

Microsoft

Exam Questions DP-100

Designing and Implementing a Data Science Solution on Azure



NEW QUESTION 1

- (Exam Topic 3)

You have several machine learning models registered in an Azure Machine Learning workspace. You must use the Fairlearn dashboard to assess fairness in a selected model.

Which three actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

Actions

Select a binary classification or regression model.

Select a metric to be measured.

Select a multiclass classification model.

Select a model feature to be evaluated.

Select a clustering model.

Answer Area

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Graphical user interface, text, application Description automatically generated

Step 1: Select a model feature to be evaluated.

Step 2: Select a binary classification or regression model.

Register your models within Azure Machine Learning. For convenience, store the results in a dictionary, which maps the id of the registered model (a string in name:version format) to the predictor itself. Example:

```
model_dict = {}
```

```
lr_reg_id = register_model("fairness_logistic_regression", lr_predictor) model_dict[lr_reg_id] = lr_predictor
```

```
svm_reg_id = register_model("fairness_svm", svm_predictor) model_dict[svm_reg_id] = svm_predictor
```

Step 3: Select a metric to be measured Precompute fairness metrics.

Create a dashboard dictionary using Fairlearn's metrics package. Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-machine-learning-fairness-aml>

NEW QUESTION 2

- (Exam Topic 3)

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You create a model to forecast weather conditions based on historical data.

You need to create a pipeline that runs a processing script to load data from a datastore and pass the processed data to a machine learning model training script.

Solution: Run the following code:

```
datastore = ws.get_default_datastore()
data_output = PipelineData("processed_data", datastore=datastore)
process_step = PythonScriptStep(script_name="process.py",
    arguments=["--data_for_train", data_output],
    outputs=[data_output], compute_target=aml_compute,
    source_directory=process_directory)
pipeline = Pipeline(workspace=ws, steps=[process_step])
```

Does the solution meet the goal?

- A. Yes
- B. No

Answer: B

Explanation:

train_step is missing. Reference:

<https://docs.microsoft.com/en-us/python/api/azureml-pipeline-core/azureml.pipeline.core.pipelinedata?view=azu>

NEW QUESTION 3

- (Exam Topic 3)

You are using C-Support Vector classification to do a multi-class classification with an unbalanced training dataset. The C-Support Vector classification using Python code shown below:

```
from sklearn.svm import svc
import numpy as np
svc = SVC(kernel= 'linear', class_weight= 'balanced', C=1.0, random_state=0)
model1 = svc.fit(X_train, y)
```

You need to evaluate the C-Support Vector classification code.

Which evaluation statement should you use? To answer, select the appropriate options in the answer area. NOTE: Each correct selection is worth one point.

Code Segment	Evaluation Statement
class_weight=balanced	<div>Automatically select the performance metrics for the classification.</div> <div>Automatically adjust weights directly proportional to class frequencies in the input data.</div> <div>Automatically adjust weights inversely proportional to class frequencies in the input data.</div>
C parameter	<div>Penalty parameter</div> <div>Degree of polynomial kernel function</div> <div>Size of the kernel cache</div>

- A. Mastered
B. Not Mastered

Answer: A

Explanation:

Box 1: Automatically adjust weights inversely proportional to class frequencies in the input data

The “balanced” mode uses the values of y to automatically adjust weights inversely proportional to class frequencies in the input data as $n_{\text{samples}} / (n_{\text{classes}} * \text{np.bincount}(y))$.

Box 2: Penalty parameter

Parameter: C : float, optional (default=1.0) Penalty parameter C of the error term. References:

<https://scikit-learn.org/stable/modules/generated/sklearn.svm.SVC.html>

NEW QUESTION 4

- (Exam Topic 3)

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

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An IT department creates the following Azure resource groups and resources:

Resource group	Resources
ml_resources	<ul style="list-style-type: none">an Azure Machine Learning workspace named amlworkspacean Azure Storage account named amlworkspace12345an Application Insights instance named amlworkspace54321an Azure Key Vault named amlworkspace67890an Azure Container Registry named amlworkspace09876
general_compute	<p>A virtual machine named mlvm with the following configuration:</p> <ul style="list-style-type: none">Operating system: Ubuntu LinuxSoftware installed: Python 3.6 and Jupyter NotebooksSize: NC6 (6 vCPUs, 1 vGPU, 56 Gb RAM)

The IT department creates an Azure Kubernetes Service (AKS)-based inference compute target named aks-cluster in the Azure Machine Learning workspace. You have a Microsoft Surface Book computer with a GPU. Python 3.6 and Visual Studio Code are installed. You need to run a script that trains a deep neural network (DNN) model and logs the loss and accuracy metrics.

Solution: Install the Azure ML SDK on the Surface Book. Run Python code to connect to the workspace. Run the training script as an experiment on the aks-cluster compute target.

Does the solution meet the goal?

- A. Yes
B. No

Answer: B

Explanation:

Need to attach the mlvm virtual machine as a compute target in the Azure Machine Learning workspace.

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/concept-compute-target>

NEW QUESTION 5

- (Exam Topic 3)

You have a dataset that includes confidential data. You use the dataset to train a model.

You must use a differential privacy parameter to keep the data of individuals safe and private. You need to reduce the effect of user data on aggregated results.

What should you do?

- A. Decrease the value of the epsilon parameter to reduce the amount of noise added to the data
- B. Increase the value of the epsilon parameter to decrease privacy and increase accuracy
- C. Decrease the value of the epsilon parameter to increase privacy and reduce accuracy
- D. Set the value of the epsilon parameter to 1 to ensure maximum privacy

Answer: C

Explanation:

Differential privacy tries to protect against the possibility that a user can produce an indefinite number of reports to eventually reveal sensitive data. A value known as epsilon measures how noisy, or private, a report is. Epsilon has an inverse relationship to noise or privacy. The lower the epsilon, the more noisy (and private) the data is.

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/concept-differential-privacy>

NEW QUESTION 6

- (Exam Topic 3)

You use an Azure Machine Learning workspace. You create the following Python code:

```
from azureml.core import ScriptRunConfig
src = ScriptRunConfig(source_directory=project_folder,
                      script='train.py'
                      environment=myenv)
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

Statements	Yes	No
The default environment will be created	<input type="radio"/>	<input type="radio"/>
The training script will run on local compute	<input type="radio"/>	<input type="radio"/>
A script run configuration runs a training script named <code>train.py</code> located in a directory defined by the <code>project_folder</code> variable	<input type="radio"/>	<input type="radio"/>

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Graphical user interface, text, application Description automatically generated

Box 1: No

Environment is a required parameter. The environment to use for the run. If no environment is specified, `azureml.core.runconfig.DEFAULT_CPU_IMAGE` will be used as the Docker image for the run.

The following example shows how to instantiate a new environment. `from azureml.core import Environment`

`myenv = Environment(name="myenv")` Box 2: Yes

Parameter `compute_target`: The compute target where training will happen. This can either be a `ComputeTarget` object, the name of an existing `ComputeTarget`, or the string "local". If no compute target is specified, your local machine will be used.

Box 3: Yes

Parameter `source_directory`. A local directory containing code files needed for a run. Parameter `script`. The file path relative to the `source_directory` of the script to be run. Reference:

<https://docs.microsoft.com/en-us/python/api/azureml-core/azureml.core.scriptrunconfig> <https://docs.microsoft.com/en-us/python/api/azureml-core/azureml.core.environment.environment>

NEW QUESTION 7

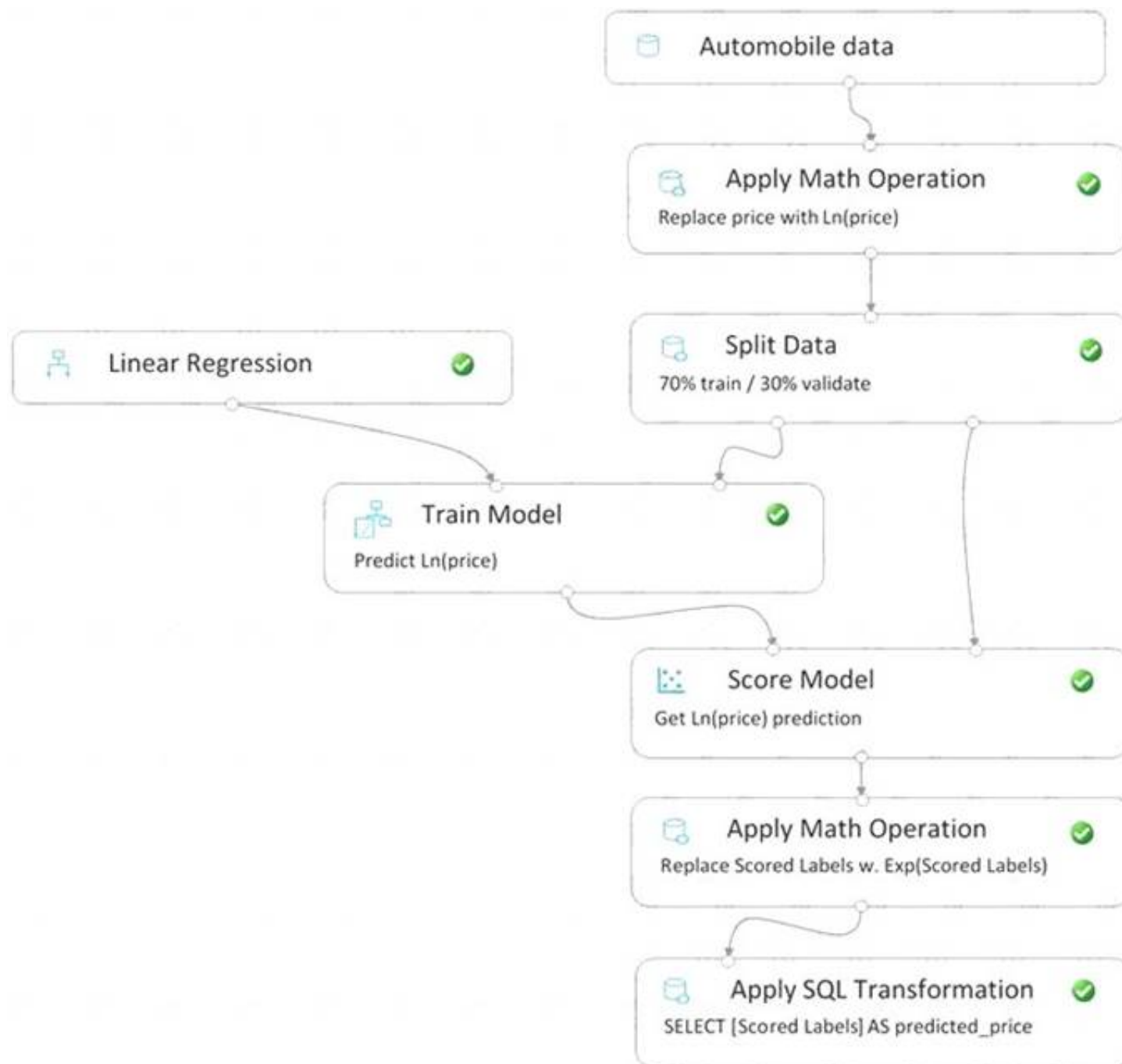
- (Exam Topic 3)

You create a pipeline in designer to train a model that predicts automobile prices.

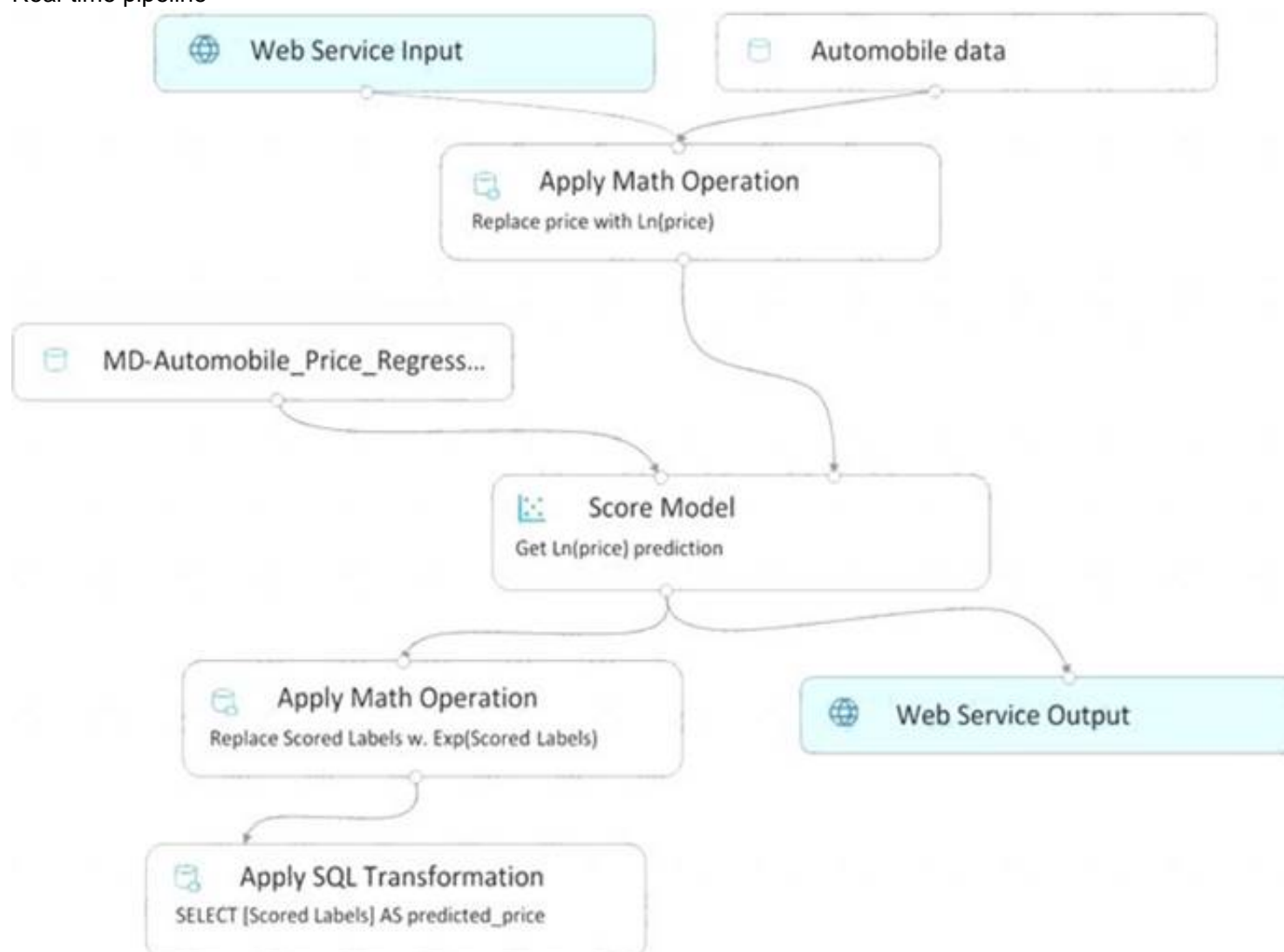
Because of non-linear relationships in the data, the pipeline calculates the natural log (Ln) of the prices in the training data, trains a model to predict this natural log of price value, and then calculates the exponential of the scored label to get the predicted price.

The training pipeline is shown in the exhibit. (Click the Training pipeline tab.)

Training pipeline



You create a real-time inference pipeline from the training pipeline, as shown in the exhibit. (Click the Real-time pipeline tab.)
 Real-time pipeline



You need to modify the inference pipeline to ensure that the web service returns the exponential of the scored label as the predicted automobile price and that client applications are not required to include a price value in the input values.

Which three modifications must you make to the inference pipeline? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

- A. Connect the output of the Apply SQL Transformation to the Web Service Output module.
- B. Replace the Web Service Input module with a data input that does not include the price column.
- C. Add a Select Columns module before the Score Model module to select all columns other than price.
- D. Replace the training dataset module with a data input that does not include the price column.
- E. Remove the Apply Math Operation module that replaces price with its natural log from the data flow.

F. Remove the Apply SQL Transformation module from the data flow.

Answer: ACE

NEW QUESTION 8

- (Exam Topic 3)

You create a Python script named train.py and save it in a folder named scripts. The script uses the scikit-learn framework to train a machine learning model. You must run the script as an Azure Machine Learning experiment on your local workstation. You need to write Python code to initiate an experiment that runs the train.py script.

How should you complete the code segment? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

```
from azureml.core import Experiment, ScriptRunConfig, Environment
from azureml.core.conda_dependencies import CondaDependencies
from azureml.core import Workspace

ws = Workspace.from_config()
py_sk = Environment('sklearn-training')
pkgs = CondaDependencies.create(pip_packages=['scikit-learn', 'azureml-defaults'])
py_sk.python.conda_dependencies = pkgs
script_config = ScriptRunConfig (
    source_directory = 'scripts',
    script = 'train.py',
    environment = py_sk)

experiment = Experiment(workspace=ws, name='training-experiment')
run = experiment.submit(config=script_config)
```

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Graphical user interface, text, application, table, Word Description automatically generated

Box 1: source_directory

source_directory: A local directory containing code files needed for a run. Box 2: script

Script: The file path relative to the source_directory of the script to be run. Box 3: environment

Reference:

<https://docs.microsoft.com/en-us/python/api/azureml-core/azureml.core.scriptrunconfig>

NEW QUESTION 9

- (Exam Topic 3)

You plan to use automated machine learning to train a regression model. You have data that has features which have missing values, and categorical features with few distinct values.

You need to configure automated machine learning to automatically impute missing values and encode categorical features as part of the training task.

Which parameter and value pair should you use in the AutoMLConfig class?

- A. featurization = 'auto'
- B. enable_voting_ensemble = True
- C. task = 'classification'
- D. exclude_nan_labels = True
- E. enable_tf = True

Answer: A

Explanation:

Featurization str or FeaturizationConfig Values: 'auto' / 'off' / FeaturizationConfig

Indicator for whether featurization step should be done automatically or not, or whether customized featurization should be used.

Column type is automatically detected. Based on the detected column type preprocessing/featurization is done as follows:

Categorical: Target encoding, one hot encoding, drop high cardinality categories, impute missing values. Numeric: Impute missing values, cluster distance, weight of evidence.

DateTime: Several features such as day, seconds, minutes, hours etc. Text: Bag of words, pre-trained Word embedding, text target encoding. Reference:

<https://docs.microsoft.com/en-us/python/api/azureml-train-automl-client/azureml.train.automl.automlconfig.auto>

NEW QUESTION 10

- (Exam Topic 3)

You create an Azure Machine Learning workspace.

You need to detect data drift between a baseline dataset and a subsequent target dataset by using the DataDriftDetector class.

How should you complete the code segment? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

```
from azureml.core import Workspace, Dataset
from datetime import datetime

ws = Workspace.from_config()
dset = Dataset.get_by_name(ws, 'target')
baseline = target.time_before(datetime(2021, 2, 1))
features = ['windAngle', 'windSpeed', 'temperature', 'stationName']

monitor = DataDriftDetector.          (ws, 'drift-monitor', baseline,

                                     backfill
                                     create_from_datasets
                                     create_from_model

target, compute_target='cpu-cluster', frequency='Week', feature_list=None,
drift_threshold=.6, latency=24)

monitor = DataDriftDetector.get_by_name(ws, 'drift-monitor')
monitor = monitor.update(feature_list=features)
complete = monitor.          (datetime(2021, 1, 1), datetime.today())

                                     backfill
                                     list
                                     update
```

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Graphical user interface, text, application, Word Description automatically generated

Box 1: create_from_datasets

The create_from_datasets method creates a new DataDriftDetector object from a baseline tabular dataset and a target time series dataset.

Box 2: backfill

The backfill method runs a backfill job over a given specified start and end date.

Syntax: backfill(start_date, end_date, compute_target=None, create_compute_target=False) Reference:

[https://docs.microsoft.com/en-us/python/api/azureml-datadrift/azureml.datadrift.datadriftdetector\(class\)](https://docs.microsoft.com/en-us/python/api/azureml-datadrift/azureml.datadrift.datadriftdetector(class))

NEW QUESTION 10

- (Exam Topic 3)

You train a model and register it in your Azure Machine Learning workspace. You are ready to deploy the model as a real-time web service.

You deploy the model to an Azure Kubernetes Service (AKS) inference cluster, but the deployment fails because an error occurs when the service runs the entry script that is associated with the model deployment.

You need to debug the error by iteratively modifying the code and reloading the service, without requiring a re-deployment of the service for each code update.

What should you do?

- A. Register a new version of the model and update the entry script to load the new version of the model from its registered path.
- B. Modify the AKS service deployment configuration to enable application insights and re-deploy to AKS.
- C. Create an Azure Container Instances (ACI) web service deployment configuration and deploy the model on ACI.
- D. Add a breakpoint to the first line of the entry script and redeploy the service to AKS.
- E. Create a local web service deployment configuration and deploy the model to a local Docker container.

Answer: C

Explanation:

How to work around or solve common Docker deployment errors with Azure Container Instances (ACI) and Azure Kubernetes Service (AKS) using Azure Machine Learning.

The recommended and the most up to date approach for model deployment is via the Model.deploy() API using an Environment object as an input parameter. In this case our service will create a base docker image for you during deployment stage and mount the required models all in one call. The basic deployment tasks are:

* 1. Register the model in the workspace model registry.

* 2. Define Inference Configuration:

* a. Create an Environment object based on the dependencies you specify in the environment yaml file or use one of our procured environments.

* b. Create an inference configuration (InferenceConfig object) based on the environment and the scoring script.

* 3. Deploy the model to Azure Container Instance (ACI) service or to Azure Kubernetes Service (AKS).

NEW QUESTION 11

- (Exam Topic 3)

You have a dataset that contains over 150 features. You use the dataset to train a Support Vector Machine (SVM) binary classifier.

You need to use the Permutation Feature Importance module in Azure Machine Learning Studio to compute a set of feature importance scores for the dataset.

In which order should you perform the actions? To answer, move all actions from the list of actions to the answer area and arrange them in the correct order.

Actions

Answer Area

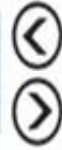
Add a Two-Class Support Vector Machine module to initialize the SVM classifier.

Set the Metric for measuring performance property to **Classification - Accuracy** and then run the experiment.

Add a Permutation Feature Importance module and connect the trained model and test dataset.

Add a dataset to the experiment.

Add a Split Data module to create training and test datasets.



- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Step 1: Add a Two-Class Support Vector Machine module to initialize the SVM classifier.

Step 2: Add a dataset to the experiment

Step 3: Add a Split Data module to create training and test dataset.

To generate a set of feature scores requires that you have an already trained model, as well as a test dataset. Step 4: Add a Permutation Feature Importance module and connect to the trained model and test dataset. Step 5: Set the Metric for measuring performance property to Classification - Accuracy and then run the experiment.

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/studio-module-reference/two-class-support-vector-mac> <https://docs.microsoft.com/en-us/azure/machine-learning/studio-module-reference/permutation-feature-importan>

NEW QUESTION 15

- (Exam Topic 3)

You are developing deep learning models to analyze semi-structured, unstructured, and structured data types. You have the following data available for model building:

- > Video recordings of sporting events
- > Transcripts of radio commentary about events
- > Logs from related social media feeds captured during sporting events

You need to select an environment for creating the model. Which environment should you use?

- A. Azure Cognitive Services
- B. Azure Data Lake Analytics
- C. Azure HDInsight with Spark MLlib
- D. Azure Machine Learning Studio

Answer: A

Explanation:

Azure Cognitive Services expand on Microsoft's evolving portfolio of machine learning APIs and enable developers to easily add cognitive features – such as emotion and video detection; facial, speech, and vision recognition; and speech and language understanding – into their applications. The goal of Azure Cognitive Services is to help developers create applications that can see, hear, speak, understand, and even begin to reason. The catalog of services within Azure Cognitive Services can be categorized into five main pillars - Vision, Speech, Language, Search, and Knowledge.

References:

<https://docs.microsoft.com/en-us/azure/cognitive-services/welcome>

NEW QUESTION 20

- (Exam Topic 3)

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

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You plan to use a Python script to run an Azure Machine Learning experiment. The script creates a reference to the experiment run context, loads data from a file, identifies the set of unique values for the label column, and completes the experiment run:


```
from azureml.core import Run
import pandas as pd

run = Run.get_context()
data = pd.read_csv('data.csv')
label_vals = data['label'].unique()
# Add code to record metrics here
run.complete()
```

The experiment must record the unique labels in the data as metrics for the run that can be reviewed later. You must add code to the script to record the unique label values as run metrics at the point indicated by the comment.

Solution: Replace the comment with the following code:

`run.log_list('Label Values', label_vals)` Does the solution meet the goal?

- A. Yes
- B. No

Answer: A

Explanation:

`run.log_list` log a list of values to the run with the given name using `log_list`. Example: `run.log_list("accuracies", [0.6, 0.7, 0.87])`

Note:

`Data = pd.read_csv('data.csv')`

Data is read into a `pandas.DataFrame`, which is a two-dimensional, size-mutable, potentially heterogeneous tabular data.

`label_vals = data['label'].unique`

`label_vals` contains a list of unique label values. Reference:

<https://www.element61.be/en/resource/azure-machine-learning-services-complete-toolbox-ai> [https://docs.microsoft.com/en-us/python/api/azureml-core/azureml.core.run\(class\)](https://docs.microsoft.com/en-us/python/api/azureml-core/azureml.core.run(class)) <https://pandas.pydata.org/docs/reference/api/pandas.DataFrame.html>

NEW QUESTION 23

- (Exam Topic 3)

You use the Two-Class Neural Network module in Azure Machine Learning Studio to build a binary classification model. You use the Tune Model Hyperparameters module to tune accuracy for the model.

You need to select the hyperparameters that should be tuned using the Tune Model Hyperparameters module. Which two hyperparameters should you use? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

- A. Number of hidden nodes
- B. Learning Rate
- C. The type of the normalizer
- D. Number of learning iterations
- E. Hidden layer specification

Answer: DE

Explanation:

D: For Number of learning iterations, specify the maximum number of times the algorithm should process the training cases.

E: For Hidden layer specification, select the type of network architecture to create.

Between the input and output layers you can insert multiple hidden layers. Most predictive tasks can be accomplished easily with only one or a few hidden layers.

References:

<https://docs.microsoft.com/en-us/azure/machine-learning/studio-module-reference/two-class-neural-network>

NEW QUESTION 27

- (Exam Topic 3)

A set of CSV files contains sales records. All the CSV files have the same data schema.

Each CSV file contains the sales record for a particular month and has the filename `sales.csv`. Each file is stored in a folder that indicates the month and year when the data was recorded. The folders are in an Azure blob container for which a datastore has been defined in an Azure Machine Learning workspace. The folders are organized in a parent folder named `sales` to create the following hierarchical structure:

```
/sales
  /01-2019
    /sales.csv
  /02-2019
    /sales.csv
  /03-2019
    /sales.csv
  ...
```

At the end of each month, a new folder with that month's sales file is added to the sales folder.

You plan to use the sales data to train a machine learning model based on the following requirements:

- You must define a dataset that loads all of the sales data to date into a structure that can be easily converted to a dataframe.
- You must be able to create experiments that use only data that was created before a specific previous month, ignoring any data that was added after that

month.

➤ You must register the minimum number of datasets possible.

You need to register the sales data as a dataset in Azure Machine Learning service workspace. What should you do?

- A. Create a tabular dataset that references the datastore and explicitly specifies each 'sales/mm-yyyy/ sales.csv' file every mont
- B. Register the dataset with the name sales_dataset each month, replacing the existing dataset and specifying a tag named month indicating the month and year it was registere
- C. Use this dataset for all experiments.
- D. Create a tabular dataset that references the datastore and specifies the path 'sales/*/sales.csv', register the dataset with the name sales_dataset and a tag named month indicating the month and year it was registered, and use this dataset for all experiments.
- E. Create a new tabular dataset that references the datastore and explicitly specifies each 'sales/mm-yyyy/ sales.csv' file every mont
- F. Register the dataset with the name sales_dataset_MM-YYYY each month with appropriate MM and YYYY values for the month and yea
- G. Use the appropriate month-specific dataset for experiments.
- H. Create a tabular dataset that references the datastore and explicitly specifies each 'sales/mm-yyyy/ sales.csv' fil
- I. Register the dataset with the name sales_dataset each month as a new version and with a tag named month indicating the month and year it was registere
- J. Use this dataset for all experiments, identifying the version to be used based on the month tag as necessary.

Answer: B

Explanation:

Specify the path. Example:

The following code gets the workspace existing workspace and the desired datastore by name. And then passes the datastore and file locations to the path parameter to create a new TabularDataset, weather_ds.

```
from azureml.core import Workspace, Datastore, Dataset datastore_name = 'your datastore name'
```

```
# get existing workspace
```

```
workspace = Workspace.from_config()
```

```
# retrieve an existing datastore in the workspace by name datastore = Datastore.get(workspace, datastore_name)
```

```
# create a TabularDataset from 3 file paths in datastore datastore_paths = [(datastore, 'weather/2018/11.csv'), (datastore, 'weather/2018/12.csv'), (datastore, 'weather/2019/*.csv')]
```

```
weather_ds = Dataset.Tabular.from_delimited_files(path=datastore_paths)
```

NEW QUESTION 29

- (Exam Topic 3)

You are training machine learning models in Azure Machine Learning. You use Hyperdrive to tune the hyperparameters. In previous model training and tuning runs, many models showed similar performance. You need to select an early termination policy that meets the following requirements:

- accounts for the performance of all previous runs when evaluating the current run
- avoids comparing the current run with only the best performing run to date

Which two early termination policies should you use? Each correct answer presents part of the solution. NOTE: Each correct selection is worth one point.

- A. Bandit
- B. Median stopping
- C. Default
- D. Truncation selection

Answer: BC

Explanation:

The Median Stopping policy computes running averages across all runs and cancels runs whose best performance is worse than the median of the running averages.

If no policy is specified, the hyperparameter tuning service will let all training runs execute to completion. Reference:

<https://docs.microsoft.com/en-us/python/api/azureml-train-core/azureml.train.hyperdrive.medianstoppingpolicy> <https://docs.microsoft.com/en-us/python/api/azureml-train-core/azureml.train.hyperdrive.truncationselectionpoli> <https://docs.microsoft.com/en-us/python/api/azureml-train-core/azureml.train.hyperdrive.banditpolicy>

NEW QUESTION 34

- (Exam Topic 3)

You run an experiment that uses an AutoMLConfig class to define an automated machine learning task with a maximum of ten model training iterations. The task will attempt to find the best performing model based on a metric named accuracy.

You submit the experiment with the following code:

You need to create Python code that returns the best model that is generated by the automated machine learning task. Which code segment should you use?

A)

```
best_model = automl_run.get_details()
```

B)

```
best_model = automl_run.get_output()[1]
```

C)

```
best_model = automl_run.get_file_names()[1]
```

D)

```
best_model = automl_run.get_metrics()
```

- A. Option A
- B. Option B
- C. Option C
- D. Option D

Answer: B

Explanation:

The get_output method returns the best run and the fitted model. Reference:

<https://notebooks.azure.com/azureml/projects/azureml-getting-started/html/how-to-use-azureml/automated-mach>

NEW QUESTION 38

- (Exam Topic 3)

You plan to use a Deep Learning Virtual Machine (DLVM) to train deep learning models using Compute Unified Device Architecture (CUDA) computations.

You need to configure the DLVM to support CUDA. What should you implement?

- A. Intel Software Guard Extensions (Intel SGX) technology
- B. Solid State Drives (SSD)
- C. Graphic Processing Unit (GPU)
- D. Computer Processing Unit (CPU) speed increase by using overclocking
- E. High Random Access Memory (RAM) configuration

Answer: C

Explanation:

A Deep Learning Virtual Machine is a pre-configured environment for deep learning using GPU instances.

References:

<https://azuremarketplace.microsoft.com/en-au/marketplace/apps/microsoft-ads.dsvm-deep-learning>

NEW QUESTION 40

- (Exam Topic 3)

You create an Azure Machine Learning workspace.

You must create a custom role named DataScientist that meets the following requirements:

- Role members must not be able to delete the workspace.
- Role members must not be able to create, update, or delete compute resource in the workspace.
- Role members must not be able to add new users to the workspace.

You need to create a JSON file for the DataScientist role in the Azure Machine Learning workspace. The custom role must enforce the restrictions specified by the IT Operations team.

Which JSON code segment should you use?

A)

```
{
  "Name": "DataScientist",
  "IsCustom": true,
  "Description": "Project Data Scientist role",
  "Actions": ["*"],
  "NotActions": [
    "Microsoft.MachineLearningServices/workspaces/*/delete",
    "Microsoft.MachineLearningServices/workspaces/computes/*/write",
    "Microsoft.MachineLearningServices/workspaces/computes/*/delete",
    "Microsoft.Authorization/*/write"
  ],
  "AssignableScopes": [
    "/subscriptions/<id>/resourceGroups/ml-rg/providers/Microsoft.MachineLearningServices/workspaces/ml-ws"
  ]
}
```

B)

```
{
  "Name": "DataScientist",
  "IsCustom": true,
  "Description": "Project Data Scientist role",
  "Actions": ["*"],
  "NotActions": [],
  "AssignableScopes": [
    "/subscriptions/<id>/resourceGroups/ml-rg/providers/Microsoft.MachineLearningServices/workspaces/ml-ws"
  ]
}
```

C)

```
{
  "Name": "DataScientist",
  "IsCustom": true,
  "Description": "Project Data Scientist role",
  "Actions": [
    "Microsoft.MachineLearningServices/workspaces/*/delete",
    "Microsoft.MachineLearningServices/workspaces/computes/*/write",
    "Microsoft.MachineLearningServices/workspaces/computes/*/delete",
    "Microsoft.Authorization/*/write"
  ],
  "NotActions": [],
  "AssignableScopes": [
    "/subscriptions/<id>/resourceGroups/ml-rg/providers/Microsoft.MachineLearningServices/workspaces/ml-ws"
  ]
}
```

D)

```
{
  "Name": "DataScientist",
  "IsCustom": true,
  "Description": "Project Data Scientist role",
  "Actions": [],
  "NotActions": ["*"],
  "AssignableScopes": [
    "/subscriptions/<id>/resourceGroups/ml-rg/providers/Microsoft.MachineLearningServices/workspaces/ml-ws"
  ]
}
```

- A. Option A
- B. Option B
- C. Option C
- D. Option D

Answer: A

Explanation:

The following custom role can do everything in the workspace except for the following actions:

- It can't create or update a compute resource.
- It can't delete a compute resource.
- It can't add, delete, or alter role assignments.
- It can't delete the workspace.

To create a custom role, first construct a role definition JSON file that specifies the permission and scope for the role. The following example defines a custom role named "Data Scientist Custom" scoped at a specific workspace level:

data_scientist_custom_role.json :

```
{
  "Name": "Data Scientist Custom", "IsCustom": true,
  "Description": "Can run experiment but can't create or delete compute.", "Actions": ["*"],
  "NotActions": [
    "Microsoft.MachineLearningServices/workspaces/*/delete", "Microsoft.MachineLearningServices/workspaces/write",
    "Microsoft.MachineLearningServices/workspaces/computes/*/write", "Microsoft.MachineLearningServices/workspaces/computes/*/delete",
    "Microsoft.Authorization/*/write"
  ],
  "AssignableScopes": [ "/subscriptions/<subscription_id>/resourceGroups/<resource_group_name>/providers/Microsoft.MachineLearnin"
]
}
```

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-assign-roles>

NEW QUESTION 43

- (Exam Topic 3)

You are creating a binary classification by using a two-class logistic regression model. You need to evaluate the model results for imbalance.

Which evaluation metric should you use?

- A. Relative Absolute Error
- B. AUC Curve
- C. Mean Absolute Error
- D. Relative Squared Error

Answer: B

Explanation:

One can inspect the true positive rate vs. the false positive rate in the Receiver Operating Characteristic (ROC) curve and the corresponding Area Under the Curve (AUC) value. The closer this curve is to the upper left corner, the better the classifier's performance is (that is maximizing the true positive rate while minimizing the false positive rate). Curves that are close to the diagonal of the plot, result from classifiers that tend to make predictions that are close to random guessing.

References:

<https://docs.microsoft.com/en-us/azure/machine-learning/studio/evaluate-model-performance#evaluating-a-bina>

NEW QUESTION 45

- (Exam Topic 3) You are solving a classification task. The dataset is imbalanced.

You need to select an Azure Machine Learning Studio module to improve the classification accuracy. Which module should you use?

- A. Fisher Linear Discriminant Analysis.
- B. Filter Based Feature Selection
- C. Synthetic Minority Oversampling Technique (SMOTE)
- D. Permutation Feature Importance

Answer: C

Explanation:

Use the SMOTE module in Azure Machine Learning Studio (classic) to increase the number of underrepresented cases in a dataset used for machine learning. SMOTE is a better way of increasing the number of rare cases than simply duplicating existing cases.

You connect the SMOTE module to a dataset that is imbalanced. There are many reasons why a dataset might be imbalanced: the category you are targeting might be very rare in the population, or the data might simply be difficult to collect. Typically, you use SMOTE when the class you want to analyze is under-represented.

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/studio-module-reference/smote>

NEW QUESTION 46

- (Exam Topic 3)

You deploy a model in Azure Container Instance.

You must use the Azure Machine Learning SDK to call the model API.

You need to invoke the deployed model using native SDK classes and methods.

How should you complete the command? To answer, select the appropriate options in the answer areas.

NOTE: Each correct selection is worth one point.

```
from azureml.core import Workspace
```

```
from azureml.core.webservice import requests  
from azureml.core.webservice import Webservice  
from azureml.core.webservice import LocalWebservice
```

```
import json  
ws = Workspace.from_config()  
service_name = "mlmodel1-service"  
service = Webservice(name=service_name, workspace=ws)  
x_new = [[2,101.5,1,24,21], [1,89.7,4,41,21]]  
input_json = json.dumps({"data": x_new})
```

```
predictions = service.run(input_json)  
predictions = requests.post(service.scoring_uri, input_json)  
predictions = service.deserialize(ws, input_json)
```

A. Mastered

B. Not Mastered

Answer: A

Explanation:

Box 1: from azureml.core.webservice import Webservice

The following code shows how to use the SDK to update the model, environment, and entry script for a web service to Azure Container Instances:

from azureml.core import Environment

from azureml.core.webservice import Webservice

from azureml.core.model import Model, InferenceConfig Box 2: predictions = service.run(input_json)

Example: The following code demonstrates sending data to the service: import json

test_sample = json.dumps({'data': [[1, 2, 3, 4, 5, 6, 7, 8, 9, 10],

[10, 9, 8, 7, 6, 5, 4, 3, 2, 1]

]])

test_sample = bytes(test_sample, encoding='utf8') prediction = service.run(input_data=test_sample)

print(prediction) Reference:

<https://docs.microsoft.com/bs-latn-ba/azure/machine-learning/how-to-deploy-azure-container-instance> <https://docs.microsoft.com/en-us/azure/machine-learning/how-to-troubleshoot-deployment>

NEW QUESTION 51

- (Exam Topic 3)

You are using the Azure Machine Learning Service to automate hyperparameter exploration of your neural network classification model.

You must define the hyperparameter space to automatically tune hyperparameters using random sampling according to following requirements:

➤ The learning rate must be selected from a normal distribution with a mean value of 10 and a standard deviation of 3.

➤ Batch size must be 16, 32 and 64.

➤ Keep probability must be a value selected from a uniform distribution between the range of 0.05 and 0.1.

You need to use the param_sampling method of the Python API for the Azure Machine Learning Service. How should you complete the code segment? To answer, select the appropriate options in the answer area. NOTE: Each correct selection is worth one point.

```
from azureml.train.hyperdrive import RandomParameterSampling
param_sampling = RandomParameterSampling( {
    "learning_rate" : 
        uniform(10,3)
        normal(10,3)
        choice(10,3)
        Loguniform(10,3)

    "batch_size": 
        choice(16,32,64)
        choice(range(16,64))
        normal(16,32,64)
        normal(range(16,64))

    "keep_probability" : 
        choice(range(0.05, 0.1))
        uniform(0.05, 0.1)
        normal(0.05, 0.1)
        lognormal(0.05, 0.1)

})
```

- A. Mastered
 B. Not Mastered

Answer: A

Explanation:

In random sampling, hyperparameter values are randomly selected from the defined search space. Random sampling allows the search space to include both discrete and continuous hyperparameters.

Example:

```
from azureml.train.hyperdrive import RandomParameterSampling
param_sampling = RandomParameterSampling( { "learning_rate": normal(10, 3),
    "keep_probability": uniform(0.05, 0.1),
    "batch_size": choice(16, 32, 64)
})
```

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/service/how-to-tune-hyperparameters>

NEW QUESTION 52

- (Exam Topic 3)

You are creating a machine learning model. You need to identify outliers in the data.

Which two visualizations can you use? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point. NOTE: Each correct selection is worth one point.

- A. box plot
 B. scatter
 C. random forest diagram
 D. Venn diagram
 E. ROC curve

Answer: AB

Explanation:

The box-plot algorithm can be used to display outliers.

One other way to quickly identify Outliers visually is to create scatter plots. References:

<https://blogs.msdn.microsoft.com/azuredev/2017/05/27/data-cleansing-tools-in-azure-machine-learning/>

NEW QUESTION 54

- (Exam Topic 3)

You are using the Hyperdrive feature in Azure Machine Learning to train a model. You configure the Hyperdrive experiment by running the following code:

```
from azureml.train.hyperdrive import RandomParameterSampling
param_sampling = RandomParameterSampling( {
    "learning_rate": normal(10, 3),
    "keep_probability": uniform(0.05, 0.1),
    "batch_size": choice(16, 32, 64, 128)
    "number_of_hidden_layers": choice(range(3,5))
})
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

	Yes	No
By defining sampling in this manner, every possible combination of the parameters will be tested.	<input type="radio"/>	<input type="radio"/>
Random values of the learning_rate parameter will be selected from a normal distribution with a mean of 10 and a standard deviation of 3.	<input type="radio"/>	<input type="radio"/>
The keep_probability parameter value will always be either 0.05 or 0.1 .	<input type="radio"/>	<input type="radio"/>
Random values for the number_of_hidden_layers parameter will be selected from a normal distribution with a mean of 3 and a standard deviation of 5.	<input type="radio"/>	<input type="radio"/>

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: Yes

In random sampling, hyperparameter values are randomly selected from the defined search space. Random sampling allows the search space to include both discrete and continuous hyperparameters.

Box 2: Yes

learning_rate has a normal distribution with mean value 10 and a standard deviation of 3.

Box 3: No

keep_probability has a uniform distribution with a minimum value of 0.05 and a maximum value of 0.1.

Box 4: No

number_of_hidden_layers takes on one of the values [3, 4, 5].

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-tune-hyperparameters>

NEW QUESTION 56

- (Exam Topic 3)

You create a multi-class image classification deep learning model that uses a set of labeled images. You create a script file named train.py that uses the PyTorch 1.3 framework to train the model.

You must run the script by using an estimator. The code must not require any additional Python libraries to be installed in the environment for the estimator. The time required for model training must be minimized.

You need to define the estimator that will be used to run the script. Which estimator type should you use?

- A. TensorFlow
- B. PyTorch
- C. SKLearn
- D. Estimator

Answer: B

Explanation:

For PyTorch, TensorFlow and Chainer tasks, Azure Machine Learning provides respective PyTorch, TensorFlow, and Chainer estimators to simplify using these frameworks.

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-train-ml-models>

NEW QUESTION 60

- (Exam Topic 3)

You use Azure Machine Learning to train and register a model.

You must deploy the model into production as a real-time web service to an inference cluster named service-compute that the IT department has created in the Azure Machine Learning workspace.

Client applications consuming the deployed web service must be authenticated based on their Azure Active Directory service principal.

You need to write a script that uses the Azure Machine Learning SDK to deploy the model. The necessary modules have been imported.

How should you complete the code? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.


```
# Assume the necessary modules have been imported
deploy_target = ▼ (ws, "service-compute")
AksCompute
AmlCompute
RemoteCompute
BatchCompute

deployment_config = ▼ .deploy_configuration(cpu_cores=1, memory_gb=1,
AksWebservice
AciWebservice
LocalWebService

▼ )
token_auth_enabled=True
token_auth_enabled=False
auth_enabled=True
auth_enabled=False

service = Model.deploy(ws, "ml-service",
    [model], inference_config, deployment_config, deploy_target)
service.wait_for_deployment(show_output = True)
```

- A. Mastered
B. Not Mastered

Answer: A

Explanation:

Box 1: AksCompute Example:

```
aks_target = AksCompute(ws,"myaks")
```

If deploying to a cluster configured for dev/test, ensure that it was created with enough
cores and memory to handle this deployment configuration. Note that memory is also used by
things such as dependencies and AML components.

```
deployment_config = AksWebservice.deploy_configuration(cpu_cores = 1, memory_gb = 1)
```

```
service = Model.deploy(ws, "myservice", [model], inference_config, deployment_config, aks_target)
```

Box 2: AksWebservice

Box 3: token_auth_enabled=Yes

Whether or not token auth is enabled for the Webservice.

Note: A Service principal defined in Azure Active Directory (Azure AD) can act as a principal on which authentication and authorization policies can be enforced in Azure Databricks.

The Azure Active Directory Authentication Library (ADAL) can be used to programmatically get an Azure AD access token for a user.

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-deploy-azure-kubernetes-service> <https://docs.microsoft.com/en-us/azure/databricks/dev-tools/api/latest/aad/service-prin-aad-token>

NEW QUESTION 62

- (Exam Topic 3)

A coworker registers a datastore in a Machine Learning services workspace by using the following code:

```
Datastore.register_azure_blob_container(workspace=ws,
    datastore_name='demo_datastore',
    container_name='demo_datacontainer',
    account_name='demo_account',
    account_key='0A0A0A-0A0A00A-0A00A0A0A0A0A',
    create_if_not_exists=True)
```

You need to write code to access the datastore from a notebook.

Answer Area

```
import azureml.core
from azureml.core import Workspace, Datastore
ws = Workspace.from_config()

datastore = Workspace
Datastore
Experiment
Run.get(ws
run
experiment
log, demo_datastore
demo_datacontainer
demo_account
Datastore)
```

- A. Mastered
B. Not Mastered

Answer: A

Explanation:

Box 1: DataStore

To get a specific datastore registered in the current workspace, use the get() static method on the Datastore class:

Get a named datastore from the current workspace

datastore = Datastore.get(ws, datastore_name='your datastore name') Box 2: ws
 Box 3: demo_datastore Reference:
<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-access-data>

NEW QUESTION 64

- (Exam Topic 3)

You use the following code to run a script as an experiment in Azure Machine Learning:

```
from azureml.core import Workspace, Experiment, Run
from azureml.core import RunConfig, ScriptRunConfig
ws = Workspace.from_config()
run_config = RunConfiguration()
run_config.target='local'
script_config = ScriptRunConfig(source_directory='./script', script='experiment.py', run_config=run_config)
experiment = Experiment(workspace=ws, name='script experiment')
run = experiment.submit(config=script_config)
run.wait_for_completion()
```

You must identify the output files that are generated by the experiment run. You need to add code to retrieve the output file names.
 Which code segment should you add to the script?

- A. files = run.get_properties()
- B. files= run.get_file_names()
- C. files = run.get_details_with_logs()
- D. files = run.get_metrics()
- E. files = run.get_details()

Answer: B

Explanation:

You can list all of the files that are associated with this run record by called run.get_file_names() Reference:
<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-track-experiments>

NEW QUESTION 66

- (Exam Topic 3)

You are the owner of an Azure Machine Learning workspace.

You must prevent the creation or deletion of compute resources by using a custom role. You must allow all other operations inside the workspace.

You need to configure the custom role.

How should you complete the configuration? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

```
{
  "Name": "Data Scientist Custom",
  "IsCustom": true
  "Description": "Description"
  "Actions": [
```

▼

Microsoft.MachineLearningServices/workspaces/*/read
 Microsoft.MachineLearningServices/workspaces/computes/*/write
 Microsoft.MachineLearningServices/workspaces/delete

▼

Microsoft.MachineLearningServices/workspaces/*/write
 Microsoft.MachineLearningServices/workspaces/computes/*/write
 Microsoft.MachineLearningServices/workspaces/delete

```
],
  "NotActions": [
```

▼

Microsoft.MachineLearningServices/workspaces/*/read
 Microsoft.MachineLearningServices/workspaces/*/write
 Microsoft.MachineLearningServices/workspaces/computes/*/delete

▼

Microsoft.MachineLearningServices/workspaces/*/read
 Microsoft.MachineLearningServices/workspaces/*/write
 Microsoft.MachineLearningServices/workspaces/computes/*/write

```
],
  "AssignableScopes": [
    "/subscriptions/<subscription_id>"
  ]
}
```

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Graphical user interface, application Description automatically generated

Graphical user interface, application Description automatically generated

Box 1: Microsoft.MachineLearningServices/workspaces/*/read

Reader role: Read-only actions in the workspace. Readers can list and view assets, including datastore credentials, in a workspace. Readers can't create or update these assets.

Box 2: Microsoft.MachineLearningServices/workspaces/*/write

If the roles include Actions that have a wildcard (*), the effective permissions are computed by subtracting the NotActions from the allowed Actions.

Box 3: Box 2: Microsoft.MachineLearningServices/workspaces/computes/*/delete

Box 4: Microsoft.MachineLearningServices/workspaces/computes/*/write Reference:

<https://docs.microsoft.com/en-us/azure/role-based-access-control/overview#how-azure-rbac-determines-if-a-use>

NEW QUESTION 71

- (Exam Topic 3)

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are creating a new experiment in Azure Machine Learning Studio.

One class has a much smaller number of observations than tin- other classes in the training set. You need to select an appropriate data sampling strategy to compensate for the class imbalance. Solution: You use the Principal Components Analysis (PCA) sampling mode.

Does the solution meet the goal?

- A. Yes
- B. No

Answer: B

Explanation:

Instead use the Synthetic Minority Oversampling Technique (SMOTE) sampling mode.

Note: SMOTE is used to increase the number of underrepresented cases in a dataset used for machine learning. SMOTE is a better way of increasing the number of rare cases than simply duplicating existing cases.

NEW QUESTION 75

- (Exam Topic 3)

You create an Azure Machine Learning workspace named ML-workspace. You also create an Azure Databricks workspace named DB-workspace. DB-workspace contains a cluster named DB-cluster.

You must use DB-cluster to run experiments from notebooks that you import into DB-workspace.

You need to use ML-workspace to track MLflow metrics and artifacts generated by experiments running on DB-cluster. The solution must minimize the need for custom code.

What should you do?

- A. From DB-cluster, configure the Advanced Logging option.
- B. From DB-workspac
- C. configure the Link Azure ML workspace option.
- D. From ML-workspac
- E. create an attached compute.
- F. From ML-workspac
- G. create a compute cluster.

Answer: B

Explanation:

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-use-mlflow-azure-databricks>

NEW QUESTION 80

- (Exam Topic 3)

You create and register a model in an Azure Machine Learning workspace.

You must use the Azure Machine Learning SDK to implement a batch inference pipeline that uses a ParallelRunStep to score input data using the model. You must specify a value for the ParallelRunConfig compute_target setting of the pipeline step.

You need to create the compute target. Which class should you use?

- A. BatchCompute
- B. AdlaCompute
- C. AmlCompute
- D. Aks Compute

Answer: C

Explanation:

Compute target to use for ParallelRunStep. This parameter may be specified as a compute target object or the string name of a compute target in the workspace. The compute_target target is of AmlCompute or string.

Note: An Azure Machine Learning Compute (AmlCompute) is a managed-compute infrastructure that allows you to easily create a single or multi-node compute.

The compute is created within your workspace region as a resource that can be shared with other users

Reference:

<https://docs.microsoft.com/en-us/python/api/azureml-contrib-pipeline-steps/azureml.contrib.pipeline.steps.parall> [https://docs.microsoft.com/en-us/python/api/azureml-core/azureml.core.compute.amlcompute\(class\)](https://docs.microsoft.com/en-us/python/api/azureml-core/azureml.core.compute.amlcompute(class))

NEW QUESTION 82

- (Exam Topic 3)

You are performing clustering by using the K-means algorithm. You need to define the possible termination conditions.

Which three conditions can you use? Each correct answer presents a complete solution. NOTE: Each correct selection is worth one point.

- A. A fixed number of iterations is executed.
- B. The residual sum of squares (RSS) rises above a threshold.
- C. The sum of distances between centroids reaches a maximum.
- D. The residual sum of squares (RSS) falls below a threshold.
- E. Centroids do not change between iterations.

Answer: ADE

Explanation:

References:

<https://docs.microsoft.com/en-us/azure/machine-learning/studio-module-reference/k-means-clustering> <https://nlp.stanford.edu/IR-book/html/htmledition/k-means-1.html>

NEW QUESTION 87

- (Exam Topic 3)

You plan to create a speech recognition deep learning model. The model must support the latest version of Python.

You need to recommend a deep learning framework for speech recognition to include in the Data Science Virtual Machine (DSVM).

What should you recommend?

- A. Apache Drill
- B. Tensorflow
- C. Rattle
- D. Weka

Answer: B

Explanation:

TensorFlow is an open source library for numerical computation and large-scale machine learning. It uses Python to provide a convenient front-end API for building applications with the framework

TensorFlow can train and run deep neural networks for handwritten digit classification, image recognition, word embeddings, recurrent neural networks, sequence-to-sequence models for machine translation, natural language processing, and PDE (partial differential equation) based simulations.

References:

<https://www.infoworld.com/article/3278008/what-is-tensorflow-the-machine-learning-library-explained.html>

NEW QUESTION 92

- (Exam Topic 3)

You plan to deliver a hands-on workshop to several students. The workshop will focus on creating data visualizations using Python. Each student will use a device that has internet access.

Student devices are not configured for Python development. Students do not have administrator access to install software on their devices. Azure subscriptions are not available for students.

You need to ensure that students can run Python-based data visualization code. Which Azure tool should you use?

- A. Anaconda Data Science Platform
- B. Azure BatchAI
- C. Azure Notebooks
- D. Azure Machine Learning Service

Answer: C

Explanation:

References:

<https://notebooks.azure.com/>

NEW QUESTION 96

- (Exam Topic 3)

You have a feature set containing the following numerical features: X, Y, and Z.

The Poisson correlation coefficient (r-value) of X, Y, and Z features is shown in the following image:

	X	Y	Z
X	1	0.149676	-0.106276
Y	0.149676	1	0.859122
Z	-0.106276	0.859122	1

Use the drop-down menus to select the answer choice that answers each question based on the information presented in the graphic.

NOTE: Each correct selection is worth one point.

What is the r-value for the correlation of Y to Z?

▼

-0.106276
0.149676
0.859122
1

Which type of relationship exists between Z and Y in the feature set?

▼

a positive linear relationship
a negative linear relationship
no linear relationship

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: 0.859122

Box 2: a positively linear relationship

+1 indicates a strong positive linear relationship

-1 indicates a strong negative linear correlation

0 denotes no linear relationship between the two variables. References:

<https://docs.microsoft.com/en-us/azure/machine-learning/studio-module-reference/compute-linear-correlation>

NEW QUESTION 99

- (Exam Topic 3)

You previously deployed a model that was trained using a tabular dataset named training-dataset, which is based on a folder of CSV files.

Over time, you have collected the features and predicted labels generated by the model in a folder containing a CSV file for each month. You have created two tabular datasets based on the folder containing the inference data: one named predictions-dataset with a schema that matches the training data exactly, including the predicted label; and another named features-dataset with a schema containing all of the feature columns and a timestamp column based on the filename, which includes the day, month, and year.

You need to create a data drift monitor to identify any changing trends in the feature data since the model was trained. To accomplish this, you must define the required datasets for the data drift monitor.

Which datasets should you use to configure the data drift monitor? To answer, drag the appropriate datasets to the correct data drift monitor options. Each source may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Target datasets	Answer Area
training-dataset	Baseline dataset
predictions-dataset	Target dataset
features-dataset	Target dataset

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Text Description automatically generated with medium confidence

Box 1: training-dataset

Baseline dataset - usually the training dataset for a model. Box 2: predictions-dataset

Target dataset - usually model input data - is compared over time to your baseline dataset. This comparison means that your target dataset must have a timestamp column specified.

The monitor will compare the baseline and target datasets. Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-monitor-datasets>

NEW QUESTION 101

- (Exam Topic 3)

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You train and register a machine learning model.

You plan to deploy the model as a real-time web service. Applications must use key-based authentication to use the model.

You need to deploy the web service. Solution:

Create an AksWebservice instance.

Set the value of the auth_enabled property to True.

Deploy the model to the service. Does the solution meet the goal?

- A. Yes
- B. No

Answer: A

Explanation:

Key-based authentication.
Web services deployed on AKS have key-based auth enabled by default. ACI-deployed services have key-based auth disabled by default, but you can enable it by setting `auth_enabled = TRUE` when creating the ACI web service. The following is an example of creating an ACI deployment configuration with key-based auth enabled.
`deployment_config <- aci_webservice_deployment_config(cpu_cores = 1, memory_gb = 1, auth_enabled = TRUE)` Reference:
<https://azure.github.io/azureml-sdk-for-r/articles/deploying-models.html>

NEW QUESTION 105

- (Exam Topic 3)
Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.
After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.
You are creating a new experiment in Azure Learning learning Studio.
One class has a much smaller number of observations than the other classes in the training
You need to select an appropriate data sampling strategy to compensate for the class imbalance. Solution: You use the Synthetic Minority Oversampling Technique (SMOTE) sampling mode. Does the solution meet the goal?

- A. Yes
- B. No

Answer: A

Explanation:

SMOTE is used to increase the number of underrepresented cases in a dataset used for machine learning. SMOTE is a better way of increasing the number of rare cases than simply duplicating existing cases.
References:
<https://docs.microsoft.com/en-us/azure/machine-learning/studio-module-reference/smote>

NEW QUESTION 107

- (Exam Topic 3)
You create a multi-class image classification deep learning model.
The model must be retrained monthly with the new image data fetched from a public web portal. You create an Azure Machine Learning pipeline to fetch new data, standardize the size of images, and retrain the model.
You need to use the Azure Machine Learning SDK to configure the schedule for the pipeline.
Which four actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

Actions

Publish the pipeline.

Retrieve the pipeline ID.

Create a ScheduleRecurrence(frequency= 'Month', interval=1, start_time='2019-01-01T00:00:00') object.

Define a pipeline parameter named RunDate.

Define a new Azure Machine Learning pipeline StepRun object with the step ID of the first step in the pipeline.

Define an Azure Machine Learning pipeline schedule using the schedule.create method with the defined recurrence specification.

Answer Area

<

>

⬆

⬇

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Step 1: Publish the pipeline.
To schedule a pipeline, you'll need a reference to your workspace, the identifier of your published pipeline, and the name of the experiment in which you wish to create the schedule.
Step 2: Retrieve the pipeline ID. Needed for the schedule.

Step 3: Create a ScheduleRecurrence..
To run a pipeline on a recurring basis, you'll create a schedule. A Schedule associates a pipeline, an experiment, and a trigger.
First create a schedule. Example: Create a Schedule that begins a run every 15 minutes: recurrence = ScheduleRecurrence(frequency="Minute", interval=15)
Step 4: Define an Azure Machine Learning pipeline schedule.. Example, continued:
recurring_schedule = Schedule.create(ws, name="MyRecurringSchedule", description="Based on time",
pipeline_id=pipeline_id, experiment_name=experiment_name, recurrence=recurrence)
Reference:
<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-schedule-pipelines>

NEW QUESTION 111

- (Exam Topic 3)
You plan to use Hyperdrive to optimize the hyperparameters selected when training a model. You create the following code to define options for the hyperparameter experiment

```
import azureml.train.hyperdrive.parameter_expressions as pe
from azureml.train.hyperdrive import GridParameterSampling, HyperDriveConfig

param_sampling = GridParameterSampling({
    "max_depth" : pe.choice(6, 7, 8, 9),
    "learning_rate" : pe.choice(0.05, 0.1, 0.15)
})
hyperdrive_run_config = HyperDriveConfig(
    estimator = estimator,
    hyperparameter_sampling = param_sampling,
    policy = None,
    primary_metric_name = "auc",
    primary_metric_goal = PrimaryMetricGoal.MAXIMIZE,

    estimator = estimator,
    hyperparameter_sampling = param_sampling,
    policy = None,
    primary_metric_name = "auc",
    primary_metric_goal = PrimaryMetricGoal.MAXIMIZE,
    max_total_runs = 50,
    max_concurrent_runs = 4)
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No. NOTE: Each correct selection is worth one point.

Answer Area

	Yes	No
There will be 50 runs for this hyperparameter tuning experiment.	<input type="radio"/>	<input type="radio"/>
You can use the policy parameter in the HyperDriveConfig class to specify a security policy.	<input type="radio"/>	<input type="radio"/>
The experiment will create a run for every possible value for the learning rate parameter between 0.05 and 0.15.	<input type="radio"/>	<input type="radio"/>

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: No
max_total_runs (50 here)
The maximum total number of runs to create. This is the upper bound; there may be fewer runs when the sample space is smaller than this value.
Box 2: Yes
Policy EarlyTerminationPolicy
The early termination policy to use. If None - the default, no early termination policy will be used. Box 3: No
Discrete hyperparameters are specified as a choice among discrete values. choice can be: one or more comma-separated values
> a range object
> any arbitrary list object Reference:
<https://docs.microsoft.com/en-us/python/api/azureml-train-core/azureml.train.hyperdrive.hyperdriveconfig> <https://docs.microsoft.com/en-us/azure/machine-learning/how-to-tune-hyperparameters>

NEW QUESTION 116

- (Exam Topic 3)
Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.
After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You have a Python script named train.py in a local folder named scripts. The script trains a regression model by using scikit-learn. The script includes code to load a training data file which is also located in the scripts folder.

You must run the script as an Azure ML experiment on a compute cluster named aml-compute.

You need to configure the run to ensure that the environment includes the required packages for model training. You have instantiated a variable named aml-compute that references the target compute cluster.

Solution: Run the following code:

```
from azureml.train.sklearn import SKLearn
sk_est = SKLearn(source_directory='./scripts',
                  compute_target=aml-compute,
                  entry_script='train.py')
```

Does the solution meet the goal?

- A. Yes
- B. No

Answer: A

Explanation:

The scikit-learn estimator provides a simple way of launching a scikit-learn training job on a compute target. It is implemented through the SKLearn class, which can be used to support single-node CPU training.

Example:

```
from azureml.train.sklearn import SKLearn
}
estimator = SKLearn(source_directory=project_folder, compute_target=compute_target, entry_script='train_iris.py'
)
```

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-train-scikit-learn>

NEW QUESTION 120

- (Exam Topic 3)

You train and register a machine learning model. You create a batch inference pipeline that uses the model to generate predictions from multiple data files.

You must publish the batch inference pipeline as a service that can be scheduled to run every night. You need to select an appropriate compute target for the inference service.

Which compute target should you use?

- A. Azure Machine Learning compute instance
- B. Azure Machine Learning compute cluster
- C. Azure Kubernetes Service (AKS)-based inference cluster
- D. Azure Container Instance (ACI) compute target

Answer: B

Explanation:

Azure Machine Learning compute clusters is used for Batch inference. Run batch scoring on serverless compute. Supports normal and low-priority VMs. No support for real-time inference.

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/concept-compute-target>

NEW QUESTION 121

- (Exam Topic 3)

You have a dataset created for multiclass classification tasks that contains a normalized numerical feature set with 10,000 data points and 150 features.

You use 75 percent of the data points for training and 25 percent for testing. You are using the scikit-learn machine learning library in Python. You use X to denote the feature set and Y to denote class labels.

You create the following Python data frames:

Name	Description
X_train	training feature set
Y_train	training class labels
x_train	testing feature set
y_train	testing class labels

You need to apply the Principal Component Analysis (PCA) method to reduce the dimensionality of the feature set to 10 features in both training and testing sets. How should you complete the code segment? To answer, select the appropriate options in the answer area. NOTE: Each correct selection is worth one point.


```
from sklearn.decomposition import PCA
pca = PCA()
pca = PCA(n_components = 150)
pca = PCA(n_components = 10)
pca = PCA(n_components = 10000)

X_train = pca.fit_transform(X_train)

x_test = pca.transform(x_test)
```

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: PCA(n_components = 10)

Need to reduce the dimensionality of the feature set to 10 features in both training and testing sets. Example:

from sklearn.decomposition import PCA pca = PCA(n_components=2) ;2 dimensions principalComponents = pca.fit_transform(x)

Box 2: pca

fit_transform(X[, y])fits the model with X and apply the dimensionality reduction on X. Box 3: transform(x_test)

transform(X) applies dimensionality reduction to X. References:

<https://scikit-learn.org/stable/modules/generated/sklearn.decomposition.PCA.html>

NEW QUESTION 126

- (Exam Topic 3)

You are implementing a machine learning model to predict stock prices. The model uses a PostgreSQL database and requires GPU processing. You need to create a virtual machine that is pre-configured with the required tools. What should you do?

- A. Create a Data Science Virtual Machine (DSVM) Windows edition.
- B. Create a Geo AI Data Science Virtual Machine (Geo-DSVM) Windows edition.
- C. Create a Deep Learning Virtual Machine (DLVM) Linux edition.
- D. Create a Deep Learning Virtual Machine (DLVM) Windows edition.
- E. Create a Data Science Virtual Machine (DSVM) Linux edition.

Answer: E

NEW QUESTION 130

- (Exam Topic 3)

The finance team asks you to train a model using data in an Azure Storage blob container named finance-data. You need to register the container as a datastore in an Azure Machine Learning workspace and ensure that an error will be raised if the container does not exist.

How should you complete the code? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

```
datastore = Datastore.register_azure_blob_container(workspace = ws,
datastore_name = 'finance_datastore',
container_name = 'finance-data',
account_name = 'fintrainingdatastorage',
account_key = 'FWUYORRv3XoyNe...',
create_if_not_exists = True,
overwrite = True)
```

- A. Mastered

B. Not Mastered

Answer: A

Explanation:

Box 1: register_azure_blob_container

Register an Azure Blob Container to the datastore.

Box 2: create_if_not_exists = False

Create the file share if it does not exists, defaults to False. Reference:

<https://docs.microsoft.com/en-us/python/api/azureml-core/azureml.core.datastore.datastore>

NEW QUESTION 135

- (Exam Topic 3)

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are creating a model to predict the price of a student's artwork depending on the following variables: the student's length of education, degree type, and art form.

You start by creating a linear regression model. You need to evaluate the linear regression model.

Solution: Use the following metrics: Mean Absolute Error, Root Mean Absolute Error, Relative Absolute Error, Relative Squared Error, and the Coefficient of Determination.

Does the solution meet the goal?

A. Yes

B. No

Answer: A

Explanation:

The following metrics are reported for evaluating regression models. When you compare models, they are ranked by the metric you select for evaluation.

Mean absolute error (MAE) measures how close the predictions are to the actual outcomes; thus, a lower score is better.

Root mean squared error (RMSE) creates a single value that summarizes the error in the model. By squaring the difference, the metric disregards the difference between over-prediction and under-prediction.

Relative absolute error (RAE) is the relative absolute difference between expected and actual values; relative because the mean difference is divided by the arithmetic mean.

Relative squared error (RSE) similarly normalizes the total squared error of the predicted values by dividing by the total squared error of the actual values.

Mean Zero One Error (MZOE) indicates whether the prediction was correct or not. In other words: ZeroOneLoss(x,y) = 1 when x!=y; otherwise 0.

Coefficient of determination, often referred to as R2, represents the predictive power of the model as a value between 0 and 1. Zero means the model is random (explains nothing); 1 means there is a perfect fit. However, caution should be used in interpreting R2 values, as low values can be entirely normal and high values can be suspect.

AUC.

References:

<https://docs.microsoft.com/en-us/azure/machine-learning/studio-module-reference/evaluate-model>

NEW QUESTION 138

- (Exam Topic 3)

You are determining if two sets of data are significantly different from one another by using Azure Machine Learning Studio.

Estimated values in one set of data may be more than or less than reference values in the other set of data. You must produce a distribution that has a constant Type I error as a function of the correlation.

You need to produce the distribution.

Which type of distribution should you produce?

A. Paired t-test with a two-tail option

B. Unpaired t-test with a two tail option

C. Paired t-test with a one-tail option

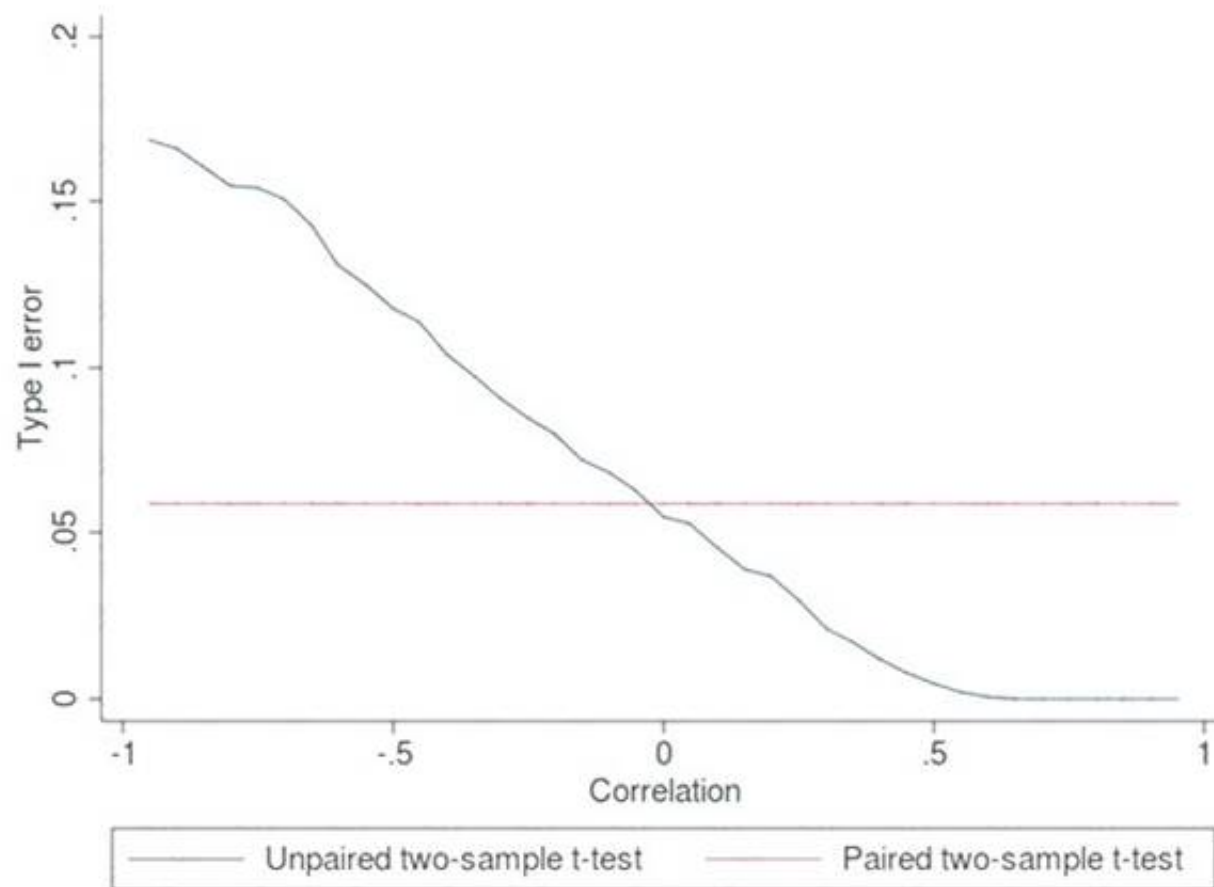
D. Unpaired t-test with a one-tail option

Answer: A

Explanation:

Choose a one-tail or two-tail test. The default is a two-tailed test. This is the most common type of test, in which the expected distribution is symmetric around zero.

Example: Type I error of unpaired and paired two-sample t-tests as a function of the correlation. The simulated random numbers originate from a bivariate normal distribution with a variance of 1.



Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/studio-module-reference/test-hypothesis-using-t-test> https://en.wikipedia.org/wiki/Student%27s_t-test

NEW QUESTION 142

- (Exam Topic 3)

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You train a classification model by using a logistic regression algorithm.

You must be able to explain the model's predictions by calculating the importance of each feature, both as an overall global relative importance value and as a measure of local importance for a specific set of predictions.

You need to create an explainer that you can use to retrieve the required global and local feature importance values.

Solution: Create a MimicExplainer. Does the solution meet the goal?

- A. Yes
- B. No

Answer: B

Explanation:

Instead use Permutation Feature Importance Explainer (PFI).

Note 1: Mimic explainer is based on the idea of training global surrogate models to mimic blackbox models. A global surrogate model is an intrinsically interpretable model that is trained to approximate the predictions of any black box model as accurately as possible. Data scientists can interpret the surrogate model to draw conclusions about the black box model.

Note 2: Permutation Feature Importance Explainer (PFI): Permutation Feature Importance is a technique used to explain classification and regression models. At a high level, the way it works is by randomly shuffling data one feature at a time for the entire dataset and calculating how much the performance metric of interest changes. The larger the change, the more important that feature is. PFI can explain the overall behavior of any underlying model but does not explain individual predictions.

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-machine-learning-interpretability>

NEW QUESTION 146

- (Exam Topic 3)

You create an Azure Databricks workspace and a linked Azure Machine Learning workspace. You have the following Python code segment in the Azure Machine Learning workspace:

```
import mlflow
import mlflow.azureml
import azureml.mlflow
import azureml.core
from azureml.core import Workspace
subscription_id = 'subscription_id' resource_group = 'resource_group_name' workspace_name = 'workspace_name'
ws = Workspace.get(name=workspace_name, subscription_id=subscription_id, resource_group=resource_group)
experimentName = "/Users/{user_name}/{experiment_folder}/{experiment_name}" mlflow.set_experiment(experimentName)
uri = ws.get_mlflow_tracking_uri() mlflow.set_tracking_uri(uri)
```

Instructions: For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

	Yes	No
A resource group and Azure Machine Learning workspace will be created.	<input type="radio"/>	<input type="radio"/>
An Azure Databricks experiment will be tracked only in the Azure Machine Learning workspace.	<input type="radio"/>	<input type="radio"/>
The epoch loss metric is set to be tracked.	<input type="radio"/>	<input type="radio"/>

- A. Mastered
 B. Not Mastered

Answer: A

Explanation:

A screenshot of a computer Description automatically generated with medium confidence

Box 1: No

The Workspace.get method loads an existing workspace without using configuration files. ws = Workspace.get(name="myworkspace", subscription_id='<azure-subscription-id>', resource_group='myresourcegroup')

Box 2: Yes

MLflow Tracking with Azure Machine Learning lets you store the logged metrics and artifacts from your local runs into your Azure Machine Learning workspace. The get_mlflow_tracking_uri() method assigns a unique tracking URI address to the workspace, ws, and set_tracking_uri() points the MLflow tracking URI to that address.

Box 3: Yes

Note: In Deep Learning, epoch means the total dataset is passed forward and backward in a neural network once.

Reference:

<https://docs.microsoft.com/en-us/python/api/azureml-core/azureml.core.workspace.workspace> <https://docs.microsoft.com/en-us/azure/machine-learning/how-to-use-mlflow>

NEW QUESTION 148

- (Exam Topic 3)

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You create a model to forecast weather conditions based on historical data.

You need to create a pipeline that runs a processing script to load data from a datastore and pass the processed data to a machine learning model training script.

Solution: Run the following code:

```
datastore = ws.get_default_datastore()
data_input = PipelineData("raw_data", datastore=rawdatastore)
data_output = PipelineData("processed_data", datastore=datastore)
process_step = PythonScriptStep(script_name="process.py",
    arguments=["--data_for_train", data_input],
    outputs=[data_output], compute_target=aml_compute,
    source_directory=process_directory)
train_step = PythonScriptStep(script_name="train.py",
    arguments=["--data_for_train", data_input], inputs=[data_output],
    compute_target=aml_compute, source_directory=train_directory)
pipeline = Pipeline(workspace=ws, steps=[process_step, train_step])
```

Does the solution meet the goal?

- A. Yes
 B. No

Answer: B

Explanation:

Note: Data used in pipeline can be produced by one step and consumed in another step by providing a PipelineData object as an output of one step and an input of one or more subsequent steps.

Compare with this example, the pipeline train step depends on the process_step_output output of the pipeline process step:

from azureml.pipeline.core import Pipeline, PipelineData from azureml.pipeline.steps import PythonScriptStep

datastore = ws.get_default_datastore()

process_step_output = PipelineData("processed_data", datastore=datastore) process_step = PythonScriptStep(script_name="process.py", arguments=["--data_for_train", process_step_output], outputs=[process_step_output], compute_target=aml_compute, source_directory=process_directory) train_step = PythonScriptStep(script_name="train.py", arguments=["--data_for_train", process_step_output], inputs=[process_step_output], compute_target=aml_compute, source_directory=train_directory)

pipeline = Pipeline(workspace=ws, steps=[process_step, train_step]) Reference:

<https://docs.microsoft.com/en-us/python/api/azureml-pipeline-core/azureml.pipeline.core.pipelinedata?view=azu>

NEW QUESTION 153

- (Exam Topic 3)

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You create an Azure Machine Learning service datastore in a workspace. The datastore contains the following files:

- /data/2018/Q1 .csv
- /data/2018/Q2.csv
- /data/2018/Q3.csv
- /data/2018/Q4.csv
- /data/2019/Q1.csv

All files store data in the following format: id,M,f2,l

1,1,2,0

2,1,1,1

32,10

You run the following code:

```
data_store = Datastore.register_azure_blob_container(workspace=ws,
    datastore_name='data_store',
    container_name='quarterly_data',
    account_name='companydata',
    account_key='NRPxk8duxbM3...',
    create_if_not_exists=False)
```

You need to create a dataset named training_data and load the data from all files into a single data frame by using the following code:

```
data_frame = training_data.to_pandas_dataframe()
```

Solution: Run the following code:

```
from azureml.core import Dataset
paths = (data_store, 'data/*/*.csv')
training_data = Dataset.Tabular.from_delimited_files(paths)
```

Does the solution meet the goal?

- A. Yes
- B. No

Answer: A

NEW QUESTION 156

- (Exam Topic 3)

You train and register a model by using the Azure Machine Learning SDK on a local workstation. Python 3.6 and Visual Studio Code are installed on the workstation.

When you try to deploy the model into production as an Azure Kubernetes Service (AKS)-based web service, you experience an error in the scoring script that causes deployment to fail.

You need to debug the service on the local workstation before deploying the service to production.

Which four actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

Actions	Answer Area
Create an AksWebservice deployment configuration for the service and deploy the model to it	
Install Docker on the workstation	
Create a LocalWebservice deployment configuration for the service and deploy the model to it	
Debug and modify the scoring script as necessary. Use the reload() method of the service after each modification	
Create an AciWebservice deployment configuration for the service and deploy the model to it	

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Graphical user interface, text, application, email Description automatically generated

Step 1: Install Docker on the workstation

Prerequisites include having a working Docker installation on your local system. Build or download the dockerfile to the compute node.

Step 2: Create an AksWebservice deployment configuration and deploy the model to it

To deploy a model to Azure Kubernetes Service, create a deployment configuration that describes the compute resources needed.

If deploying to a cluster configured for dev/test, ensure that it was created with enough

cores and memory to handle this deployment configuration. Note that memory is also used by

things such as dependencies and AML components.

deployment_config = AksWebService.deploy_configuration(cpu_cores = 1, memory_gb = 1)

service = Model.deploy(ws, "myservice", [model], inference_config, deployment_config, aks_target) service.wait_for_deployment(show_output = True)

print(service.state) print(service.get_logs())

Step 3: Create a LocalWebService deployment configuration for the service and deploy the model to it

To deploy locally, modify your code to use LocalWebService.deploy_configuration() to create a deployment configuration. Then use Model.deploy() to deploy the service.

Step 4: Debug and modify the scoring script as necessary. Use the reload() method of the service after each modification.

During local testing, you may need to update the score.py file to add logging or attempt to resolve any problems that you've discovered. To reload changes to the score.py file, use reload(). For example, the following code reloads the script for the service, and then sends data to it.

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-deploy-azure-kubernetes-service> <https://docs.microsoft.com/en-us/azure/machine-learning/how-to-troubleshoot-deployment-local>

NEW QUESTION 161

- (Exam Topic 3)

You are building a recurrent neural network to perform a binary classification. You review the training loss, validation loss, training accuracy, and validation accuracy for each training epoch.

You need to analyze model performance.

Which observation indicates that the classification model is over fitted?

- A. The training loss .stays constant and the validation loss stays on a constant value and close to the training loss value when training the model.
- B. The training loss increases while the validation loss decreases when training the model.
- C. The training loss decreases while the validation loss increases when training the model.
- D. The training loss stays constant and the validation loss decreases when training the model.

Answer: B

NEW QUESTION 164

- (Exam Topic 3)

You plan to explore demographic data for home ownership in various cities. The data is in a CSV file with the following format:

age,city,income,home_owner 21,Chicago,50000,0 35,Seattle,120000,1 23,Seattle,65000,0 45,Seattle,130000,1 18,Chicago,48000,0

You need to run an experiment in your Azure Machine Learning workspace to explore the data and log the results. The experiment must log the following information:

- > the number of observations in the dataset
- > a box plot of income by home_owner
- > a dictionary containing the city names and the average income for each city

You need to use the appropriate logging methods of the experiment's run object to log the required information.

How should you complete the code? To answer, drag the appropriate code segments to the correct locations. Each code segment may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Code segments

- log
- log_list
- log_row
- log_table
- log_image

Answer Area

```
from azureml.core import Experiment, Run
import pandas as pd
import matplotlib.pyplot as plt
# Create an Azure ML experiment in workspace
experiment = Experiment(workspace = ws, name = "demo-experiment")
# Start logging data from the experiment
run = experiment.start_logging()
# load the dataset
data = pd.read_csv('research/demographics.csv')
# Log the number of observations
row_count = (len(data))
run.  ("observations", row_count)
# Log box plot for income by home_owner
fig = plt.figure(figsize=(9, 6))
ax = fig.gca()
data.boxplot(column = 'income', by = "home_owner", ax = ax)
ax.set_title('income by home_owner')
ax.set_ylabel('income')
run.  (name = 'income_by_home_owner', plot = fig)
# Create a dataframe of mean income per city
mean_inc_df = data.groupby('city')['income'].agg(np.mean).to_frame().reset_index()
# Convert to a dictionary
mean_inc_dict = mean_inc_df.to_dict('dict')
# Log city names and average income dictionary
run.  (name="mean_income_by_city", value= mean_inc_dict)
# Complete tracking and get link to details
run.complete()
```

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: log

The number of observations in the dataset. `run.log(name, value, description=)`

Scalar values: Log a numerical or string value to the run with the given name. Logging a metric to a run causes that metric to be stored in the run record in the experiment. You can log the same metric multiple times within a run, the result being considered a vector of that metric.

Example: `run.log("accuracy", 0.95)`

Box 2: log_image

A box plot of income by home_owner.

log_image Log an image to the run record. Use log_image to log a .PNG image file or a matplotlib plot to the run. These images will be visible and comparable in the run record.

Example: `run.log_image("ROC", plot=plt)` Box 3: log_table

A dictionary containing the city names and the average income for each city. log_table: Log a dictionary object to the run with the given name.

NEW QUESTION 168

- (Exam Topic 3)

You write code to retrieve an experiment that is run from your Azure Machine Learning workspace.

The run used the model interpretation support in Azure Machine Learning to generate and upload a model explanation.

Business managers in your organization want to see the importance of the features in the model.

You need to print out the model features and their relative importance in an output that looks similar to the following.

Feature	Importance
0	1.5627435610083558
2	0.6077689312583112
4	0.5574002432900718
3	0.42858759955671777
1	0.3501361539771977

How should you complete the code? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

```
# Assume required modules are imported

ws = Workspace.from_config()
feature_importances = explanation.
```

from_run

list_model_explanations

from_run_id

download_model_explanation

```
explanation = client.
```

upload_model_explanation

list_model_explanations

run

download_model_explanation

```
feature_importances = explanation.
```

explanation

explanation_client

get_feature_important_dict

download_model_explanation

```
for key, value in feature_importances.items():
    print(key, "\t", value)
```

```
( workspace = ws,
experiment_name='train_and_explain',
run_id='train_and_explain_12345')

()

()
```

- A. Mastered
B. Not Mastered

Answer: A

Explanation:

Box 1: from_run_id

from_run_id(workspace, experiment_name, run_id) Create the client with factory method given a run ID. Returns an instance of the explanations Client.

Parameters

- Workspace Workspace An object that represents a workspace.
- experiment_name str The name of an experiment.
- run_id str A GUID that represents a run.

Box 2: list_model_explanations

list_model_explanations returns a dictionary of metadata for all model explanations available.

Returns

A dictionary of explanation metadata such as id, data type, explanation: method, model type, and upload time, sorted by upload time

Box 3: explanation:

Reference:

<https://docs.microsoft.com/en-us/python/api/azureml-contrib-interpret/azureml.contrib.interpret>.

NEW QUESTION 169

- (Exam Topic 3)

HOTSPOT

You have an Azure blob container that contains a set of TSV files. The Azure blob container is registered as a datastore for an Azure Machine Learning service workspace. Each TSV file uses the same data schema.

You plan to aggregate data for all of the TSV files together and then register the aggregated data as a dataset in an Azure Machine Learning workspace by using the Azure Machine Learning SDK for Python.

You run the following code.

```
from azureml.core.workspace import Workspace
from azureml.core.datastore import Datastore
from azureml.core.dataset import Dataset
import pandas as pd
datastore_paths = (datastore, './data/*.tsv')
myDataset_1 = Dataset.File.from_files(path=datastore_paths)
myDataset_2 = Dataset.Tabular.from_delimited_files(path=datastore_paths, separator='\\t')
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

	Yes	No
The myDataset_1 dataset can be converted into a pandas dataframe by using the following method: using myDataset_1.to_pandas_dataframe()	<input type="radio"/>	<input type="radio"/>
The myDataset_1.to_path() method returns an array of file paths for all of the TSV files in the dataset.	<input type="radio"/>	<input type="radio"/>
The myDataset_2 dataset can be converted into a pandas dataframe by using the following method: myDataset_2.to_pandas_dataframe()	<input type="radio"/>	<input type="radio"/>

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: No

FileDataset references single or multiple files in datastores or from public URLs. The TSV files need to be parsed.

Box 2: Yes

to_path() gets a list of file paths for each file stream defined by the dataset. Box 3: Yes

TabularDataset.to_pandas_dataframe loads all records from the dataset into a pandas DataFrame. TabularDataset represents data in a tabular format created by parsing the provided file or list of files.

Note: TSV is a file extension for a tab-delimited file used with spreadsheet software. TSV stands for Tab Separated Values. TSV files are used for raw data and can be imported into and exported from spreadsheet software. TSV files are essentially text files, and the raw data can be viewed by text editors, though they are often used when moving raw data between spreadsheets.

Reference:

<https://docs.microsoft.com/en-us/python/api/azureml-core/azureml.data.tabulardataset>

NEW QUESTION 170

- (Exam Topic 3)

You are developing a hands-on workshop to introduce Docker for Windows to attendees. You need to ensure that workshop attendees can install Docker on their devices.

Which two prerequisite components should attendees install on the devices? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

- A. Microsoft Hardware-Assisted Virtualization Detection Tool
- B. Kitematic
- C. BIOS-enabled virtualization
- D. VirtualBox
- E. Windows 10 64-bit Professional

Answer: CE

Explanation:

C: Make sure your Windows system supports Hardware Virtualization Technology and that virtualization is enabled.

Ensure that hardware virtualization support is turned on in the BIOS settings. For example:



E: To run Docker, your machine must have a 64-bit operating system running Windows 7 or higher. References:

https://docs.docker.com/toolbox/toolbox_install_windows/ <https://blogs.technet.microsoft.com/canitpro/2015/09/08/step-by-step-enabling-hyper-v-for-use-on-windows-10/>

NEW QUESTION 171

- (Exam Topic 3)

You have a Python script that executes a pipeline. The script includes the following code:

```
from azureml.core import Experiment
```

```
pipeline_run = Experiment(ws, 'pipeline_test').submit(pipeline) You want to test the pipeline before deploying the script.
```

You need to display the pipeline run details written to the STDOUT output when the pipeline completes. Which code segment should you add to the test script?

- A. pipeline_run.get.metrics()
- B. pipeline_run.wait_for_completion(show_output=True)
- C. pipeline_param = PipelineParameter(name="stdout", default_value="console")
- D. pipeline_run.get_status()

Answer: B

Explanation:

wait_for_completion: Wait for the completion of this run. Returns the status object after the wait. Syntax: wait_for_completion(show_output=False, wait_post_processing=False, raise_on_error=True) Parameter: show_output Indicates whether to show the run output on sys.stdout.

NEW QUESTION 174

- (Exam Topic 3)

You have a Python script that executes a pipeline. The script includes the following code: from azureml.core import Experiment

```
pipeline_run = Experiment(ws, 'pipeline_test').submit(pipeline) You want to test the pipeline before deploying the script.
```

You need to display the pipeline run details written to the STDOUT output when the pipeline completes. Which code segment should you add to the test script?

- A. pipeline_run.get.metrics()
- B. pipeline_run.wait_for_completion(show_output=True)
- C. pipeline_param = PipelineParameter(name="stdout", default_value="console")
- D. pipeline_run.get_status()

Answer: B

Explanation:

wait_for_completion: Wait for the completion of this run. Returns the status object after the wait. Syntax: wait_for_completion(show_output=False, wait_post_processing=False, raise_on_error=True) Parameter: show_output Indicates whether to show the run output on sys.stdout.

NEW QUESTION 179

- (Exam Topic 3)

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are using Azure Machine Learning to run an experiment that trains a classification model.

You want to use Hyperdrive to find parameters that optimize the AUC metric for the model. You configure a HyperDriveConfig for the experiment by running the following code:


```
hyperdrive = HyperDriveConfig(estimator=your_estimator,
    hyperparameter_sampling=your_params,
    policy=policy,
    primary_metric_name='AUC',
    primary_metric_goal=PrimaryMetricGoal.MAXIMIZE,
    max_total_runs=6,
    max_concurrent_runs=4)
```

variable named `y_test` variable, and the predicted probabilities from the model are stored in a variable named `y_predicted`. You need to add logging to the script to allow Hyperdrive to optimize hyperparameters for the AUC metric. Solution: Run the following code:

```
from sklearn.metrics import roc_auc_score
import logging
# code to train model omitted
auc = roc_auc_score(y_test, y_predicted)
logging.info("AUC: " + str(auc))
```

Does the solution meet the goal?

- A. Yes
- B. No

Answer: A

Explanation:

Python printing/logging example: `logging.info(message)`

Destination: Driver logs, Azure Machine Learning designer

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-debug-pipelines>

NEW QUESTION 182

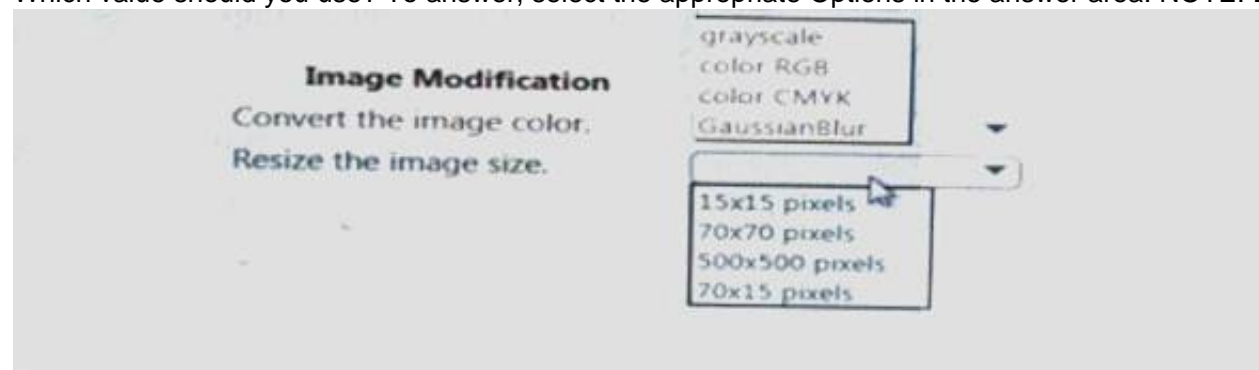
- (Exam Topic 3)

You are training a deep learning model to identify cats and dogs. You have 25,000 color images. You must meet the following requirements:

- Reduce the number of training epochs.
- Reduce the size of the neural network.
- Reduce over-fitting of the neural network.

You need to select the image modification values.

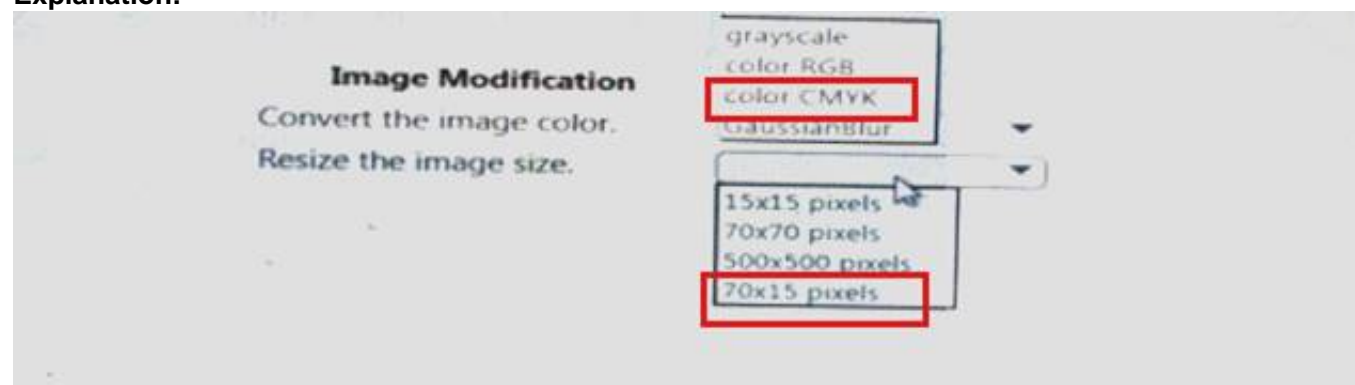
Which value should you use? To answer, select the appropriate Options in the answer area. NOTE: Each correct selection is worth one point.



- A. Mastered
- B. Not Mastered

Answer: A

Explanation:



NEW QUESTION 184

- (Exam Topic 3)

You are analyzing a dataset containing historical data from a local taxi company. You are developing a regression model.

You must predict the fare of a taxi trip.

You need to select performance metrics to correctly evaluate the regression model. Which two metrics can you use? Each correct answer presents a complete solution. NOTE: Each correct selection is worth one point.

- A. an F1 score that is high
- B. an R Squared value close to 1
- C. an R-Squared value close to 0
- D. a Root Mean Square Error value that is high

- E. a Root Mean Square Error value that is low
- F. an F 1 score that is low.

Answer: BE

Explanation:

References:
<https://docs.microsoft.com/en-us/azure/machine-learning/studio-module-reference/evaluate-model>

NEW QUESTION 187

- (Exam Topic 3)

You use the following code to define the steps for a pipeline: from azureml.core import Workspace, Experiment, Run from azureml.pipeline.core import Pipeline from azureml.pipeline.steps import PythonScriptStep ws = Workspace.from_config()

... step1 = PythonScriptStep(name="step1", ...) step2 = PythonScriptsStep(name="step2", ...) pipeline_steps = [step1, step2]

You need to add code to run the steps.

Which two code segments can you use to achieve this goal? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

- A. experiment = Experiment(workspace=ws, name='pipeline-experiment')run = experiment.submit(config=pipeline_steps)
- B. run = Run(pipeline_steps)
- C. pipeline = Pipeline(workspace=ws, steps=pipeline_steps) experiment = Experiment(workspace=ws, name='pipeline-experiment')run = experiment.submit(pipeline)
- D. pipeline = Pipeline(workspace=ws, steps=pipeline_steps)run = pipeline.submit(experiment_name='pipeline-experiment')

Answer: CD

Explanation:

After you define your steps, you build the pipeline by using some or all of those steps.

Build the pipeline. Example:

pipeline1 = Pipeline(workspace=ws, steps=[compare_models])

Submit the pipeline to be run

pipeline_run1 = Experiment(ws, 'Compare_Models_Exp').submit(pipeline1) Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-create-machine-learning-pipelines>

NEW QUESTION 191

- (Exam Topic 3)

You are analyzing a dataset by using Azure Machine Learning Studio.

YOU need to generate a statistical summary that contains the p value and the unique value count for each feature column.

Which two modules can you users? Each correct answer presents a complete solution. NOTE: Each correct selection is worth one point.

- A. Execute Python Script
- B. Export Count Table
- C. Convert to Indicator Values
- D. Summarize Data
- E. Compute linear Correlation

Answer: BE

Explanation:

The Export Count Table module is provided for backward compatibility with experiments that use the Build Count Table (deprecated) and Count Featurizer (deprecated) modules.

E: Summarize Data statistics are useful when you want to understand the characteristics of the complete dataset. For example, you might need to know:

How many missing values are there in each column? How many unique values are there in a feature column?

What is the mean and standard deviation for each column?

The module calculates the important scores for each column, and returns a row of summary statistics for each variable (data column) provided as input.

References:

<https://docs.microsoft.com/en-us/azure/machine-learning/studio-module-reference/export-count-table> <https://docs.microsoft.com/en-us/azure/machine-learning/studio-module-reference/summarize-data>

NEW QUESTION 193

- (Exam Topic 3)

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

An IT department creates the following Azure resource groups and resources:

Resource group	Resources
ml_resources	<ul style="list-style-type: none">• an Azure Machine Learning workspace named amlworkspace• an Azure Storage account named amlworkspace12345• an Application Insights instance named amlworkspace54321• an Azure Key Vault named amlworkspace67890• an Azure Container Registry named amlworkspace09876
general_compute	<p>A virtual machine named mlvm with the following configuration:</p> <ul style="list-style-type: none">• Operating system: Ubuntu Linux• Software installed: Python 3.6 and Jupyter Notebooks• Size: NC6 (6 vCPUs, 1 vGPU, 56 Gb RAM)

The IT department creates an Azure Kubernetes Service (AKS)-based inference compute target named aks-cluster in the Azure Machine Learning workspace.

You have a Microsoft Surface Book computer with a GPU. Python 3.6 and Visual Studio Code are installed. You need to run a script that trains a deep neural network (DNN) model and logs the loss and accuracy metrics.

Solution: Attach the mlvm virtual machine as a compute target in the Azure Machine Learning workspace. Install the Azure ML SDK on the Surface Book and run Python code to connect to the workspace. Run the training script as an experiment on the mlvm remote compute resource.

- A. Yes
- B. No

Answer: A

Explanation:

Use the VM as a compute target.

Note: A compute target is a designated compute resource/environment where you run your training script or host your service deployment. This location may be your local machine or a cloud-based compute resource.

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/concept-compute-target>

NEW QUESTION 195

- (Exam Topic 3)

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are creating a new experiment in Azure Machine Learning Studio.

One class has a much smaller number of observations than the other classes in the training set. You need to select an appropriate data sampling strategy to compensate for the class imbalance. Solution: You use the Scale and Reduce sampling mode.

Does the solution meet the goal?

- A. Yes
- B. No

Answer: B

Explanation:

Instead use the Synthetic Minority Oversampling Technique (SMOTE) sampling mode.

Note: SMOTE is used to increase the number of underrepresented cases in a dataset used for machine learning. SMOTE is a better way of increasing the number of rare cases than simply duplicating existing cases.

References:

<https://docs.microsoft.com/en-us/azure/machine-learning/studio-module-reference/smote>

NEW QUESTION 196

- (Exam Topic 3)

You are creating a new experiment in Azure Machine Learning Studio. You have a small dataset that has missing values in many columns. The data does not require the application of predictors for each column. You plan to use the Clean Missing Data module to handle the missing data.

You need to select a data cleaning method. Which method should you use?

- A. Synthetic Minority
- B. Replace using Probabilistic PAC
- C. Replace using MICE
- D. Normalization

Answer: B

NEW QUESTION 198

- (Exam Topic 3)

You develop and train a machine learning model to predict fraudulent transactions for a hotel booking website. Traffic to the site varies considerably. The site experiences heavy traffic on Monday and Friday and much lower traffic on other days. Holidays are also high web traffic days. You need to deploy the model as an Azure Machine Learning real-time web service endpoint on compute that can dynamically scale up and down to support demand. Which deployment compute option should you use?

- A. attached Azure Databricks cluster
- B. Azure Container Instance (ACI)
- C. Azure Kubernetes Service (AKS) inference cluster
- D. Azure Machine Learning Compute Instance
- E. attached virtual machine in a different region

Answer: D

Explanation:

Azure Machine Learning compute cluster is a managed-compute infrastructure that allows you to easily create a single or multi-node compute. The compute is created within your workspace region as a resource that can be shared with other users in your workspace. The compute scales up automatically when a job is submitted, and can be put in an Azure Virtual Network.

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-create-attach-compute-sdk>

NEW QUESTION 203

- (Exam Topic 3)

HOTSPOT

You collect data from a nearby weather station. You have a pandas dataframe named weather_df that includes the following data:

Temperature	Observation_time	Humidity	Pressure	Visibility	Days_since_last observation
74	2019/10/2 00:00	0.62	29.87	3	0.5
89	2019/10/2 12:00	0.70	28.88	10	0.5
72	2019/10/3 00:00	0.64	30.00	8	0.5
80	2019/10/3 12:00	0.66	29.75	7	0.5

The data is collected every 12 hours: noon and midnight.

You plan to use automated machine learning to create a time-series model that predicts temperature over the next seven days. For the initial round of training, you want to train a maximum of 50 different models.

You must use the Azure Machine Learning SDK to run an automated machine learning experiment to train these models.

You need to configure the automated machine learning run.

How should you complete the AutoMLConfig definition? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

```

automl_config = AutoMLConfig(task="
                                regression
                                forecasting
                                classification
                                deep learning

                                training_data=weather_df,
                                label_column_name="
                                humidity
                                pressure
                                visibility
                                temperature
                                days_since_last
                                observation_time

                                time_column_name="
                                humidity
                                pressure
                                visibility
                                temperature
                                days_since_last
                                observation_time

                                max_horizon=
                                2
                                6
                                7
                                12
                                14
                                50

                                iterations=
                                2
                                6
                                7
                                12
                                14
                                50

                                iteration_timeout_minutes=5,
                                primary_metric="r2_score")

```

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: forecasting

Task: The type of task to run. Values can be 'classification', 'regression', or 'forecasting' depending on the type of automated ML problem to solve.

Box 2: temperature

The training data to be used within the experiment. It should contain both training features and a label column (optionally a sample weights column).

Box 3: observation_time

time_column_name: The name of the time column. This parameter is required when forecasting to specify the datetime column in the input data used for building the time series and inferring its frequency. This setting is being deprecated. Please use forecasting_parameters instead.

Box 4: 7

"predicts temperature over the next seven days"

max_horizon: The desired maximum forecast horizon in units of time-series frequency. The default value is 1. Units are based on the time interval of your training data, e.g., monthly, weekly that the forecaster should

predict out. When task type is forecasting, this parameter is required.

Box 5: 50

"For the initial round of training, you want to train a maximum of 50 different models."

Iterations: The total number of different algorithm and parameter combinations to test during an automated ML experiment. Reference:

<https://docs.microsoft.com/en-us/python/api/azureml-train-automl-client/azureml.train.automl.automlconfig.auto>

NEW QUESTION 206

- (Exam Topic 3)

You are solving a classification task.

You must evaluate your model on a limited data sample by using k-fold cross-validation. You start by configuring a k parameter as the number of splits.

You need to configure the k parameter for the cross-validation. Which value should you use?

- A. k=1
- B. k=10
- C. k=0.5
- D. k=0.9

Answer: B

Explanation:

Leave One Out (LOO) cross-validation

Setting $K = n$ (the number of observations) yields n-fold and is called leave-one out cross-validation (LOO), a special case of the K-fold approach.

LOO CV is sometimes useful but typically doesn't shake up the data enough. The estimates from each fold are highly correlated and hence their average can have high variance.

This is why the usual choice is $K=5$ or 10 . It provides a good compromise for the bias-variance tradeoff.

NEW QUESTION 211

- (Exam Topic 3)

You are using Azure Machine Learning to train machine learning models. You need a compute target on which to remotely run the training script. You run the following Python code:

```
from azureml.core.compute import ComputeTarget, AmlCompute
from azureml.core.compute_target import ComputeTargetException
the_cluster_name = "NewCompute"
config = AmlCompute.provisioning_configuration(vm_size='STANDARD_D2', max_nodes=3)
the_cluster = ComputeTarget.create(ws, the_cluster_name, config)
```

Answer Area

	Yes	No
The compute is created in the same region as the Machine Learning service workspace.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The compute resource created by the code is displayed as a compute cluster in Azure Machine Learning studio.	<input type="checkbox"/>	<input type="checkbox"/>
The minimum number of nodes will be zero.	<input type="checkbox"/>	<input type="checkbox"/>

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: Yes

The compute is created within your workspace region as a resource that can be shared with other users. Box 2: Yes

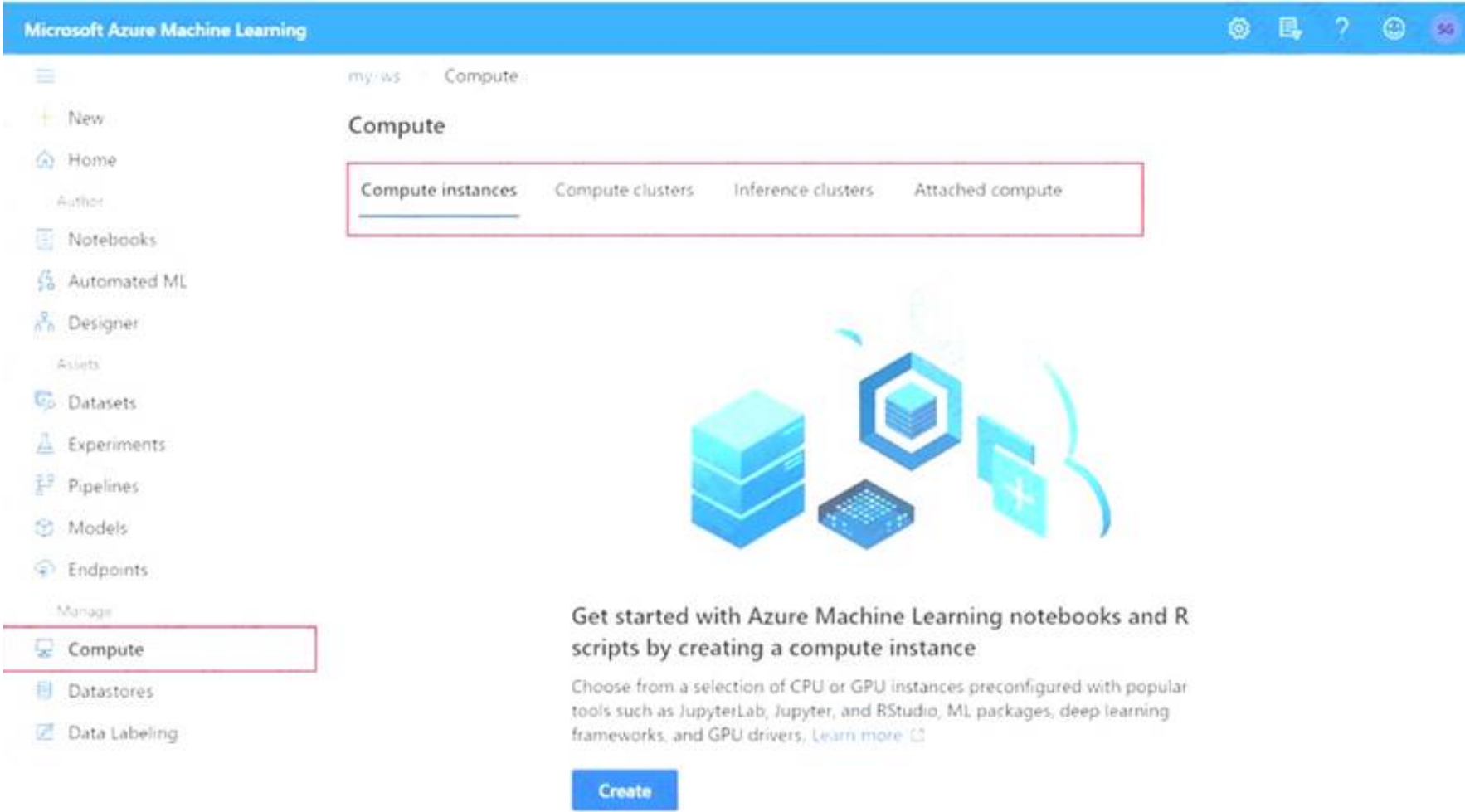
It is displayed as a compute cluster. View compute targets

* 1. To see all compute targets for your workspace, use the following steps:

* 2. Navigate to Azure Machine Learning studio.

* 3. Under Manage, select Compute.

* 4. Select tabs at the top to show each type of compute target.



Box 3: Yes
min_nodes is not specified, so it defaults to 0. Reference:
<https://docs.microsoft.com/en-us/python/api/azureml-core/azureml.core.compute.amlcompute.amlcomputeprovider> <https://docs.microsoft.com/en-us/azure/machine-learning/how-to-create-attach-compute-studio>

NEW QUESTION 212

- (Exam Topic 3)
You have an Azure Machine Learning workspace named workspace1 that is accessible from a public endpoint. The workspace contains an Azure Blob storage datastore named store1 that represents a blob container in an Azure storage account named account1. You configure workspace1 and account1 to be accessible by using private endpoints in the same virtual network.
You must be able to access the contents of store1 by using the Azure Machine Learning SDK for Python. You must be able to preview the contents of store1 by using Azure Machine Learning studio.
You need to configure store1.
What should you do? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Requirement	Action
Access the contents of store1 by using the Azure Machine Learning SDK for Python.	<div><div>Set store1 as the default datastore.</div><div>Disable data validation for store1.</div><div>Update authentication for store1.</div><div>Regenerate the keys of account1.</div></div>
Preview the contents of store1 by using Azure Machine Learning studio.	<div><div>Set store1 as the default datastore.</div><div>Disable data validation for store1.</div><div>Update authentication for store1.</div><div>Regenerate the keys of account1.</div></div>

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Text, table Description automatically generated
Box 1: Regenerate the keys of account1.
Azure Blob Storage support authentication through Account key or SAS token.
To authenticate your access to the underlying storage service, you can provide either your account key, shared access signatures (SAS) tokens, or service principal
Box 2: Update the authentication for store1.
For Azure Machine Learning studio users, several features rely on the ability to read data from a dataset; such as dataset previews, profiles and automated machine learning. For these features to work with storage behind virtual networks, use a workspace managed identity in the studio to allow Azure Machine Learning to access the storage account from outside the virtual network.
Note: Some of the studio's features are disabled by default in a virtual network. To re-enable these features, you must enable managed identity for storage accounts you intend to use in the studio.

The following operations are disabled by default in a virtual network:

> Preview data in the studio.

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-access-data>

NEW QUESTION 213

- (Exam Topic 3)

An organization uses Azure Machine Learning service and wants to expand their use of machine learning. You have the following compute environments. The organization does not want to create another compute environment.

Environment name	Compute type
nb_server	Compute Instance
aks_cluster	Azure Kubernetes Service
mlc_cluster	Machine Learning Compute

You need to determine which compute environment to use for the following scenarios.

Which compute types should you use? To answer, drag the appropriate compute environments to the correct scenarios. Each compute environment may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Environments

nb_server
aks_cluster
mlc_cluster

Answer Area

Scenario	Environment
Run an Azure Machine Learning Designer training pipeline.	Environment
Deploying a web service from the Azure Machine Learning designer.	Environment

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: nb_server

Training targets	Automated ML	ML pipelines	Azure Machine Learning designer
Local computer	yes		
Azure Machine Learning compute cluster	yes & hyperparameter tuning	yes	yes
Azure Machine Learning compute instance	yes & hyperparameter tuning	yes	yes
Remote VM	yes & hyperparameter tuning	yes	
Azure Databricks	yes (SDK local mode only)	yes	
Azure Data Lake Analytics		yes	
Azure HDInsight		yes	
Azure Batch		yes	

Box 2: mlc_cluster

With Azure Machine Learning, you can train your model on a variety of resources or environments, collectively referred to as compute targets. A compute target can be a local machine or a cloud resource, such as an Azure Machine Learning Compute, Azure HDInsight or a remote virtual machine.

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/concept-compute-target> <https://docs.microsoft.com/en-us/azure/machine-learning/how-to-set-up-training-targets>

NEW QUESTION 215

- (Exam Topic 3)

You are evaluating a completed binary classification machine. You need to use the precision as the evaluation metric. Which visualization should you use?

- A. scatter plot
- B. coefficient of determination
- C. Receiver Operating Characteristic CROC) curve
- D. Gradient descent

Answer: C

Explanation:

Receiver operating characteristic (or ROC) is a plot of the correctly classified labels vs. the incorrectly classified labels for a particular model.

References:

<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-understand-automated-ml#confusion-matrix>

NEW QUESTION 218

- (Exam Topic 3)

You are building an experiment using the Azure Machine Learning designer.

You split a dataset into training and testing sets. You select the Two-Class Boosted Decision Tree as the algorithm.

You need to determine the Area Under the Curve (AUC) of the model.

Which three modules should you use in sequence? To answer, move the appropriate modules from the list of modules to the answer area and arrange them in the correct order.

Modules

Export Data

Tune Model Hyperparameters

Cross Validate Model

Evaluate Model

Score Model

Train Model

Answer Area

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Step 1: Train Model

Two-Class Boosted Decision Tree

First, set up the boosted decision tree model.

* 1. Find the Two-Class Boosted Decision Tree module in the module palette and drag it onto the canvas.

* 2. Find the Train Model module, drag it onto the canvas, and then connect the output of the Two-Class Boosted Decision Tree module to the left input port of the Train Model module.

The Two-Class Boosted Decision Tree module initializes the generic model, and Train Model uses training data to train the model.

* 3. Connect the left output of the left Execute R Script module to the right input port of the Train Model module (in this tutorial you used the data coming from the left side of the Split Data module for training). This portion of the experiment now looks something like this:



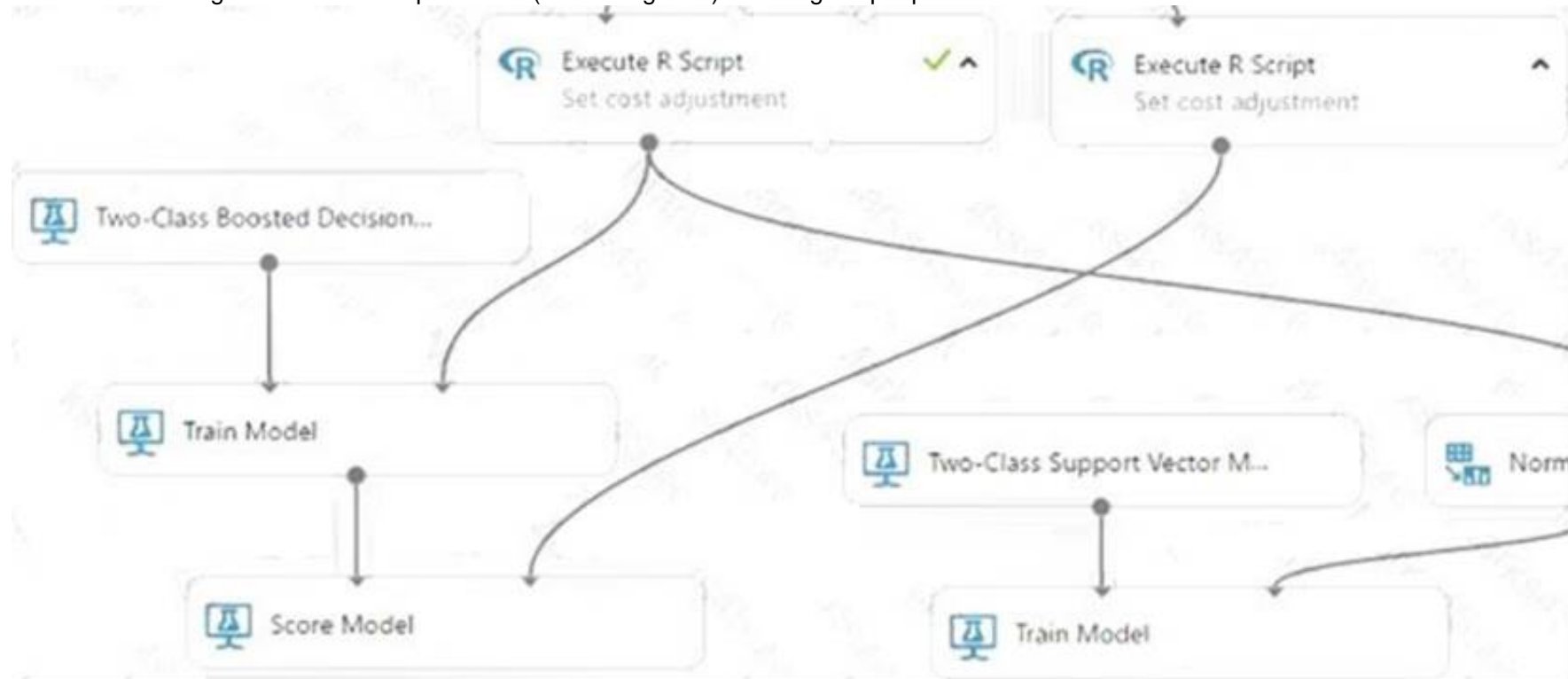
Step 2: Score Model

Score and evaluate the models

You use the testing data that was separated out by the Split Data module to score our trained models. You can then compare the results of the two models to see which generated better results.

Add the Score Model modules

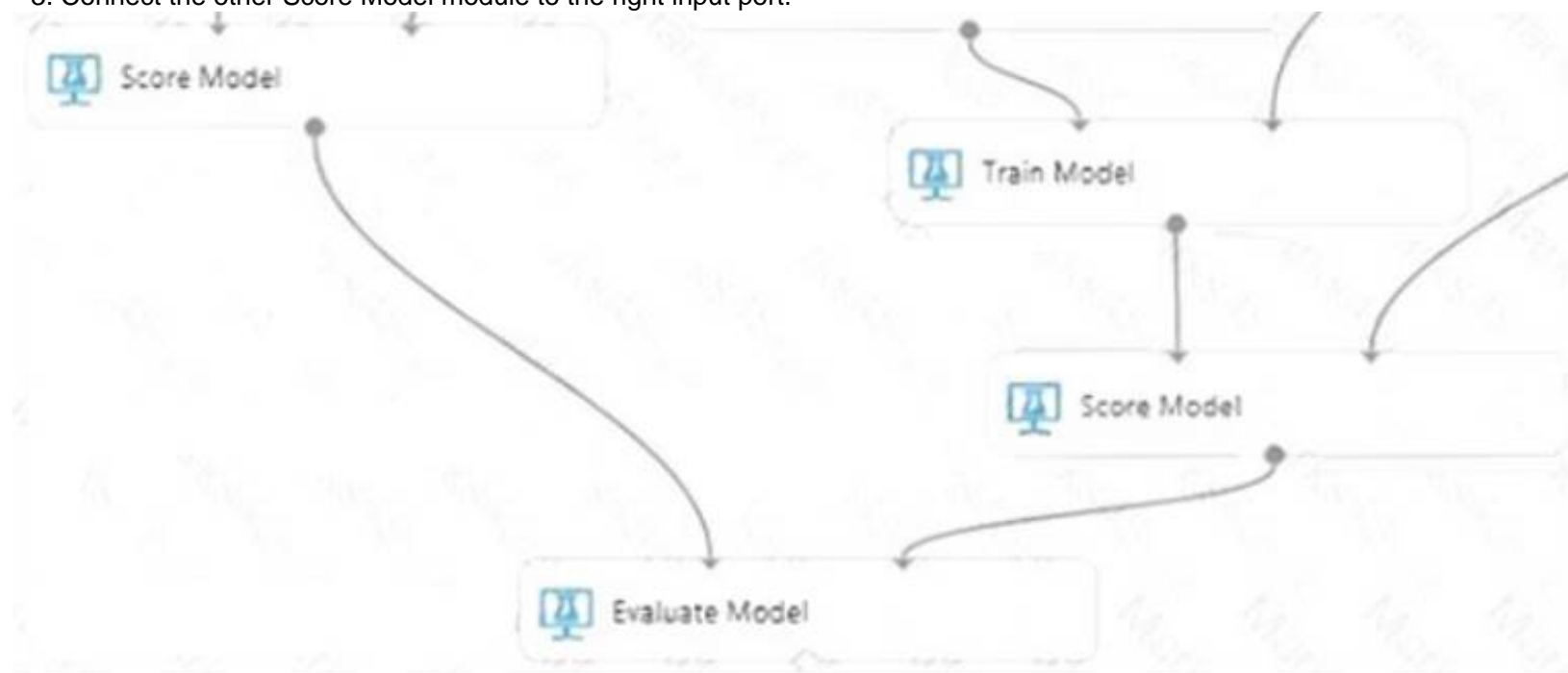
- * 1. Find the Score Model module and drag it onto the canvas.
- * 2. Connect the Train Model module that's connected to the Two-Class Boosted Decision Tree module to the left input port of the Score Model module.
- * 3. Connect the right Execute R Script module (our testing data) to the right input port of the Score Model module.



Step 3: Evaluate Model

To evaluate the two scoring results and compare them, you use an Evaluate Model module.

- * 1. Find the Evaluate Model module and drag it onto the canvas.
- * 2. Connect the output port of the Score Model module associated with the boosted decision tree model to the left input port of the Evaluate Model module.
- * 3. Connect the other Score Model module to the right input port.



NEW QUESTION 222

- (Exam Topic 3)

You plan to run a Python script as an Azure Machine Learning experiment. The script contains the following code:

```
import os, argparse, glob
from azureml.core import Run
parser = argparse.ArgumentParser()
parser.add_argument('--input-data',
                    type=str, dest='data_folder')
args = parser.parse_args()
data_path = args.data_folder
file_paths = glob.glob(data_path + "/*.jpg")
```

You must specify a file dataset as an input to the script. The dataset consists of multiple large image files and must be streamed directly from its source.

You need to write code to define a ScriptRunConfig object for the experiment and pass the ds dataset as an argument.

Which code segment should you use?

- A. arguments = ['--input-data', ds.to_pandas_dataframe()]
- B. arguments = ['--input-data', ds.as_mount()]
- C. arguments = ['--data-data', ds]
- D. arguments = ['--input-data', ds.as_download()]

Answer: A

Explanation:

If you have structured data not yet registered as a dataset, create a TabularDataset and use it directly in your training script for your local or remote experiment.

To load the TabularDataset to pandas DataFrame df = dataset.to_pandas_dataframe()

Note: TabularDataset represents data in a tabular format created by parsing the provided file or list of files. Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-train-with-datasets>

NEW QUESTION 224

- (Exam Topic 3)

You publish a batch inferencing pipeline that will be used by a business application.

The application developers need to know which information should be submitted to and returned by the REST interface for the published pipeline.

You need to identify the information required in the REST request and returned as a response from the published pipeline.

Which values should you use in the REST request and to expect in the response? To answer, select the appropriate options in the answer area.
 NOTE: Each correct selection is worth one point.

Answer Area

REST Request	Value
Request Header	<div>JSON containing the run ID</div> <div>JSON containing the pipeline ID</div> <div>JSON containing the experiment name</div> <div>JSON containing an OAuth bearer token</div>
Response	<div>JSON containing the run ID</div> <div>JSON containing the pipeline ID</div> <div>JSON containing the experiment name</div> <div>JSON containing an OAuth bearer token</div>
Response	<div>JSON containing the run ID</div> <div>JSON containing a list of predictions</div> <div>JSON containing the experiment name</div> <div>JSON containing a path to the parallel_run_step.txt output file</div>

- A. Mastered
 B. Not Mastered

Answer: A

Explanation:

Box 1: JSON containing an OAuth bearer token Specify your authentication header in the request.

To run the pipeline from the REST endpoint, you need an OAuth2 Bearer-type authentication header. Box 2: JSON containing the experiment name

Add a JSON payload object that has the experiment name. Example:

```
rest_endpoint = published_pipeline.endpoint response = requests.post(rest_endpoint, headers=auth_header, json={"ExperimentName": "batch_scoring",
"ParameterAssignments": {"process_count_per_node": 6}}) run_id = response.json()["Id"]
```

Box 3: JSON containing the run ID

Make the request to trigger the run. Include code to access the Id key from the response dictionary to get the value of the run ID.

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/tutorial-pipeline-batch-scoring-classification>

NEW QUESTION 226

- (Exam Topic 3)

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You train and register a machine learning model.

You plan to deploy the model as a real-time web service. Applications must use key-based authentication to use the model.

You need to deploy the web service.

Solution:

Create an AksWebService instance.

Set the value of the auth_enabled property to False.

Set the value of the token_auth_enabled property to True.

Deploy the model to the service. Does the solution meet the goal?

- A. Yes
 B. No

Answer: B

Explanation:

Instead use only auth_enabled = TRUE Note: Key-based authentication.

Web services deployed on AKS have key-based auth enabled by default. ACI-deployed services have

key-based auth disabled by default, but you can enable it by setting auth_enabled = TRUE when creating the ACI web service. The following is an example of creating an ACI deployment configuration with key-based auth enabled.

```
deployment_config <- aci_webservice_deployment_config(cpu_cores = 1, memory_gb = 1,
```

```
auth_enabled = TRUE) Reference:
```

<https://azure.github.io/azureml-sdk-for-r/articles/deploying-models.html>

NEW QUESTION 229

- (Exam Topic 3)

You configure a Deep Learning Virtual Machine for Windows.

You need to recommend tools and frameworks to perform the following:

- > Build deep neural network (DNN) models
- > Perform interactive data exploration and visualization

Which tools and frameworks should you recommend? To answer, drag the appropriate tools to the correct tasks. Each tool may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Tools	Task	Tool
Vowpal Wabbit	Build DNN models	Tool
PowerBI Desktop	Enable interactive data exploration and visualization	Tool
Azure Data Factory		
Microsoft Cognitive Toolkit		

- A. Mastered
 B. Not Mastered

Answer: A

Explanation:

Box 1: Vowpal Wabbit

Use the Train Vowpal Wabbit Version 8 module in Azure Machine Learning Studio (classic), to create a machine learning model by using Vowpal Wabbit.

Box 2: PowerBI Desktop

Power BI Desktop is a powerful visual data exploration and interactive reporting tool

BI is a name given to a modern approach to business decision making in which users are empowered to find, explore, and share insights from data across the enterprise.

References:

<https://docs.microsoft.com/en-us/azure/machine-learning/studio-module-reference/train-vowpal-wabbit-version-8> <https://docs.microsoft.com/en-us/azure/architecture/data-guide/scenarios/interactive-data-exploration>

NEW QUESTION 233

- (Exam Topic 3)

You are creating a machine learning model in Python. The provided dataset contains several numerical columns and one text column. The text column represents a product's category. The product category will always be one of the following:

- > Bikes
- > Cars
- > Vans
- > Boats

You are building a regression model using the scikit-learn Python package.

You need to transform the text data to be compatible with the scikit-learn Python package.

How should you complete the code segment? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

```
from sklearn import linear_model
import
dataset = df.read_csv("data\\ProductSales.csv")
ProductCategoryMapping = {"Bikes":1, "Cars":2, "Boats": 3,
"Vans": 4}
dataset['ProductCategoryMapping'] =
dataset['ProductCategory'].
regr = linear_model.LinearRegression()
X_train = dataset[['ProductCategoryMapping', 'ProductSize',
'ProductCost']]
y_train = dataset[['Sales']]
regr.fit(X_train, y_train)
```

- A. Mastered
 B. Not Mastered

Answer: A

Explanation:

Box 1: pandas as df

Pandas takes data (like a CSV or TSV file, or a SQL database) and creates a Python object with rows and columns called data frame that looks very similar to table in a statistical software (think Excel or SPSS for example).

Box 2: transpose[ProductCategoryMapping] Reshape the data from the pandas Series to columns. Reference:

<https://datascienceplus.com/linear-regression-in-python/>

NEW QUESTION 235

- (Exam Topic 3)

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You train a classification model by using a logistic regression algorithm.

You must be able to explain the model's predictions by calculating the importance of each feature, both as an overall global relative importance value and as a measure of local importance for a specific set of predictions.

You need to create an explainer that you can use to retrieve the required global and local feature importance values.

Solution: Create a TabularExplainer. Does the solution meet the goal?

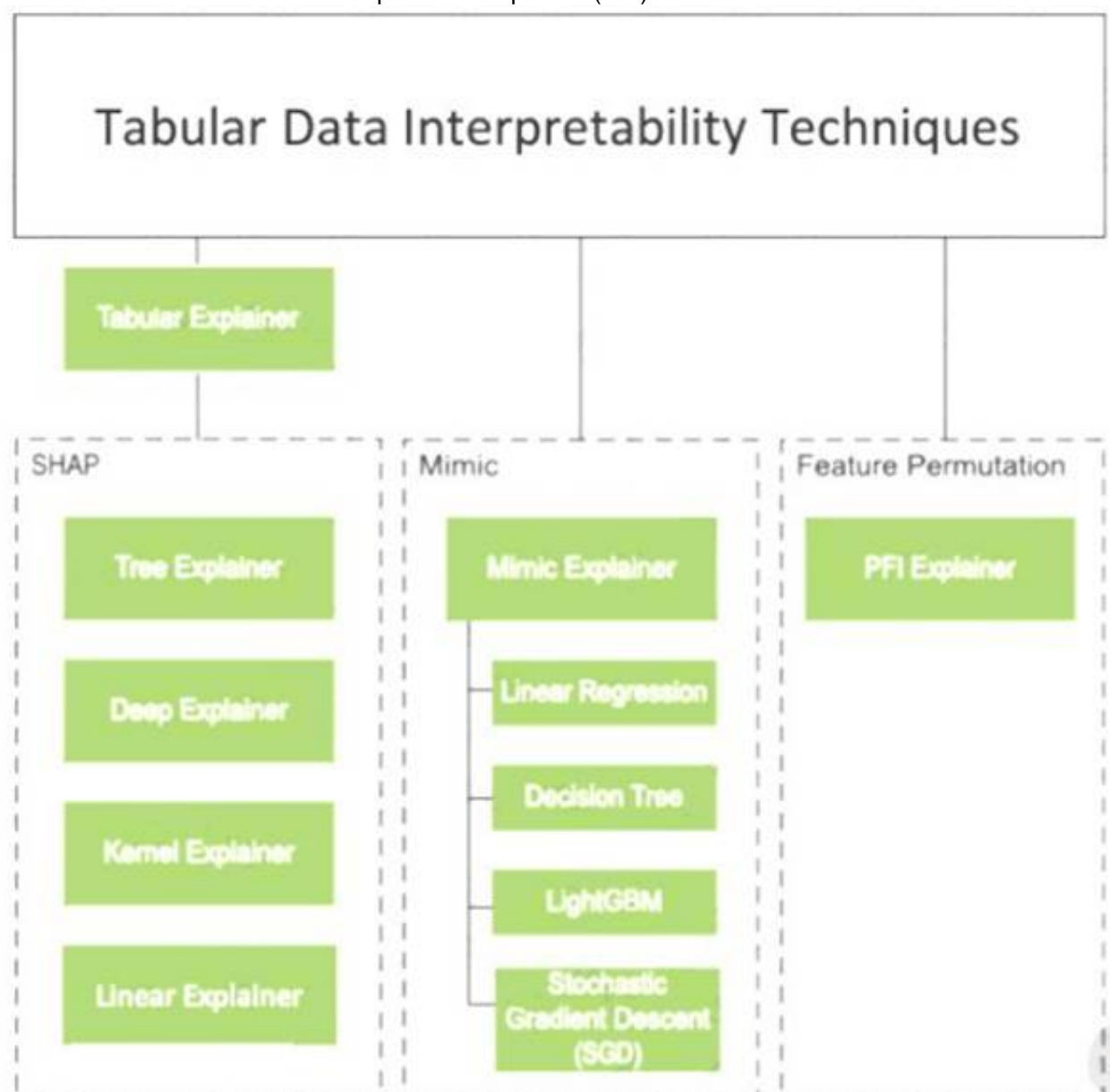
A. Yes

B. No

Answer: B

Explanation:

Instead use Permutation Feature Importance Explainer (PFI). Note 1:



Note 2: Permutation Feature Importance Explainer (PFI): Permutation Feature Importance is a technique used to explain classification and regression models. At a high level, the way it works is by randomly shuffling data one feature at a time for the entire dataset and calculating how much the performance metric of interest changes. The larger the change, the more important that feature is. PFI can explain the overall behavior of any underlying model but does not explain individual predictions.

Reference:

<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-machine-learning-interpretability>

NEW QUESTION 240

- (Exam Topic 3)

You are a data scientist building a deep convolutional neural network (CNN) for image classification. The CNN model you built shows signs of overfitting.

You need to reduce overfitting and converge the model to an optimal fit.

Which two actions should you perform? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

A. Reduce the amount of training data.

B. Add an additional dense layer with 64 input units

C. Add L1/L2 regularization.

D. Use training data augmentation

E. Add an additional dense layer with 512 input units.

Answer: AC

Explanation:

References:

<https://machinelearningmastery.com/how-to-reduce-overfitting-in-deep-learning-with-weight-regularization/>

https://en.wikipedia.org/wiki/Convolutional_neural_network

NEW QUESTION 245

- (Exam Topic 3)

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are a data scientist using Azure Machine Learning Studio.

You need to normalize values to produce an output column into bins to predict a target column. Solution: Apply an Equal Width with Custom Start and Stop binning mode.

Does the solution meet the goal?

A. Yes

B. No

Answer: B

Explanation:

Use the Entropy MDL binning mode which has a target column. References:

<https://docs.microsoft.com/en-us/azure/machine-learning/studio-module-reference/group-data-into-bins>

NEW QUESTION 250

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