7 Introduction to Python

LEARNING OUTCOMES

After this lesson, students will be able to:

- » Define a programming language.
- » Give examples of programming languages.
- » Define keywords.
- » Describe the characteristics of Python language.
- » List the different modes on Python language.
- » State the advantages and disadvantages of the interactive mode.
- » State the advantages and disadvantages of the script mode.
- » Open Python in the script and interactive modes.
- » Make simple programs in the interactive mode.
- » Make simple programs in the script mode.
- » Open and save files in the script mode.
- » Compile and execute a program in the script mode.

WARM UP

Match the following:

Ans.

1. Machine Language	(d) Language consisting of 0's and 1's
2. Program	(b) Language used to write programs
3. Programmer	(a) A person who writes programs
4. Programming Language	(c) Set of instructions

CHAPTER NOTES

- A programming language is a set of grammatical rules for instructing a computer to perform specific tasks.
- Each programming language has a unique set of keywords (words that it understands) and a special syntax for organising program instructions.
- There are many programming languages such as BASIC, C, C++, COBOL, Java, FORTRAN, Ada, Pascal, etc.
- Python was developed by Guido van Rossum.
- Python is a general-purpose Object Oriented Programming (OOP) language.
- It is derived from programming languages such as ABC, Modula-3, Smalltalk and ALGOL 68.
- This language is also used for developing Artificial Intelligence (AI) applications and projects.
- Python can be used on a server to create web applications.
- Python can connect to database systems. It can also read and modify files.
- Python can be used to handle Big Data and perform complex mathematical calculations.
- There are two modes to use the Python interpreter: Interactive Mode and Script Mode.
- Interactive mode, also known as the Read Eval Print Loop (REPL), provides a quick way of running blocks or a single line of Python code.
- Without passing the Python script file to the interpreter, it gets executed directly.
- The code executes via the Python shell, which comes with Python installation.
- The >>> symbol indicates that the Python shell is ready to execute and send your commands to the Python interpreter.
- The result is immediately displayed on the Python shell as soon as the Python interpreter translates the command.

- Advantages of using Interactive Mode: Helpful when your script is extremely short and you want immediate results; faster as you only have to type a command and then press the Enter key to get the results; good for beginners who need to understand Python basics.
- Disadvantages of using the Interactive Mode: Editing the code in interactive mode is difficult as you have to move back to the previous commands or else you have to rewrite the whole command again; it's very tedious to run long pieces of code.
- Script Mode: In this mode, the source code is stored in a file with the .py extension and uses the interpreter to execute the contents of the file.
- If you need to write a long piece of Python code, use the script mode.
- You can use any text editor for this, including Sublime, Atom, Notepad++, etc.
- To execute the script by the interpreter, you have to tell the interpreter the name of the file.
- Advantages of using the Script Mode: It is easy to run large pieces of code; editing script is easier in the script mode; good for both beginners and experts.
- Disadvantages of using the Script Mode: It can be tedious when you need to run only a single or a few lines of code; you must create and save the file before executing your code.

DEMONSTRATION

- Open Python in the script and interactive modes.
- Make simple programs in the interactive mode.
- Make simple programs in the script mode.
- Open and save files in the script mode.
- Compile and execute a program in the script mode.

LAB ACTIVITIES

» Open Python in the interactive mode.
» Write the Hello World program.
» Save your file.
» Execute the program.

ASSESSMENT

Teacher can assess the students by asking them the following:

1. Definition of a computer language.
2. Examples of high level languages.
3. Characteristics of Python.

SUGGESTED CLASS ACTIVITIES

A. Fill in the blanks.

1. Python is a _____ language.
2. _____ is an example of an Open Source Prgramming Language.
3. The _____ mode of Python is also called REPL.
4. Python program has the _____ file extension.
3. Click on the Run button and select the _____ to execute the Python file.

B. Match the following:

1. Python	(a) Save As
2. .py	(b) Interactive Mode
3. File tab	(c) Script Mode
4. Read Eval Print Loop	(d) Programming Language
5. Code saved in a file	(e) File extension