Python

Q1. What is Python?

Ans. Python is a high-level, interpreted, and general-purpose programming language known for its simplicity, readability, and ease of use.

It's used in various fields like web development, data science, machine learning etc.

Q2. What is high level and low-level language?

Ans. High level is a language that is close to human and low level is a language that is close to machine.

Q3. What is interpreted language?

Ans. An interpreted language is a programming language where code is executed directly, line by line at run time.

Q4. What is compiled language?

Ans. A compiled language is a programming language where source code is translated into machine code (or byte code) by a compiler, creating an executable file.

Q5. What is statically typed language?

Ans. Whenever you define a variable, we need to tell data type of variable that is called statically typed language.

Q6. What is dynamically typed language?

Ans. We do not have to mention data type of a variable, that is called dynamically typed language.

Q7. What is weekly typed and strongly typed language?

Ans. **1.** WeaklyTypedLanguage

A weaklytyped **language** allows **automatic or implicit type conversions** between different data types.

* You can mix types without strict rules.

**2. Strongly Typed Language**

* A **strongly typed language** enforces **strict rules about types**, and does **not automatically convert between incompatible types**.
* You must explicitly convert types if needed.

Q8. What is variable?

Ans. A reserved memory location to store values that called is variable.

Q9. 9. What is PYC file (Byte code)?

Ans. A .pyc file is a compiled Python file. It is the result of compiling a Python .py source file into Python bytecode, which is a lower-level, platform-independent representation of your code that can be executed by the Python interpreter.

Q10. What is PVM?

Ans. **PVM** is the runtime engine that executes Python **bytecode (.pyc file).**

11. How Python internally works?

Ans. **Workflow in Python execution:**

1. **Source code** (.py) →
2. **Bytecode** (.pyc) →
3. **Execution by PVM** →
4. **Machine code (via system libraries, OS calls, etc.)**

Q12. What is PEP 8?

Ans. **PEP 8** stands for **Python Enhancement Proposal 8**, and it is the **official style guide for writing Python code**.

Q13. What is PIP what is the use of PIP?

Ans. PIP is Python's package manager that is used to install, manage, and uninstall Python libraries from the Python Package Index (PyPI).

**Simple Use of PIP:**

* **Install packages:** pip install package-name
* **Manage packages:** list, upgrade, remove installed libraries.

Q14. What is Byte code and when is it created?

Ans. **Bytecode** is an intermediate, low-level, platform-independent set of instructions that the **Python interpreter** generates from your source code.

It is **not human-readable**, but it is simpler for the Python Virtual Machine (PVM) to execute.

**🔧 When is Bytecode Created?**

* When you **run a Python program**, the Python interpreter **compiles the source code (.py) into bytecode**.
* This happens **automatically** before execution.
* The bytecode may be saved as .pyc files inside the \_\_pycache\_\_ directory.
* It is created **each time you run the code**, unless the .pyc is already up to date

Q15. What is indentation in python? Does python relay on indentation?

Ans. Indentation in Python is the use of spaces or tabs at the start of a line to define code blocks.

**Does Python rely on indentation?**

**Yes**, Python **strictly depends on indentation** to identify blocks of code like loops, functions, and conditionals.  
Incorrect indentation will cause errors.

Q16. What is keyword in python?

Ans. A **reserved word** that has a special meaning and is used to define the syntax and structure of the language. You **cannot use keywords as variable names**.

Q17. Tell me the areas where python is being used?

Ans. Python is a versatile programming language used in a wide range of domains due to its simplicity,

Web Development, Data Science & Analytics, Machine Learning & Artificial Intelligence, Automation & Scripting, Software Testing etc.

Q18. What are variable naming rules?

Ans.  **Start with a letter or underscore (\_)**

* name, \_value

 **Can contain letters, numbers, and underscores**

* ✅ Valid: name1, user\_name, \_temp\_var
* ❌ Invalid: name!, user-name, first name

 **Cannot be a Python keyword or reserved word**

* ❌ Invalid: for, class, if, def, etc.

Q19. What is datatype and name of datatypes.

Ans. A **data type** is a classification that tells Python what kind of value a variable holds and what operations can be performed on that value.

Datatypes: - str, int, float, list, tuple, range, dict, set, Boolean, None.