

## PES UNIVERSITY, BENGALURU

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# UE25CS151A – PYTHON FOR COMPUTATIONAL PROBLEM SOLVING LAB MANUAL

## WEEK 2

### TOPICS:

**Python Installation and Program Execution**

**Installation of Python and setup of the programming environment**

**Execution of Python programs using the interpreter**

### OBEJCTIVE:

To install Python on different operating systems and learn to execute basic commands using the interactive Python interpreter (also known as a REPL - Read-Eval-Print Loop).

### TASK 1: Python IDLE 3.13.7 Installation

Python IDLE means “Integrated Development Learning Environment” in short IDE “Integrated Development Environment”.

IDLE has two main window types, the Shell window and the Editor window. It is possible to have multiple editor windows simultaneously.

Note: The latest stable Python version as of August 2025 is 3.13.7. Always download from the official site: <https://www.python.org/downloads/>. IDLE is included in the standard Python installation on all platforms.

#### a. For Windows OS

**Step 1:** Visit <https://www.python.org/downloads/> and click on the "Download Python 3.13.7" button (or the latest version). Select the Windows installer (64-bit) for most systems.

**Step 2:** Run the downloaded executable (.exe) file.

**Step 3:** In the installer window, check the boxes for "Install launcher for all users (recommended)" and "Add python.exe to PATH".

**Step 4:** Click "Install Now" (or customize installation if needed, ensuring IDLE is selected under optional features).

**Step 5:** Once installed, search for "IDLE" in the Start menu to launch it. Verify by running `print("PESU")` in the shell.

### **b. For macOS**

**Step 1:** Visit <https://www.python.org/downloads/> and click on the "Download Python 3.13.7" button (or the latest version). Select the macOS installer (.pkg).

**Step 2:** Run the downloaded .pkg file and follow the on-screen instructions.

**Step 3:** The installer will place a Python 3.13 folder in your Applications folder, which includes IDLE.

**Step 4:** Launch IDLE from Applications > Python 3.13 > IDLE.app.

**Step 5:** Verify installation in Terminal by typing `python3 --version` (should show 3.13.7). **Note:** macOS comes with an older system Python; use the newly installed version for development.

### **c. For Ubuntu systems (Linux)**

Most modern Ubuntu distributions come with Python 3 pre-installed. These steps show how to verify it and install it if needed.

**Step 1:** Check for Python: Open the **Terminal** -> Run the **python3 --version** command.

**Step 2:** Install Python (If not present): Update the package list -> Run the command: **\$ sudo apt update**

**Step 3:** Now, install Python 3 and its standard Integrated Development and Learning Environment (IDLE) -> Run the command: **\$ sudo apt install idle3**

**Step 4:** Update repositories again: **\$ sudo apt update**

**Step 5:** Check whether Python is installed: **\$ python3.13 --version**

### **TASK 2: Python Shell Commands:**

**Step 1:** Open Python 3.13.7 shell prompt (via IDLE or terminal/command prompt by typing `python3` or `python` or `py`). The prompt looks like `>>>` once the interpreter is started.

```
Command Prompt - py      X  +  ▾
Microsoft Windows [Version 10.0.26100.4946]
(c) Microsoft Corporation. All rights reserved.

C:\Users\KUNDHAVI>py
Python 3.11.0 (main, Oct 24 2022, 18:26:48) [MSC v.1933 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

Note: Type the command **exit()** and press Enter, or use the shortcut Ctrl+D (on macOS/Ubuntu) or Ctrl+Z then Enter (on Windows).

### **TASK 3: Basic programs on the interpreter**

#### **1. To check the version:**

```
import platform
print(platform.python_version())

C:\Users\KUNDHAVI>py
Python 3.11.0 (main, Oct 24 2022, 18:26:48) [MSC v.1933 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> import platform
>>> print(platform.python_version())
3.11.0
>>> |
```

#### **Alternative way:**

```
import sys
print(sys.version)
```

```
C:\Users\KUNDHAVI>py
Python 3.11.0 (main, Oct 24 2022, 18:26:48) [MSC v.1933 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> import sys
>>> print(sys.version)
3.11.0 (main, Oct 24 2022, 18:26:48) [MSC v.1933 64 bit (AMD64)]
>>> |
```

#### **2. print function:(Parentheses Mandatory):**

The **print()** function in Python outputs specified data to the console.

```
C:\Users\KUNDHAVI>py
Python 3.11.0 (main, Oct 24 2022, 18:26:48) [MSC v.1933 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> print("Pes University")
Pes University
>>> print(10)
10
>>> print('Hello')
Hello
>>> print(12.8)
12.8
>>> print 12.8
  File "<stdin>", line 1
    print 12.8
    ^^^^^^^^^^
SyntaxError: Missing parentheses in call to 'print'. Did you mean print(...)?
>>> print(False)
False
>>> |
```

**Note:** In Python, strings can be represented using either **single quotes (' ) or double quotes (" )**. For instance, you can use `print('Hello')` or `print("Hello")` in the interpreter with the same result: Hello.

```
C:\Users\KUNDHAVI>py
Python 3.11.0 (main, Oct 24 2022, 18:26:48) [MSC v.1933 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> 50 + 100
150
>>> 25 * 4
100
>>> 10 / 5
2.0
>>> 10//5
2
>>> (5+3)*2
16
>>> 5+3*2
11
>>> message = "Welcome All"
>>> print(message)
Welcome All
>>> |
```

## **TASK 4: To execute Python program in command line using .py file**

Create a new Python file using a text editor (e.g., Notepad on Windows, nano/vi on Ubuntu/Mac).

### **Sample program:**

```
a = int(input("Enter 1st number: "))
b = int(input("Enter 2nd number: "))
sum = a + b
print("Sum of two numbers", a, "and", b, "is", sum)
```

Save the file as **program1.py (filename.py)**

**Run the Python file:**

python program1.py (Windows)

python3 program1.py (Mac/Ubuntu)

**Sample output:**

Enter 1st number: 78

Enter 2nd number: 90

Sum of two numbers 78 and 90 is 168

### **Special Note for Ubuntu Users:**

- Explore the Deadsnakes PPA to access newer Python versions (e.g., 3.13) not available in default Ubuntu repositories.
  - **Add the PPA with:** sudo add-apt-repository ppa:deadsnakes/ppa.
  - **Update and install:** sudo apt update followed by sudo apt install python3.13 idle-python3.13.
  - This provides updated features and patches, but use cautiously in production due to unofficial support.
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Practice often, explore more, Python makes problem solving fun