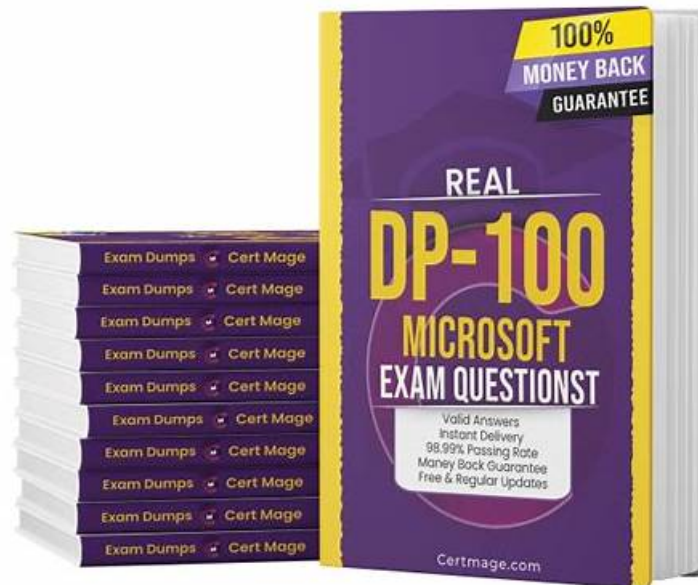


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The DP-100 exam is intended for data scientists who have experience working with data and developing machine learning models. It focuses on the practical application of data science techniques using Azure tools and services. Candidates will need to demonstrate their ability to use Azure Machine Learning to prepare data, train models, and deploy solutions. They will also need to know how to work with other Azure services such as Azure Databricks, Azure Stream Analytics, and Azure Synapse Analytics.

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Microsoft Designing and Implementing a Data Science Solution on Azure Sample Questions (Q76-Q81):

NEW QUESTION # 76

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)
```

You plan to use this configuration to run a script that trains a random forest model and then tests it with validation data. The label values for the validation data are stored in a 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:

```
import json, os  
from sklearn.metrics import roc_auc_score  
# code to train model omitted  
auc = roc_auc_score(y_test, y_predicted)  
os.makedirs("outputs", exist_ok = True)  
with open("outputs/AUC.txt", "w") as file_cur:  
    file_cur.write(auc)
```

Does the solution meet the goal?

- A. No
- B. Yes

Answer: A

Explanation:

Explanation

Use a solution with `logging.info(message)` instead.

Note: 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 # 77

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

Answer: D

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.config.automlconfig> Develop models Testlet 1 Case study Overview You are a data scientist in a company that provides data science for professional sporting events. Models will use global and local market data to meet the following business goals:

- * Understand sentiment of mobile device users at sporting events based on audio from crowd reactions.
- * Assess a user's tendency to respond to an advertisement.
- * Customize styles of ads served on mobile devices.
- * Use video to detect penalty events

Current environment

- * Media used for penalty event detection will be provided by consumer devices. Media may include images and videos captured during the sporting event and shared using social media. The images and videos will have varying sizes and formats.
- * The data available for model building comprises of seven years of sporting event media. The sporting event media includes; recorded video transcripts or radio commentary, and logs from related social media feeds captured during the sporting events.
- * Crowd sentiment will include audio recordings submitted by event attendees in both mono and stereo formats.

Penalty detection and sentiment

- * Data scientists must build an intelligent solution by using multiple machine learning models for penalty event detection.
- * Data scientists must build notebooks in a local environment using automatic feature engineering and model building in machine learning pipelines.
- * Notebooks must be deployed to retrain by using Spark instances with dynamic worker allocation.
- * Notebooks must execute with the same code on new Spark instances to recode only the source of the data.
- * Global penalty detection models must be trained by using dynamic runtime graph computation during training.
- * Local penalty detection models must be written by using BrainScript.
- * Experiments for local crowd sentiment models must combine local penalty detection data.
- * Crowd sentiment models must identify known sounds such as cheers and known catch phrases. Individual crowd sentiment models will detect similar sounds.
- * All shared features for local models are continuous variables.
- * Shared features must use double precision. Subsequent layers must have aggregate running mean and standard deviation metrics available.

Advertisements

During the initial weeks in production, the following was observed:

- * Ad response rated declined.
- * Drops were not consistent across ad styles.
- * The distribution of features across training and production data are not consistent Analysis shows that, of the 100 numeric features on user location and behavior, the 47 features that come from location sources are being used as raw features. A suggested experiment to remedy the bias and variance issue is to engineer 10 linearly uncorrelated features.
- * Initial data discovery shows a wide range of densities of target states in training data used for crowd sentiment models.
- * All penalty detection models show inference phases using a Stochastic Gradient Descent (SGD) are running too slow.
- * Audio samples show that the length of a catch phrase varies between 25%-47% depending on region
- * The performance of the global penalty detection models shows lower variance but higher bias when comparing training and validation sets. Before implementing any feature changes, you must confirm the bias and variance using all training and validation cases.
- * Ad response models must be trained at the beginning of each event and applied during the sporting event.
- * Market segmentation models must optimize for similar ad response history.
- * Sampling must guarantee mutual and collective exclusively between local and global segmentation models that share the same features.
- * Local market segmentation models will be applied before determining a user's propensity to respond to an advertisement.
- * Ad response models must support non-linear boundaries of features.
- * The ad propensity model uses a cut threshold is 0.45 and retrains occur if weighted Kappa deviated from 0.1 +/- 5%.
- * The ad propensity model uses cost factors shown in the following diagram:

		Actual	
		1	0
Predicted	0	1	2
	1	2	1

* The ad propensity model uses proposed cost factors shown in the following diagram:

		Actual	
		1	0
Predicted	0	1	5
	1	5	1

* Performance curves of current and proposed cost factor scenarios are shown in the following diagram:



NEW QUESTION # 78

You plan to provision an Azure Machine Learning Basic edition workspace for a data science project. You need to identify the tasks you will be able to perform in the workspace.

Which three tasks will you be able to perform? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

- A. Create an Azure Kubernetes Service (AKS) inference cluster.
- B. Use the Automated Machine Learning user interface to train a model.
- C. Create a Compute Instance and use it to run code in Jupyter notebooks.
- D. Create a tabular dataset that supports versioning.
- E. Use the designer to train a model by dragging and dropping pre-defined modules.

Answer: A,C,D

Explanation:

Incorrect Answers:

C, E: The UI is included the Enterprise edition only.

Reference:

NEW QUESTION # 79

You are preparing to build a deep learning convolutional neural network model for image classification. You create a script to train the model using CUDA devices.

You must submit an experiment that runs this script in the Azure Machine Learning workspace.

The following compute resources are available:

a Microsoft Surface device on which Microsoft Office has been installed. Corporate IT policies prevent the installation of additional software a Compute Instance named ds-workstation in the workspace with 2 CPUs and 8 GB of memory an Azure Machine Learning compute target named cpu-cluster with eight CPU-based nodes an Azure Machine Learning compute target named gpu-cluster with four CPU and GPU-based nodes You need to specify the compute resources to be used for running the code to submit the experiment, and for running the script in order to minimize model training time.

Which resources should the data scientist use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Resource type	Option
Run code to submit the experiment	<div>the Microsoft Surface device</div> <div>the ds-workstation notebook VM</div> <div>the cpu-cluster compute target</div> <div>the gpu-cluster compute target</div>
Run the training script	<div>the ds-workstation notebook VM</div> <div>the cpu-cluster compute target</div> <div>the gpu-cluster compute target</div> <div>the Microsoft Surface device</div>

Answer:

Explanation:

Resource type	Option
Run code to submit the experiment	<div>the Microsoft Surface device</div> <div>the ds-workstation notebook VM</div> <div>the cpu-cluster compute target</div> <div>the gpu-cluster compute target</div>
Run the training script	<div>the ds-workstation notebook VM</div> <div>the cpu-cluster compute target</div> <div>the gpu-cluster compute target</div> <div>the Microsoft Surface device</div>

Explanation:

Resource type	Option
Run code to submit the experiment	<div>the Microsoft Surface device</div> <div>the ds-workstation notebook VM</div> <div>the cpu-cluster compute target</div> <div>the gpu-cluster compute target</div>
Run the training script	<div>the ds-workstation notebook VM</div> <div>the cpu-cluster compute target</div> <div>the gpu-cluster compute target</div> <div>the Microsoft Surface device</div>

NEW QUESTION # 80

Hotspot Question

You have an Azure Machine Learning workspace.

You run the following code in a Python environment in which the configuration file for your workspace has been downloaded.

```
from azureml.core import Workspace
from azureml.core import Experiment
import pandas as pd
import datetime as dt
ws = Workspace.from_config()
experiment = Experiment(workspace=ws, name= 'my_experiment')
run = experiment.start_logging()
print('run_time', dt.datetime.now())

row_count = (len(data))
run.log('observations', row_count)
run.complete()
```

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.

Answer Area

Statements	Yes	No
An error will occur if an experiment named my_experiment does not already exist in the workspace.	<input type="radio"/>	<input type="radio"/>
If the experiment does not exist, it will be created. If the experiment does exist, the code will create a new run of the existing experiment.	<input type="radio"/>	<input type="radio"/>
After the code completes, a metric named run_time is recorded in the experiment run. The metric will contain the date and time for the run.	<input type="radio"/>	<input type="radio"/>
After the code completes, the data.csv file will be available in the run's output.	<input type="radio"/>	<input type="radio"/>

Answer:

Explanation:

Statements	Yes	No
An error will occur if an experiment named my_experiment does not already exist in the workspace.	<input type="radio"/>	<input checked="" type="radio"/>
If the experiment does not exist, it will be created. If the experiment does exist, the code will create a new run of the existing experiment.	<input checked="" type="radio"/>	<input type="radio"/>
After the code completes, a metric named run_time is recorded in the experiment run. The metric will contain the date and time for the run.	<input type="radio"/>	<input checked="" type="radio"/>
After the code completes, the data.csv file will be available in the run's output.	<input type="radio"/>	<input checked="" type="radio"/>

NEW QUESTION # 81

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