

Python, SQL & Pandas Viva Notes

PYTHON BASICS

Q: What is dynamic typing?

A: Python is dynamically typed, meaning variable types are decided at runtime.

Q: What are jumping statements?

A: They control loop flow: break, continue, pass.

Q: Difference between = and == ?

A: = assigns a value, == compares values.

Q: For vs While loop

A: For → fixed iterations, While → runs until condition false.

Q: What is a list?

A: Ordered, mutable collection of items, e.g. [1, 2, 3].

Q: Connection function in Python

A: Used to connect to databases using mysql.connector, sqlite3, etc.

SQL BASICS

Q: DDL vs DML

A: DDL defines structure (CREATE, DROP), DML manipulates data (SELECT, INSERT).

Q: WHERE vs HAVING

A: WHERE filters before grouping; HAVING filters aggregated results.

Q: Primary Key

A: Unique identifier for a record.

Q: Foreign Key

A: Links to a primary key in another table.

Q: DELETE vs TRUNCATE vs DROP

A: DELETE removes rows; TRUNCATE clears table; DROP deletes structure.

Q: Aggregate functions

A: COUNT, SUM, AVG, MAX, MIN are used to summarize data.

Q: JOINS

A: Combine tables: INNER, LEFT, RIGHT, FULL.

Q: Normalization

A: Process of reducing redundancy by organizing data into tables.

PANDAS / DATAFRAME

Q: What is a DataFrame?

A: 2D labeled data structure similar to an Excel table.

Q: `isna()`

A: Checks for missing values.

Q: `fillna()`

A: Replaces missing values with a specified value.

Q: `dropna()`

A: Removes missing rows or columns.

Q: `loc` vs `iloc`

A: `loc` = label-based, `iloc` = position-based indexing.

Q: `where()`

A: Returns values where condition true, others replaced by NaN.

Q: `groupby()`

A: Groups data and applies aggregate functions.

Q: `merge()`

A: Combines DataFrames based on keys.

Q: `concat()`

A: Stacks multiple DataFrames.

Q: `apply()`

A: Applies custom function to rows or columns.