Exp No: 1 Date:	**Setting up the Python Environment and Jupyter Notebook**

Aim:

To set up a Python environment using Jupyter Notebook and demonstrate code execution, Markdown formatting, and the use of Jupyter Widgets and Jupyter AI.

Problem Statement:

Create a Jupyter Notebook that showcases Python code execution, Markdown documentation, interactive widgets, and AI-assisted features.

Algorithm:

1. Install Jupyter Notebook using pip install notebook.
2. Launch Jupyter using jupyter notebook.
3. Create a new Python 3 notebook.
4. Add and execute Python code cells.
5. Add Markdown cells for headings, lists, and descriptions.
6. Install and use ipywidgets for interactivity.
7. Explore Jupyter AI

IPython Widgets

It is a Python library that lets you create interactive user interface controls in Jupyter Notebooks, JupyterLab, and JupyterLite.

These controls include:

- Sliders
- Dropdowns
- Buttons
- Text boxes
- Date pickers
- File uploads
- Tabs
- Layout containers

Code:

jupyter --version

pip install ipywidgets

pip install jupyterlab-widgets

Step 1: Basic Python code

print("Hello, Jupyter!")

Step 2: Markdown cell (add this in a Markdown cell, not code)

Welcome to Jupyter Notebook

This is a Markdown cell. You can write **bold**, *italic*, or `code`.

Step 3: Jupyter Widgets

import ipywidgets as widgets

widgets.IntSlider(description='Slider:', min=0, max=100, step=5)

Output:

```
# Python code cell
print("Hello, Jupyter!")

# Markdown cell
# ## This is a Markdown Heading

# Jupyter Widgets
import ipywidgets as widgets
widgets.IntSlider()
```

```
Hello, Jupyter!
```

0

Jupyter Widgets

import ipywidgets as widgets

from IPython.display import display

Create an IntSlider widget for age

age = widgets.IntSlider(

description="Age:",

min=0,

max=100,

```
    value=25
)
# Display the slider
display(age)
```

Output:

Code:

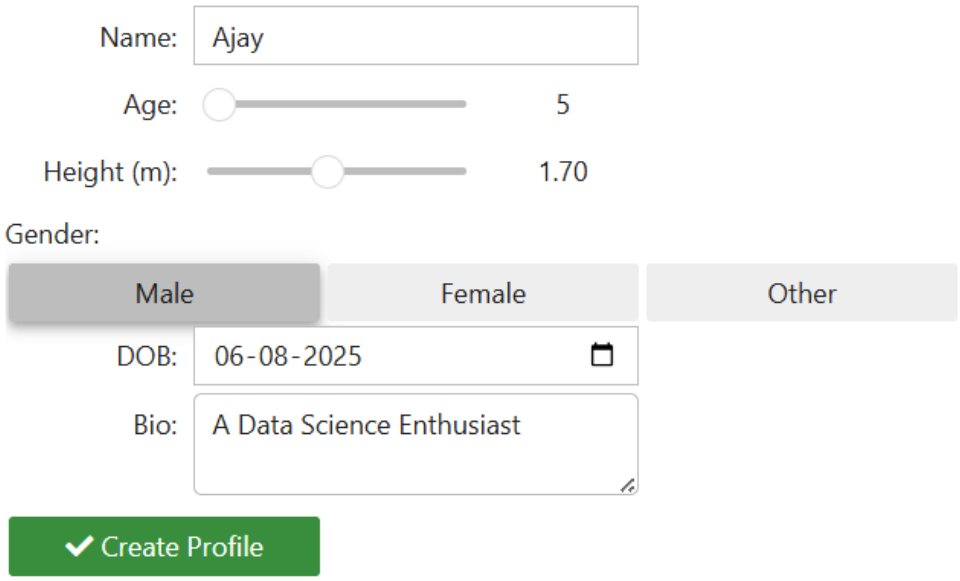
```
import ipywidgets as widgets
from IPython.display import display, clear_output
# Personal Info Widgets
name = widgets.Text(
    description="Name:",
    placeholder="Enter your name"
)
age = widgets.IntSlider(
    description="Age:",
    min=0, max=100, value=25
)
gender = widgets.ToggleButtons(
    options=['Male', 'Female', 'Other'],
    description='Gender:'
)
birthdate = widgets.DatePicker(
    description='DOB:'
)
height = widgets.FloatSlider(
    description="Height (m):",
    min=1.0, max=2.5, step=0.01, value=1.70
)
```

```
bio = widgets.Textarea(
    description="Bio:",
    placeholder="Write something about yourself"
)
# Output display
profile_output = widgets.Output()
# Submit button
submit_btn = widgets.Button(
    description="Create Profile",
    button_style='success',
    icon='check'
)
# Event handler
def on_submit(b):
    with profile_output:
        clear_output()
        print(“ Profile Summary \n")
        print(f"Name: {name.value}")
        print(f"Age: {age.value}")
        print(f"Height: {height.value} m")
        print(f"Gender: {gender.value}")
        print(f"Date of Birth: {birthdate.value}")
        print(f"Bio: {bio.value}")
submit_btn.on_click(on_submit)
# Layout (No Tabs)
form = widgets.VBox([
    name,
    age,
    height,
```

```
    gender,
    birthdate,
    bio,
    submit_btn,
    profile_output
])

# Display the form
display(form)
```

Output:



Result :

Thus, the program successfully created a Jupyter Notebook showcasing Python code execution, Markdown formatting, and the use of interactive widgets.