1. What are various DML commands in SQL? Give brief description of their purpose

Various DML commands in SQL:

INSERT: Used to insert new records or rows into a table.

UPDATE: Used to modify existing records in a table.

DELETE: Used to delete records from a table.

SELECT: Used to retrieve data from one or more tables

1. Can you sort a column using a column alias?

Yes, you can sort a column using a column alias. The alias is just a reference to the original column, so when you use the alias in the ORDER BY clause, it will sort based on the original column's values.

SELECT column\_name AS alias\_name

FROM table\_name

ORDER BY alias\_name;

1. What are the specific uses of SQL functions?

Specific Uses of SQL Functions:

Aggregate Functions: Used for performing calculations on a set of values and returning a single value. Examples include COUNT, SUM, AVG, MIN, MAX.

String Functions: Manipulate and operate on strings, such as CONCAT, SUBSTRING, LENGTH, UPPER, LOWER.

Mathematical Functions: Perform mathematical operations on numeric values, like ROUND, CEIL, FLOOR, ABS.

Date Functions: Work with date and time values, including functions like CURRENT\_DATE, DATEADD, DATEDIFF.

1. What is the use of the NULLIF function?

The NULLIF function returns a null value if two expressions are equal; otherwise, it returns the first expression. It is often used to handle division by zero or to return null when two values should be treated as equivalent.

1. What’s wrong in the following query? SELECT subject\_code, count(name) FROM students;

The query is missing a GROUP BY clause for subject\_code. When using aggregate functions like COUNT along with regular columns, you need to include a GROUP BY clause for the non-aggregated columns. The correct query should be:

SELECT subject\_code, COUNT(name) FROM students GROUP BY subject\_code;

1. Different methods of machine learning

Supervised Learning: Models are trained on a labeled dataset.

Unsupervised Learning: Models discover patterns in unlabeled data.

Semi-Supervised Learning: Combination of labeled and unlabeled data.

Reinforcement Learning: Agents learn to make decisions through trial and error

1. Stored procedure syntax

In SQL, a stored procedure is a set of SQL statements that can be stored in the database and executed later. The syntax to create a stored procedure is:

CREATE PROCEDURE procedure\_name

AS -- SQL statements

1. python oops

Object-Oriented Programming in Python involves creating and using classes and objects to structure code. Key concepts include encapsulation, inheritance, and polymorphism.

1. What is Scope in Python?

Scope refers to the region of the program where a variable is accessible. In Python, there are two types of scopes - global scope and local scope.

1. What are the common built-in data types in Python?

Common Built-In Data Types in Python:

int: Integer type.

float: Floating-point type.

str: String type.

list: List type.

tuple: Tuple type.

dict: Dictionary type.

set: Set type.

bool: Boolean type.

4 pillars , class vs object + syntax + 1-1 Example

1. Semi-supervised

Semi-supervised learning is a combination of supervised and unsupervised learning. It uses a small amount of labeled data along with a large amount of unlabeled data for training.

1. What are Dict and List comprehensions?

List Comprehension: A concise way to create lists. Example: [x\*\*2 for x in range(10)].

Dict Comprehension: Similar to list comprehension but for dictionaries. Example: {x: x\*\*2 for x in range(10)}.

1. How do you copy an object in Python?

You can use the copy module or do a shallow or deep copy depending on the requirements.

Shallow Copy: new\_list = old\_list.copy()

Deep Copy:import copy ,new\_list = copy.deepcopy(old\_list)

1. What is the purpose of DML statements in SQL?

Data Manipulation Language (DML) statements in SQL are used to manage data within the database. They include INSERT, UPDATE, DELETE, and SELECT statements.

1. How do you insert null values in a column while inserting data?

You can insert null values into a column using the NULL keyword.

INSERT INTO table\_name (column1, column2, column3)

VALUES (value1, NULL, value3);

1. What is a view? Why should you use a view?

A view is a virtual table based on the result of a SELECT query. It allows users to query the data in the view as if it were a normal table. Views are used to simplify complex queries, provide security by restricting access to specific columns, and abstract the underlying database structure.

1. What is the difference between VARCHAR2 AND CHAR data types?

VARCHAR2: Variable-length character data type. It stores variable-length strings and does not pad spaces.

CHAR: Fixed-length character data type. It stores fixed-length strings and pads spaces to the maximum length.

1. What is the difference between Python Arrays and lists?

Arrays:

Homogeneous elements (elements of the same data type).

Requires importing the array module.

Supports mathematical operations on arrays.

Fixed size, need to specify the size during creation.

More memory efficient for large datasets.

Lists:

Heterogeneous elements (elements of different data types).

Part of the core Python language, no need to import additional modules.

More versatile, supports various operations and methods.

Dynamic size, can grow or shrink as needed.

Generally more commonly used in Python

1. SQL diff between where and having clause

WHERE Clause:

Used with SELECT, UPDATE, DELETE statements.

Filters rows before the aggregation.

Applies conditions to individual rows.

Cannot be used with aggregate functions.

HAVING Clause:

Used with SELECT statements.

Filters rows after the aggregation (e.g., GROUP BY).

Applies conditions to groups of rows.

Used with aggregate functions.

1. class imbalance in machine learning

Class imbalance occurs when the distribution of classes in a dataset is not equal. It can impact the performance of machine learning models, especially in classification tasks. Techniques to address class imbalance include resampling methods (oversampling, undersampling), using different evaluation metrics, and using algorithms designed to handle imbalanced data.

1. slicing in python 🡪 Slicing in Python is a way to extract a portion of a sequence (e.g., list, string, tuple). The syntax is sequence[start:stop:step], where start is the starting index, stop is the ending index (exclusive), and step is the interval.
2. Decorator in python  -🡪 A decorator in Python is a design pattern that allows you to extend or modify the behavior of a function or a class method without modifying its code. Decorators are denoted by the @decorator syntax. They are often used for logging, timing, authorization, etc.

29. ALTER TABLE ADD COLUMN in SQL:

The ALTER TABLE ADD COLUMN statement is used to add a new column to an existing table in a database.

ALTER TABLE table\_name

ADD COLUMN column\_name datatype;

30. AWS Servers - How to Extract Data from Database:

To extract data from a database on AWS, you can use various methods

AWS RDS: Connect to the RDS instance using appropriate credentials and query the database.

AWS Glue: Use Glue ETL jobs to extract, transform, and load data.

AWS Data Pipeline: Create a pipeline to move data between different AWS services.

31. How to Read Postgres Dataset - DATABASE:

To read a dataset from a PostgreSQL database in Python, you can use the psycopg2 library.

import psycopg2

# Establish a connection

conn = psycopg2.connect(database="your\_database", user="your\_user", password="your\_password", host="your\_host", port="your\_port")

# Create a cursor

cur = conn.cursor()

# Execute a query

cur.execute("SELECT \* FROM your\_table")

# Fetch data

data = cur.fetchall()

# Close the cursor and connection

cur.close()

conn.close()

32. How to Define Class in Python:

class MyClass:

def \_\_init\_\_(self, attribute1, attribute2):

self.attribute1 = attribute1

self.attribute2 = attributes

def my\_method(self):

# Method code here

Pass

33. SQL Finds Salary from 2 Tables (Employee Table and Salary Table):

Assuming there's a common column like employee\_id in both tables:

SELECT Employee.employee\_id, Employee.employee\_name, Salary.salary

FROM Employee

INNER JOIN Salary ON Employee.employee\_id = Salary.employee\_id;

34. Second Highest Salary:

SELECT MAX(salary) AS second\_highest\_salary

FROM employees

WHERE salary < (SELECT MAX(salary) FROM employees);

35. JOINS in SQL:

SQL JOINS are used to combine rows from two or more tables based on a related column between them. Common types include INNER JOIN, LEFT JOIN, RIGHT JOIN, and FULL JOIN.

36. Pie Chart - 3 Charts Sales Chart for CEO Presentation:

Creating pie charts for a CEO presentation involves using a plotting library like Matplotlib or Seaborn in Python. You would need to provide data for sales and use it to create three pie charts representing different aspects of sales.

37. Uber Data Science - Delhi City, Max Uber Drivers Assignment - Optimization Algorithm:

Optimizing the assignment of Uber drivers in Delhi involves using optimization algorithms such as Linear Programming, Genetic Algorithms, or Reinforcement Learning. The goal is to maximize efficiency, minimize waiting times, and allocate drivers effectively.

38. Decision Tree:

A decision tree is a supervised machine learning algorithm used for both classification and regression tasks. It works by recursively partitioning the data into subsets based on the most significant attribute at each node.

39. Random Forest:

Random Forest is an ensemble learning method that builds multiple decision trees and merges them together to get a more accurate and stable prediction. It is effective in reducing overfitting and improving accuracy.

40. Project - Company Model Presentation - HR Interview:

Presenting a company model in an HR interview involves explaining the project's objectives, methodology, tools used, challenges faced, and the impact on the company. Focus on the positive outcomes and how it aligns with the company's goals.

1. prime numbers 1 to 20

def is\_prime(num):

if num < 2:

return False

for i in range(2, int(num\*\*0.5) + 1):

if num % i == 0:

return False

return True

prime\_numbers = [num for num in range(1, 21) if is\_prime(num)]

print("Prime numbers between 1 and 20 are:", prime\_numbers)

1. reverse the name using slicing

def reverse\_name(name):

return name[::-1]

original\_name = "John"

reversed\_name = reverse\_name(original\_name)

print(f"Original Name: {original\_name}")

print(f"Reversed Name: {reversed\_name}")

1. Feature Selection:

Answer: Feature selection is the process of choosing a subset of relevant and significant features from a larger set of features. It aims to improve model performance, reduce overfitting, and enhance interpretability. Common techniques include filter methods, wrapper methods, and embedded methods.

1. Supervised vs. Unsupervised:

Answer:

Supervised Learning: In supervised learning, the algorithm is trained on a labeled dataset, where the input data is paired with corresponding output labels. The goal is for the model to learn the mapping from inputs to outputs, making predictions on unseen data.

Unsupervised Learning: In unsupervised learning, the algorithm is given unlabeled data and must discover patterns, structures, or relationships within the data without explicit guidance. Common techniques include clustering and dimensionality reduction.

1. Union and Join Difference in SQL:

Answer:

UNION: Combines the results of two or more SELECT statements into a single result set, removing duplicate rows.

JOIN: Combines rows from two or more tables based on a related column. Types include INNER JOIN, LEFT JOIN, RIGHT JOIN, and FULL OUTER JOIN.

1. Drop, Truncate, Delete in SQL:

Answer:

DROP: Removes an entire table or database.

TRUNCATE: Removes all rows from a table, but retains the table structure.

DELETE: Removes specific rows from a table based on a condition.

1. Parameters Used in Random Forest:

Answer:

Number of Trees (n\_estimators): The number of decision trees in the forest.

Max Depth (max\_depth): The maximum depth of each tree.

Minimum Samples Split (min\_samples\_split): The minimum number of samples required to split an internal node.

Minimum Samples Leaf (min\_samples\_leaf): The minimum number of samples required to be in a leaf node.

1. Write a SQL Query for Finding 2nd Highest Salary from a Given Table:

Answer:

sql

Copy code

SELECT MAX(salary) AS SecondHighestSalary

FROM your\_table

WHERE salary < (SELECT MAX(salary) FROM your\_table);

1. Difference Between Regression and Classifier:

Answer:

Regression: Predicts a continuous numerical value. Examples include predicting house prices or temperature.

Classifier: Predicts the class or category to which an observation belongs. Examples include spam detection or image classification.

1. Left Join, Inner Join in SQL:

Answer:

LEFT JOIN: Returns all rows from the left table and the matched rows from the right table. Unmatched rows in the right table contain NULL values.

INNER JOIN: Returns only the matched rows from both tables, excluding unmatched rows.

1. List Comprehension Code:

Answer:

python

Copy code

# Example: Create a list of squares of even numbers from 0 to 9

squares\_of\_evens = [x\*\*2 for x in range(10) if x % 2 == 0]

1. Given Table Find 2nd Highest Salary:

Answer:

sql

Copy code

SELECT MAX(salary) AS SecondHighestSalary

FROM your\_table

WHERE salary < (SELECT MAX(salary) FROM your\_table);

1. Linear Regression Project Based:

Answer: A linear regression project involves predicting a continuous numerical outcome based on one or more input features. Example: Predicting house prices based on features like square footage, number of bedrooms, etc.

Find Total Count of Null Value in Table:

Answer:

sql

Copy code

SELECT COUNT(\*) AS NullCount

FROM your\_table

WHERE your\_column IS NULL;

1. Lists in Python:

Answer: Lists in Python are ordered, mutable collections of elements. They are defined using square brackets ([]). Example:

python

Copy code

my\_list = [1, 2, 'three', 4.0]

1. Even/Odd Code:

Answer:

python

Copy code

# Check if a number is even or odd

def even\_or\_odd(number):

return "Even" if number % 2 == 0 else "Odd"

1. SVM (Support Vector Machine):

Answer: SVM is a supervised machine learning algorithm used for classification and regression tasks. It works by finding the hyperplane that best separates data points into different classes.

1. Supervised vs. Unsupervised:

Answer:

Supervised Learning: Uses labeled data for training, with input-output pairs.

Unsupervised Learning: Uses unlabeled data and aims to find patterns or relationships without explicit guidance.

1. WHERE vs HAVING Query in SQL:

Answer:

WHERE Clause: Used to filter rows before grouping or aggregating in a query. Typically involves conditions on individual rows.

HAVING Clause: Used to filter grouped rows based on aggregate conditions in a query. Applied after grouping and aggregation.

1. Scenario-Based Questions:

Answer: Scenario-based questions assess your problem-solving skills and understanding of how to apply knowledge to real-world situations. Provide detailed and logical responses, considering various factors relevant to the scenario.

1. Imbalancing Problem in Machine Learning:

Answer:

Imbalance Problem: Occurs when one class in a classification problem has significantly fewer instances than another class.

Challenges: Biased models, poor performance on minority class, and misleading evaluation metrics.

Solutions: Resampling techniques (oversampling, undersampling), using different evaluation metrics (precision, recall, F1-score), and using ensemble methods.

1. Lock in Machine Learning:

Answer:

Locking: In machine learning, the term "lock" is not commonly used. If you meant something else, please provide additional context or clarify the term.

1. Decorators in Python:

Answer:

Decorators: Functions that modify the behavior of other functions or methods. They use the @decorator syntax. Commonly used for logging, timing, or access control.

Example:

def my\_decorator(func):

def wrapper():

print("Something is happening before the function is called.")

func()

print("Something is happening after the function is called.")

return wrapper

@my\_decorator

def say\_hello():

print("Hello!")

say\_hello()

1. List Comprehension in Python:

Answer:

List Comprehension: A concise way to create lists in Python. It consists of an expression followed by a for loop inside square brackets ([]).

# Create a list of squares of numbers from 0 to 9

squares = [x\*\*2 for x in range(10)]

Advantages: Readability, shorter syntax, and often more efficient than traditional loops.