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Lab Report No : 03
Lab Report Name : Introduction to python
Course Name : Computer Networks Lab

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Introduction to Python

Objective :

- Setup python environment for programing.
- Learn the basics of python.
- Create and run basic examples using python.

Theory :

Definition of Python: Python is an interpreted, object-oriented, high-level programming language with dynamic semantics. Its high-level built in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together.

Main Features of Python:

- Easy to code
- Free and Open Source
- Object-Oriented Language
- GUI Programming Support
- High-Level Language
- Extensible feature
- Python is Portable language
- Python is Integrated language
- Interpreted Language
- Large Standard Library
- Dynamically Typed Language

Setup of Python Environment :

Step 1: Open Eclipse and setup a correct access to Internet.

Step 2: Installing python environment using Eclipse Graphical Interface.

To install PyDev, we need to use **Help > Eclipse Marketplace** and installed PyDev – Python IDE for Eclipse 7.6.0.


Eclipse Marketplace

Select solutions to install. Press Install Now to proceed with installation.
Press the "more info" link to learn more about a solution.



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**PyDev - Python IDE for Eclipse 7.6.0**

PyDev is a plugin that enables Eclipse to be used as a Python IDE (supporting also Jython and IronPython). It uses advanced type inference techniques which allow... [more info](#)

by [Brainwy Software](#), EPL

★ 1864 🔄 Installs: **1.41M** (11,381 last month) Installed

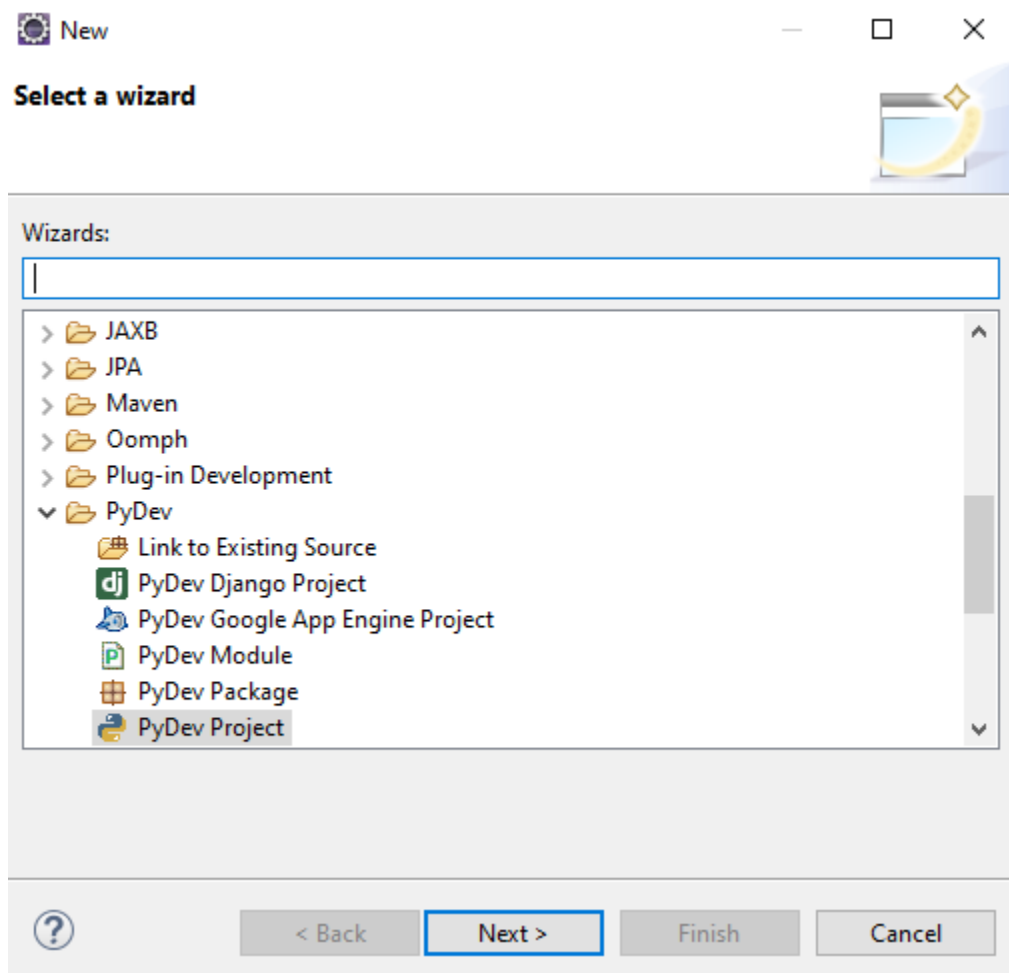
**Vrapper (Vim) 0.74.0**


Vrapper acts as a wrapper for Eclipse text editors to provide a Vim-like input scheme for moving around and editing text. Unlike other plugins which embed Vim in... [more info](#)

by [Vrapper Team](#), GPL

★ 382 🔄 Installs: **188K** (1,331 last month) Install

Step 3 : After installing PyDev, have to go **File > New > Other > PyDev > PyDev Project**.



— □ ×

PyDev Project

Create a new PyDev Project.

Project name:

Project contents:

☒ Use default

Directory

Project type

Choose the project type

☒ Python ☐ Jython ☐ IronPython

Grammar Version

▾

Interpreter

▾

[Click here to configure an interpreter not listed.](#)

Additional syntax validation: <no additional grammars selected>.

☒ Add project directory to the PYTHONPATH

☐ Create 'src' folder and add it to the PYTHONPATH


☐ Create links to existing sources (select them on the next page)

☐ Don't configure PYTHONPATH (to be done manually later on)

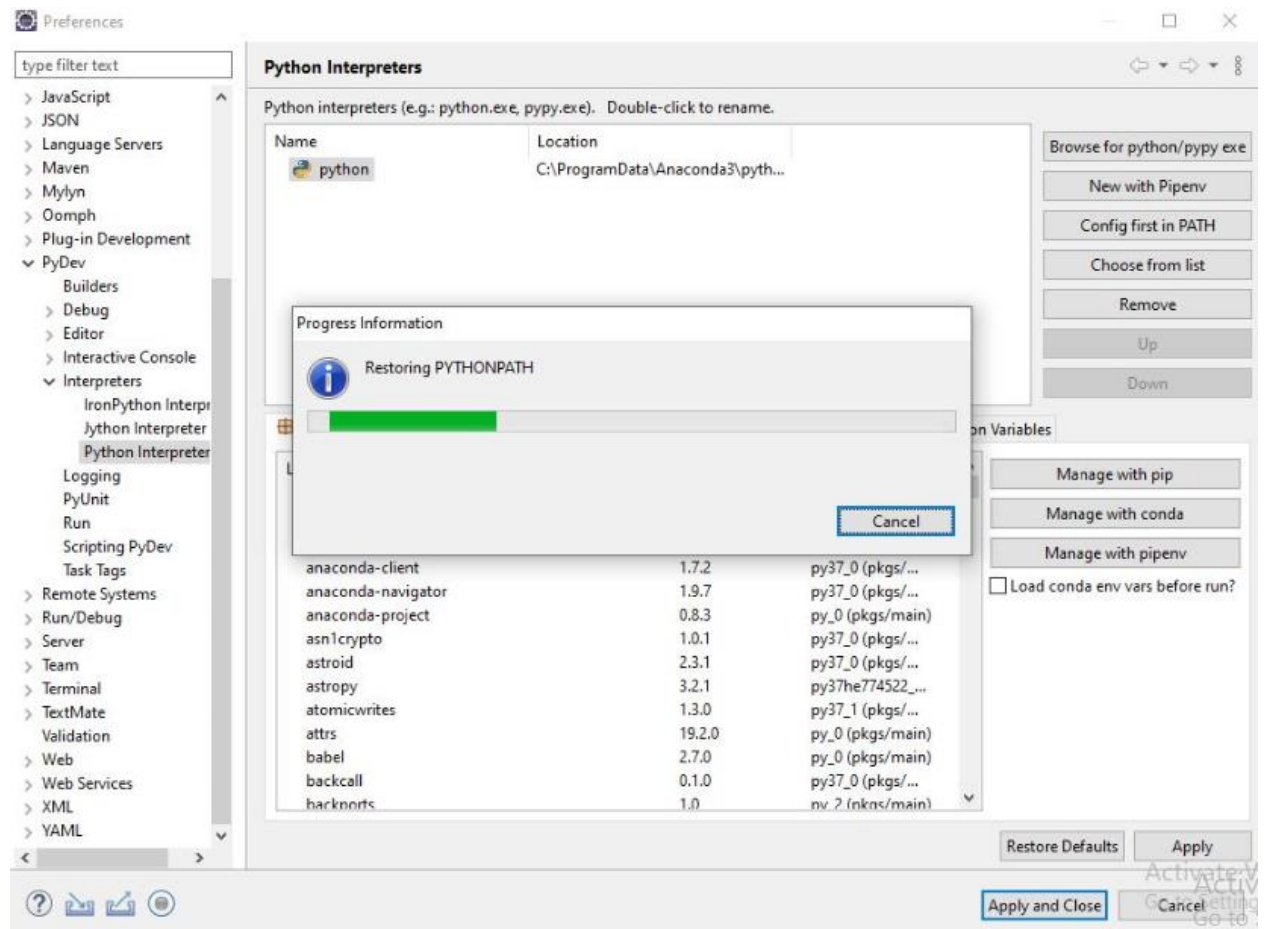
Working sets

☐ Add project to working sets

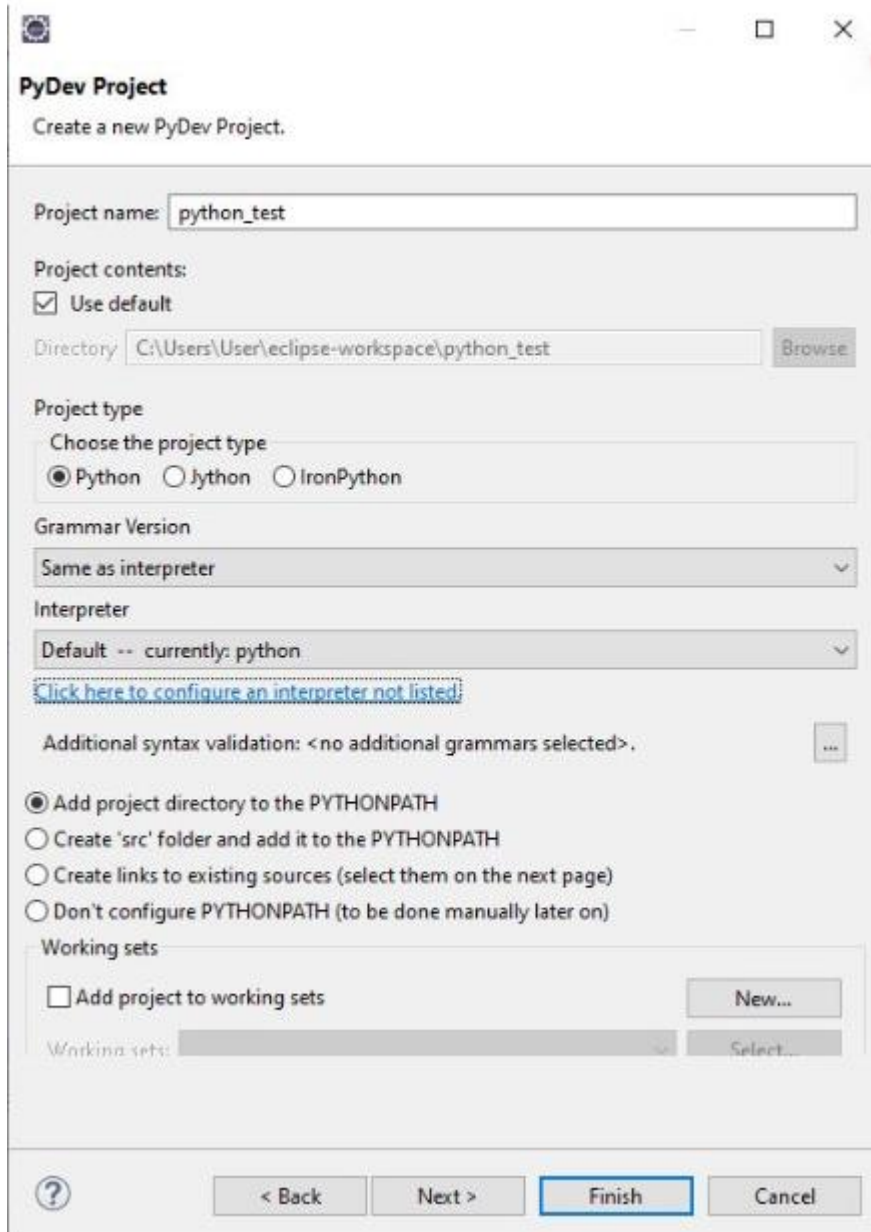
Working sets: ▾



Step 4 : To configure an interpreter , have to go “click here to configure an interpreter not listed” and select “Config first in PATH”.



Step 5 : Then, give a project name and click “Finish” button.



The image shows the 'PyDev Project' dialog box in Eclipse. The title bar says 'PyDev Project' and the subtitle is 'Create a new PyDev Project.' The dialog is divided into several sections. The 'Project name' field contains 'python_test'. The 'Project contents' section has a checked 'Use default' checkbox. The 'Directory' field shows 'C:\Users\User\eclipse-workspace\python_test' with a 'Browse' button. The 'Project type' section has a 'Choose the project type' label and three radio buttons: 'Python' (selected), 'Jython', and 'IronPython'. The 'Grammar Version' dropdown is set to 'Same as interpreter'. The 'Interpreter' dropdown is set to 'Default -- currently: python' with a link below it that says 'Click here to configure an interpreter not listed'. The 'Additional syntax validation' section shows '<no additional grammars selected>' with a button to the right. The 'Working sets' section has a checkbox 'Add project to working sets' which is unchecked, a 'New...' button, and a 'Working sets:' label with a dropdown and a 'Select...' button. At the bottom, there are four buttons: a help button '?', '< Back', 'Next >', and 'Finish' (which is highlighted with a blue border), and a 'Cancel' button.

PyDev Project
Create a new PyDev Project.

Project name:

Project contents:
☒ Use default

Directory:

Project type
Choose the project type
☒ Python ☐ Jython ☐ IronPython

Grammar Version
Same as interpreter

Interpreter
Default -- currently: python
[Click here to configure an interpreter not listed](#)

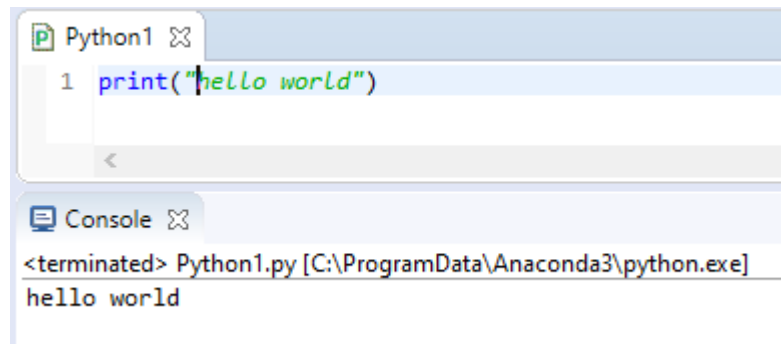
Additional syntax validation: <no additional grammars selected>

☒ Add project directory to the PYTHONPATH
☐ Create 'src' folder and add it to the PYTHONPATH
☐ Create links to existing sources (select them on the next page)
☐ Don't configure PYTHONPATH (to be done manually later on)

Working sets
☐ Add project to working sets
Working sets:

? < Back Next > **Finish** Cancel

Exercise 4.1.2: Write a Hello World program

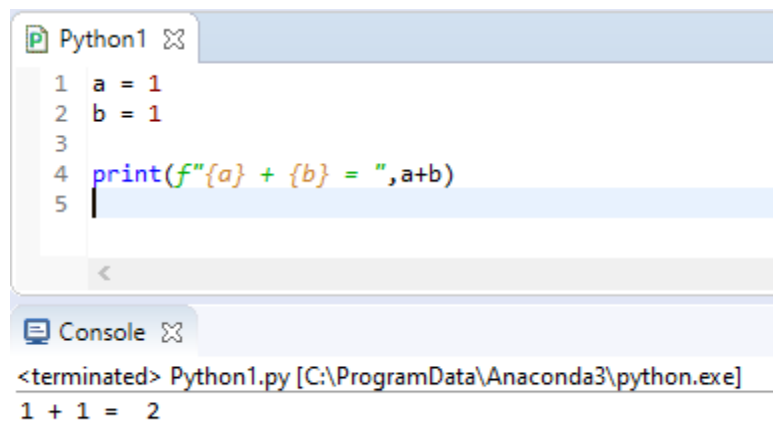


The screenshot shows a Python IDE with a file named 'Python1.py'. The code in the editor is a single line: `print("hello world")`. Below the editor is a console window showing the output: `<terminated> Python1.py [C:\ProgramData\Anaconda3\python.exe]` followed by `hello world`.

```
Python1
1 print("hello world")

Console
<terminated> Python1.py [C:\ProgramData\Anaconda3\python.exe]
hello world
```

Exercise 4.1.3: Compute 1+1

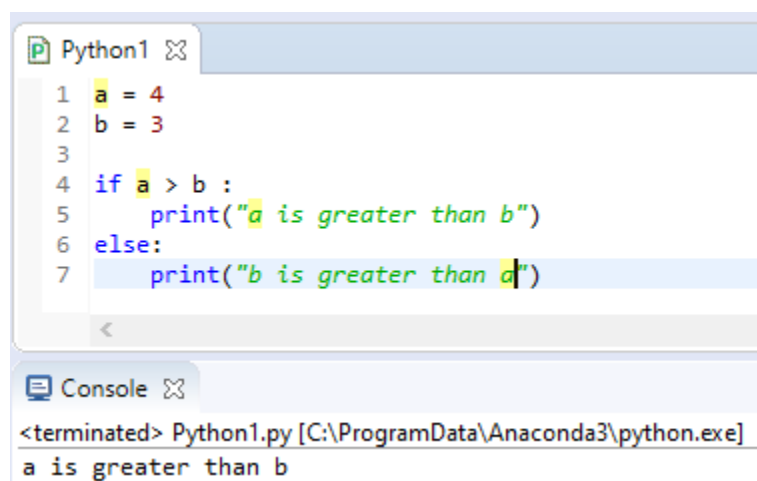


The screenshot shows a Python IDE with a file named 'Python1.py'. The code in the editor is: `a = 1`, `b = 1`, and `print(f"{a} + {b} = ", a+b)`. Below the editor is a console window showing the output: `<terminated> Python1.py [C:\ProgramData\Anaconda3\python.exe]` followed by `1 + 1 = 2`.

```
Python1
1 a = 1
2 b = 1
3
4 print(f"{a} + {b} = ", a+b)
5

Console
<terminated> Python1.py [C:\ProgramData\Anaconda3\python.exe]
1 + 1 = 2
```

Exercise 4.2.2: The if statement:

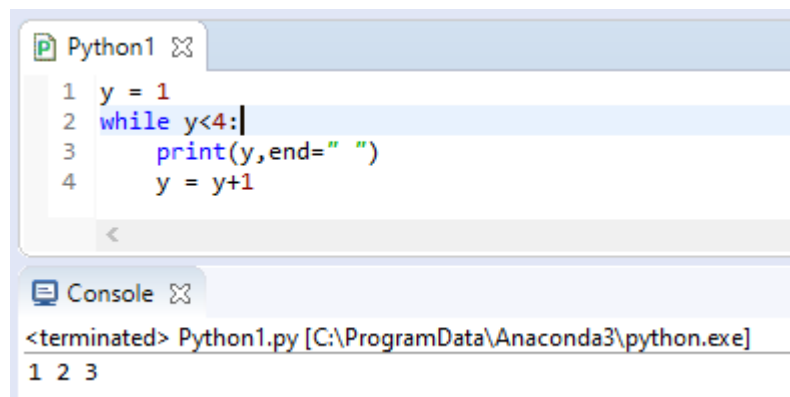


The screenshot shows a Python IDE with a file named 'Python1.py'. The code in the editor is: `a = 4`, `b = 3`, and an if-else statement: `if a > b :` followed by `print("a is greater than b")` and `else:` followed by `print("b is greater than a")`. Below the editor is a console window showing the output: `<terminated> Python1.py [C:\ProgramData\Anaconda3\python.exe]` followed by `a is greater than b`.

```
Python1
1 a = 4
2 b = 3
3
4 if a > b :
5     print("a is greater than b")
6 else:
7     print("b is greater than a")

Console
<terminated> Python1.py [C:\ProgramData\Anaconda3\python.exe]
a is greater than b
```

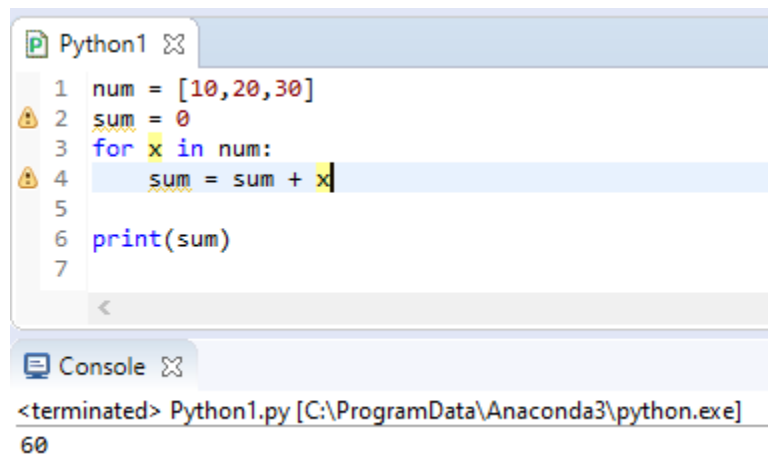

Exercise 4.2.3: The while Statement



```
Python1
1 y = 1
2 while y<4:
3     print(y,end=" ")
4     y = y+1

Console
<terminated> Python1.py [C:\ProgramData\Anaconda3\python.exe]
1 2 3
```

Exercise 4.2.4: The for Statement



```
Python1
1 num = [10,20,30]
2 sum = 0
3 for x in num:
4     sum = sum + x
5
6 print(sum)
7

Console
<terminated> Python1.py [C:\ProgramData\Anaconda3\python.exe]
60
```

Conclusion : In this lab, we have learned how to setup python environment for programming and learn basic program of python.

Python is a popular programming language.

It is used for:

- web development (server-side),
- software development,
- mathematics,
- system scripting.
- Python works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc).

Python Syntax compared to other programming languages

- Python was designed for readability, and has some similarities to the English language with influence from mathematics.
- Python uses new lines to complete a command, as opposed to other programming languages which often use semicolons or parentheses.
- Python relies on indentation, using whitespace, to define scope; such as the scope of loops, functions and classes. Other programming languages often use curly-brackets for this purpose.

Python has syntax that allows developers to write programs with fewer lines than some other programming languages. Python runs on an interpreter system, meaning that code can be executed as soon as it is written. This means that prototyping can be very quick. Python can be treated in a procedural way, an object-oriented way or a functional way.