**Assignment 1   
PYTHON BASIC QUESTIONS**

1. What is Python?

Python is a high-level, interpreted, general-purpose programming language known for its simplicity, readability, and vast ecosystem of libraries.

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2. Tell me the areas where Python is being used?

Python is used in:

• Web development (e.g., Django, Flask)

• Data science and machine learning (e.g., pandas, scikit-learn)

• Automation and scripting

• Game development

• Desktop applications

• Cybersecurity

• Artificial Intelligence

• IoT

• Scientific computing

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

• High-level language: Closer to human languages (e.g., Python, Java). Easier to write and understand.

• Low-level language: Closer to machine code (e.g., Assembly, C). Offers more control over hardware.

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4. What is interpreted language?

An interpreted language is executed line-by-line by an interpreter at runtime (e.g., Python). No separate compilation step is needed.

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5. What is compiled language?

A compiled language is converted into machine code using a compiler before it runs (e.g., C, C++). It usually runs faster than interpreted code.

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6. What is statically typed language?

In a statically typed language, variable types are defined at compile time and cannot change (e.g., Java, C++).

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7. What is dynamically typed language?

In a dynamically typed language, variable types are determined at runtime and can change (e.g., Python, JavaScript).

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8. What is weakly typed language?

In a weakly typed language, the interpreter or compiler may implicitly convert between types (e.g., JavaScript: "5" + 1 → "51").

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9. What is strongly typed language?

In a strongly typed language, types are enforced strictly; you can’t mix incompatible types without explicit conversion (e.g., Python).

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10. What is .PYC file (Byte code)?

.pyc is a compiled Python file containing bytecode, which is a lower-level, platform-independent representation of the source code. It's created to improve performance.

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11. What is PVM?

Python Virtual Machine (PVM) is the runtime engine that executes Python bytecode (.pyc files).

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12. How Python internally works?

1. Python code (.py) is parsed and compiled to bytecode (.pyc).

2. Bytecode is executed by the Python Virtual Machine (PVM).

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13. What is PEP 8?

PEP 8 is the Python Enhancement Proposal that provides style guidelines for writing clean and readable Python code (e.g., naming conventions, indentation rules).

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14. What is PIP? What is the use of PIP?

PIP is Python’s package installer. It's used to install, upgrade, and manage Python libraries and dependencies from the Python Package Index (PyPI).

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15. What is Bytecode and when is it created?

Bytecode is an intermediate code between source and machine code. It’s created after the Python source code is compiled, just before execution.

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16. What is indentation in Python? Does Python rely on indentation?

Yes. Indentation refers to spaces or tabs used at the start of a line. Python relies on indentation to define blocks of code instead of braces {}.

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17. What is a variable?

A variable is a named reference to a value stored in memory. It allows you to store and manipulate data.

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18. What are variable naming rules?

• Must start with a letter or underscore (\_)

• Can include letters, digits, and underscores

• Cannot start with a digit

• Cannot use Python keywords

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19. What is datatype and names of datatypes?

A data type defines the kind of data a variable can hold. Common Python data types:

• int

• float

• str

• bool

• list

• tuple

• dict

• set

• NoneType

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20. What is a keyword in Python?

A keyword is a reserved word that has a special meaning in Python’s syntax (e.g., if, while, class, def, True, None). They cannot be used as variable names.