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QUESTION: 1

Which method in Python is used to align a string to the center within a specified width, padding it with a specified character?

- Option A : ljust()
- Option B : rjust()
- Option C : pad()
- Option D : center()

Correct Answer: D

Explanation/Reference:

The center() method aligns a string to the center within a specified width, padding it with a specified character. This method is useful for formatting text output to ensure consistent alignment in user interfaces or reports.

QUESTION: 2

Which Python feature enables the creation of custom objects with user-defined behaviors?

- Option A : Decorators
- Option B : Generators
- Option C : Modules
- Option D : Classes

Correct Answer: D

Explanation/Reference:

Classes enable the creation of custom objects in Python with user-defined attributes and methods. They serve as blueprints for objects, supporting principles of object-oriented programming like inheritance, encapsulation, and polymorphism.

QUESTION: 3

Which type of variable in Python is unique to each instance of a class and stores data specific to that instance?

- Option A : Global Variable
- Option B : Local Variable
- Option C : Instance Variable
- Option D : Class Variable

Correct Answer: C

Explanation/Reference:

Instance Variables are unique to each instance of a class and store data specific to that particular instance. They are typically defined within the `__init__` method and accessed using `self`, ensuring that each object maintains its own state.

QUESTION: 4

Which AI domain utilizes algorithms inspired by biological evolution to solve optimization and search problems?

- Option A : Ensemble Methods
- Option B : Gradient Descent
- Option C : Genetic Algorithms
- Option D : Rule-Based Systems

Correct Answer: C

Explanation/Reference:

Genetic Algorithms are optimization techniques based on the principles of natural selection and genetics. They iteratively evolve solutions by selecting, crossing, and mutating candidate solutions, making them effective for complex problem-solving where traditional methods fail.

QUESTION: 5

Which characteristic defines a recursive function that calls itself directly or indirectly to solve a problem?

- Option A : Base Case
- Option B : Termination Case
- Option C : Recursive Case
- Option D : Iterative Case

Correct Answer: C

Explanation/Reference:

A Recursive Case defines how a recursive function breaks down the problem into smaller instances by calling itself. This allows the function to solve complex problems through repetitive application of the same process.

QUESTION: 6

What is the primary benefit of using transfer learning in deep learning models?

- Option A : Reduces training time significantly
- Option B : Eliminates the need for data preprocessing
- Option C : Ensures 100% model accuracy
- Option D : Allows the use of unsupervised data for training

Correct Answer: A

Explanation/Reference:

Transfer learning reduces training time by leveraging pre-trained models on large datasets, thereby requiring only fine-tuning on the new task. This is especially useful when data or computational resources are limited.

QUESTION: 7

Which NLP task involves identifying the sentiment expressed in a piece of text?

- Option A : Syntactic Parsing
- Option B : Named Entity Recog
- Option C : Topic Modeling
- Option D : Sentiment Analysis

Correct Answer: D

Explanation/Reference:

Sentiment Analysis is the task of determining the sentiment or emotional tone behind a body of text. It is widely used in social media monitoring, customer feedback analysis, and other applications where understanding public opinion is critical.

QUESTION: 8

Which Python feature allows for the definition of reusable pieces of code that modify functions or methods?

- Option A : Coroutines
- Option B : Decorators
- Option C : Metaclasses
- Option D : Context Managers

Correct Answer: B

Explanation/Reference:

Decorators are a powerful feature in Python that allow you to modify or enhance functions or methods without altering their code. They are applied using the @decorator syntax and are useful for adding functionality in a modular and reusable way.

QUESTION: 9

Which advancement in AI seeks to combine insights from multiple types of neural networks to improve overall model performance and capability?

- Option A : Transfer Learning
- Option B : Hybrid Learning
- Option C : Neural Architecture Search
- Option D : Generative Adversarial Networks (GANs)

Correct Answer: C

Explanation/Reference:

Neural Architecture Search involves designing and optimizing neural network architectures by combining insights from various types of networks to enhance performance and capability.

QUESTION: 10

Which Python feature allows for the extension of existing classes or modules without modifying their source code?

- Option A : Encapsulation
- Option B : Composition
- Option C : Inheritance
- Option D : Polymorphism

Correct Answer: C

Explanation/Reference:

Inheritance allows for the creation of a new class that inherits attributes and methods from an existing class. This feature supports code reuse and extension by enabling new functionality without altering the original class's implementation.

QUESTION: 11

Which optimization technique involves designing algorithms to achieve the best possible worst-case performance by reducing the worst-case time complexity?

- Option A : Amortized Analysis
- Option B : Exact Analysis
- Option C : Empirical Analysis
- Option D : Asymptotic Analysis

Correct Answer: D

Explanation/Reference:

Asymptotic Analysis is used to design algorithms that achieve the best possible worst-case performance by reducing the worst-case time complexity. It provides a way to evaluate and compare algorithm efficiency in theoretical terms.

QUESTION: 12

Which Python feature allows you to define a function that can accept a variable number of arguments?

- Option A : Variable-length Arguments
- Option B : Keyword Arguments
- Option C : Nested Functions
- Option D : Default Parameters

Correct Answer: A

Explanation/Reference:

Variable-length Arguments allow a function to accept an arbitrary number of positional or keyword arguments using `*args` and `**kwargs`, respectively. This feature provides flexibility in function definitions and enhances code usability.

QUESTION: 13

Which flowchart symbol is used to represent an input or output operation, such as reading or printing data?

- Option A : Pentagon
- Option B : Diamond
- Option C : Square
- Option D : Parallelogram

Correct Answer: D

Explanation/Reference:

The Parallelogram in a flowchart represents input/output operations, such as reading data from an input device or displaying data on a screen. This symbol is essential for indicating where and how data enters or exits the process.

QUESTION: 14

Which principle is essential for ensuring that AI systems can be audited and evaluated by independent parties?

- Option A : Privacy by Design
- Option B : Risk Management
- Option C : Auditability
- Option D : User Empowerment

Correct Answer: C

Explanation/Reference:

Auditability ensures that AI systems can be independently assessed for their compliance with ethical standards and legal requirements. This principle is crucial for verifying that AI systems operate as intended and do not engage in harmful or biased behavior.

QUESTION: 15

Which keyword is used in Python to define a function that returns another function as its result, enabling higher-order functions?

- Option A : yield
- Option B : return
- Option C : def
- Option D : lambda

Correct Answer: C

Explanation/Reference:

def is used to define a function that can return another function. This is fundamental for higher-order functions, which are

functions that operate on or return other functions.

QUESTION: 16

In the context of GANs (Generative Adversarial Networks), what is the primary objective of the discriminator network?

- Option A : Optimize the loss function of the generator
- Option B : Generate new data samples
- Option C : Balance the generator's performance
- Option D : Distinguish between real and generated data

Correct Answer: D

Explanation/Reference:

The discriminator's role in GANs is to differentiate between real data and data generated by the generator. It provides feedback to the generator, enabling it to improve and produce more realistic data over time.

QUESTION: 17

Which Python keyword allows you to test multiple discrete values of a variable in a clean and readable manner?

- Option A : match
- Option B : switch
- Option C : case
- Option D : select

Correct Answer: A

Explanation/Reference:

The match keyword, introduced in Python 3.10, allows for pattern matching and testing multiple discrete values of a variable in a clean and readable manner. It provides a powerful alternative to if-elif chains.

QUESTION: 18

Which algorithm is designed to sort elements by recursively dividing the list into halves, sorting each half, and merging them?

Option A : Merge Sort Algo
Option B : Heap Sort Method
Option C : Bucket Sort Algo
Option D : Shell Sort Method

Correct Answer: A

Explanation/Reference:

Merge Sort is a divide-and-conquer algorithm that recursively splits the list into halves, sorts each half, and then merges the sorted halves. This algorithm is known for its efficiency, particularly in handling large datasets.

QUESTION: 19

Which type of comment in Python is used to describe a block of code spanning multiple lines?

Option A : Multiline Comment
Option B : Documentation String
Option C : Inline Comment
Option D : Single-line Comment

Correct Answer: A

Explanation/Reference:

Multiline Comments are typically written using triple quotes (""" or ''') in Python to span multiple lines. While technically multiline strings, they are used as comments for documentation or extensive explanations within the code.

QUESTION: 20

Which commenting practice is recommended for marking tasks or features that need to be completed or reviewed later?

Option A : Inline Comment
Option B : Documentation String
Option C : Block Comment
Option D : TODO Comment

Correct Answer: D

Explanation/Reference:

TODO Comments are used to mark tasks or features that need to be completed or reviewed in the future. They help developers keep track of pending work and are often accompanied by a specific action or reminder.

QUESTION: 21

Which Python data type allows for ordered collections of items that can be of different types and can be modified?

- Option A : Dictionary
- Option B : Tuple
- Option C : List
- Option D : Set

Correct Answer: C

Explanation/Reference:

A List is an ordered collection that can contain items of different types and allows for modification. Lists support operations such as appending, removing, and updating elements, making them versatile and widely used.

QUESTION: 22

Which method retrieves but does not remove the element from the top of a stack?

- Option A : Peek
- Option B : Enqueue
- Option C : Push
- Option D : Pop

Correct Answer: A

Explanation/Reference:

The Peek method retrieves the top element of the stack without removing it. This operation allows access to the most recently added element while preserving the stack's state.

QUESTION: 23

Which concept in AI ethics is concerned with the responsibility of developers to ensure their AI systems are used ethically?

- Option A : Accountability
- Option B : Equity Assurance
- Option C : Ethical Oversight
- Option D : System Transparency

Correct Answer: A

Explanation/Reference:

Accountability refers to the responsibility of AI developers and organizations to ensure that their AI systems are designed, deployed, and used in an ethical manner. This includes being answerable for the outcomes of AI applications and addressing any negative impacts.

QUESTION: 24

Which method is used in computer vision to correct distortions caused by camera lenses?

- Option A : Image Rectification
- Option B : Geometric Calibration
- Option C : Morphological Adjust
- Option D : Perspective Mapping

Correct Answer: A

Explanation/Reference:

Image Rectification is a process used to correct distortions in images caused by camera lenses. It involves adjusting the image to align with a known geometric model, ensuring that straight lines remain straight and preserving the true proportions of the scene.

QUESTION: 25

In unsupervised learning, what is the primary goal of clustering algorithms?

- Option A : Minimize classification error
- Option B : Maximize the margin between classes
- Option C : Predict the label of new data points
- Option D : Group similar data points together

Correct Answer: D

Explanation/Reference:

Clustering algorithms aim to group similar data points based on their features without any predefined labels. This technique is useful for discovering patterns or structures in the data.

QUESTION: 26

Which statement is used to ensure that a block of code is executed regardless of whether an exception was raised?

- Option A : ensure
- Option B : execute
- Option C : always
- Option D : finally

Correct Answer: D

Explanation/Reference:

The finally block ensures that a block of code is executed regardless of whether an exception was raised in the try block. It is used for cleanup actions and to guarantee that certain code runs after exception handling.

QUESTION: 27

Which method in Python returns a string with all occurrences of the specified substring removed from the original string?

- Option A : remove()
- Option B : replace()
- Option C : delete()
- Option D : purge()

Correct Answer: B

Explanation/Reference:

The replace() method can be used to remove all occurrences of a specified substring by replacing it with an empty string. This method provides a way to eliminate unwanted substrings from a string.

QUESTION: 28

Which type of neural network is most effective for processing sequential data like time series or natural language?

- Option A : Convolutional Networks
- Option B : Decision Trees
- Option C : Support Vector Machines
- Option D : RNN

Correct Answer: D

Explanation/Reference:

Recurrent Neural Networks (RNNs) are designed to process sequential data by maintaining a memory of previous inputs, making them ideal for tasks like time series analysis or natural language processing, where the order of data points is crucial.

QUESTION: 29

Which operation on a queue adds an element to the rear of the queue and is used to build up the queue's content?

- Option A : Dequeue
- Option B : Peek
- Option C : Pop
- Option D : Enqueue

Correct Answer: D

Explanation/Reference:

The Enqueue operation adds an element to the rear of a queue, expanding the queue's size. It is essential for maintaining the order of elements in FIFO fashion.

QUESTION: 30

Which method returns a view object that displays a list of key-value tuple pairs in a dictionary?

- Option A : pairs()
- Option B : get_pairs()
- Option C : items()

Option D : tuples()

Correct Answer: C

Explanation/Reference:

The items() method returns a view object displaying a list of key-value tuple pairs from a dictionary. This view dynamically reflects changes to the dictionary's items.

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