



Mawlana Bhashani Science And Technology University

Lab-Report

Lab Report No: DNS_lab_01

Course code: ICT-3208

Course title: Introduction to python

Date of Performance: 20-02-2021

Date of Submission: 26-02-2021

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3rd Year 1st Semester

Session: 2017-2018

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Theory :

Python is an easy to learn, powerful programming language. It has efficient highlevel data structures and a simple but effective approach to object-oriented programming. Python's elegant syntax and dynamic typing, together with its interpreted nature, make it an ideal language for scripting and rapid application development in many areas on most platforms.

Setup of Python Environment

STEP 1: Open Eclipse and setup a correct access to Internet (This is required only in RMIT network). In order to set up Manual Proxy follow the instructions (see also figure 1):

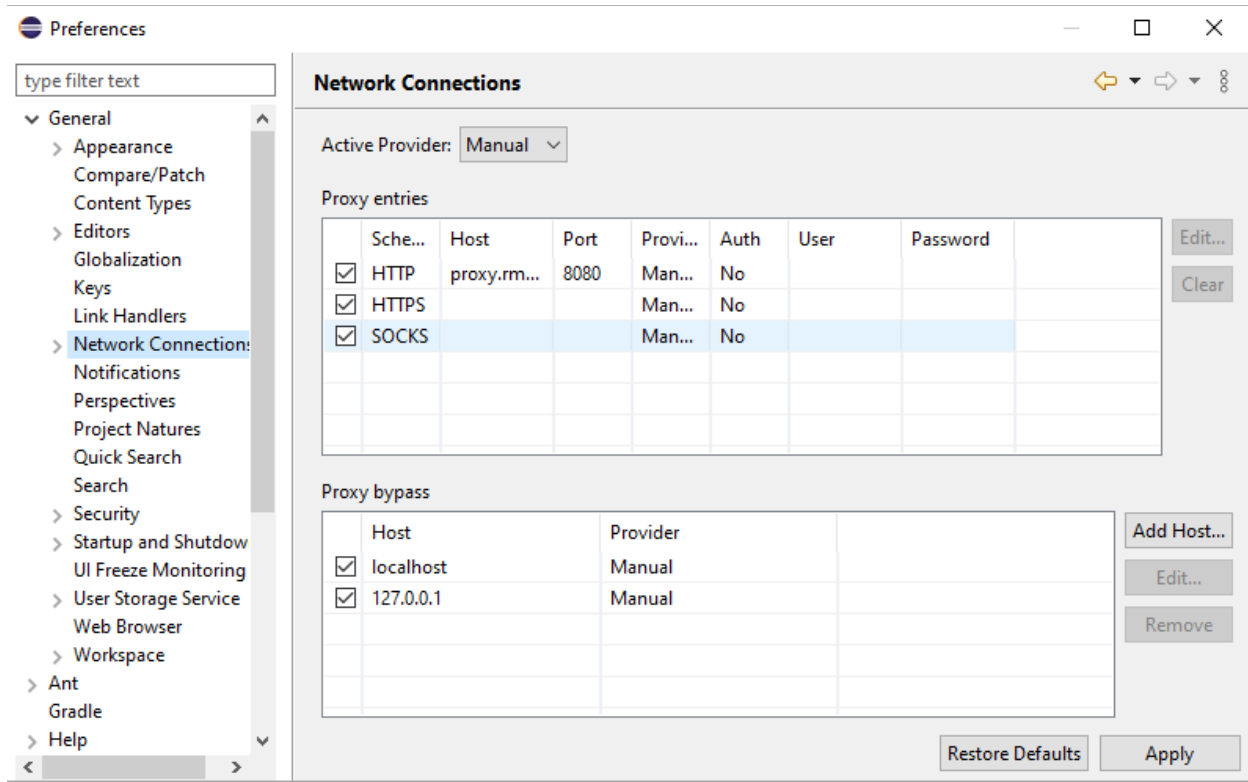
- a. Go to **Windows > Preferences > General > Network Connections**.
- b. Change Active Provider to Manual.
- c. Input proxy details, including username/password if required.

Host : proxy.rmit.edu.au

Port : 8080

Username/password : No required

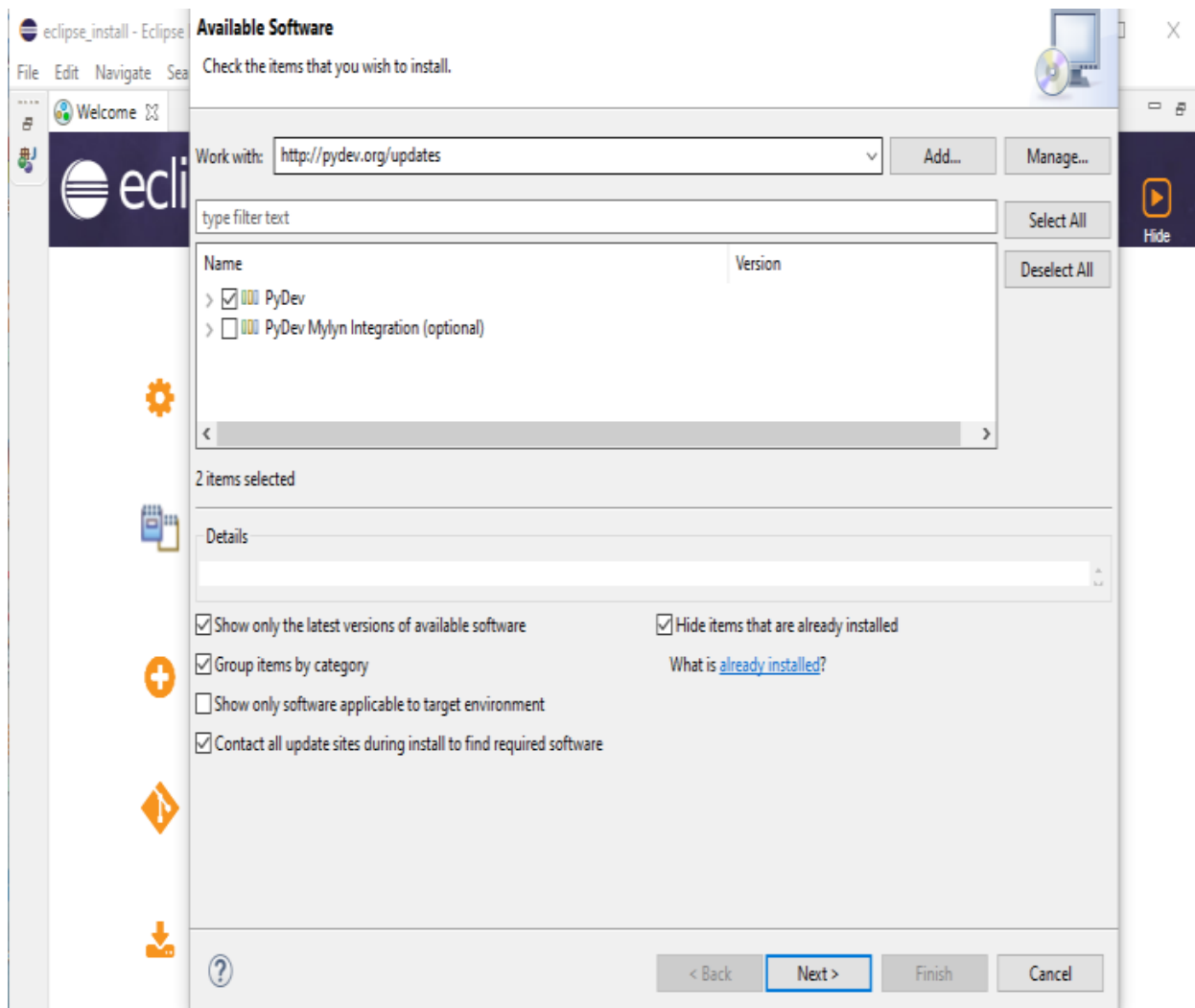
- d. Clear SOCKS proxy.
- e. Restart Eclipse.



STEP 2 : Installing python environment using Eclipse Graphical Interface1.

a. To install PyDev and PyDev Extensions using the Eclipse Update Manager, you need to use the

Help > Install New Software... menu (note that in older versions, this would be the 'Find and Install' menu) as shown in the following figure:



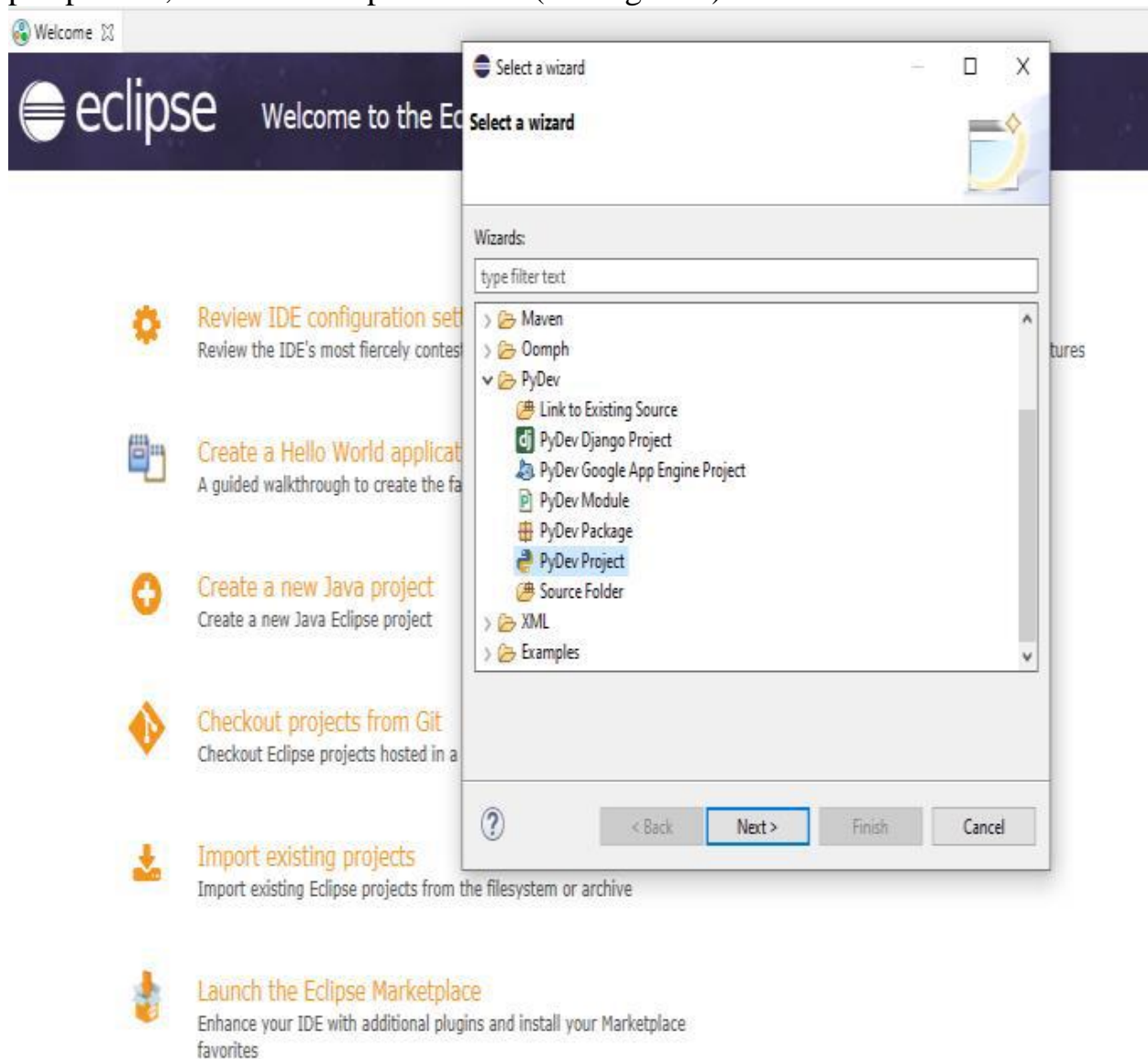
C. After entering the update sites, select the update site you entered or select "All available sites" and add a filter for PyDev, so that it shows the contents of all the update sites that have PyDev, then select what you want to install and click

D. Then, UNCHECK the 'Contact all update sites during install to find required software' and press 'NEXT' again to confirm your selection

E. And finally, read the license agreement if you accept, select the accept radio button and click 'Finish'

STEP 2 : Checking the installation: You can verify if it is correctly installed going to the menu 'window> preferences' and checking if there is a PyDev item under that

(see Figure 7). After that eclipse will display the graphical interface for python perspective, the main components are (see Figure 8):

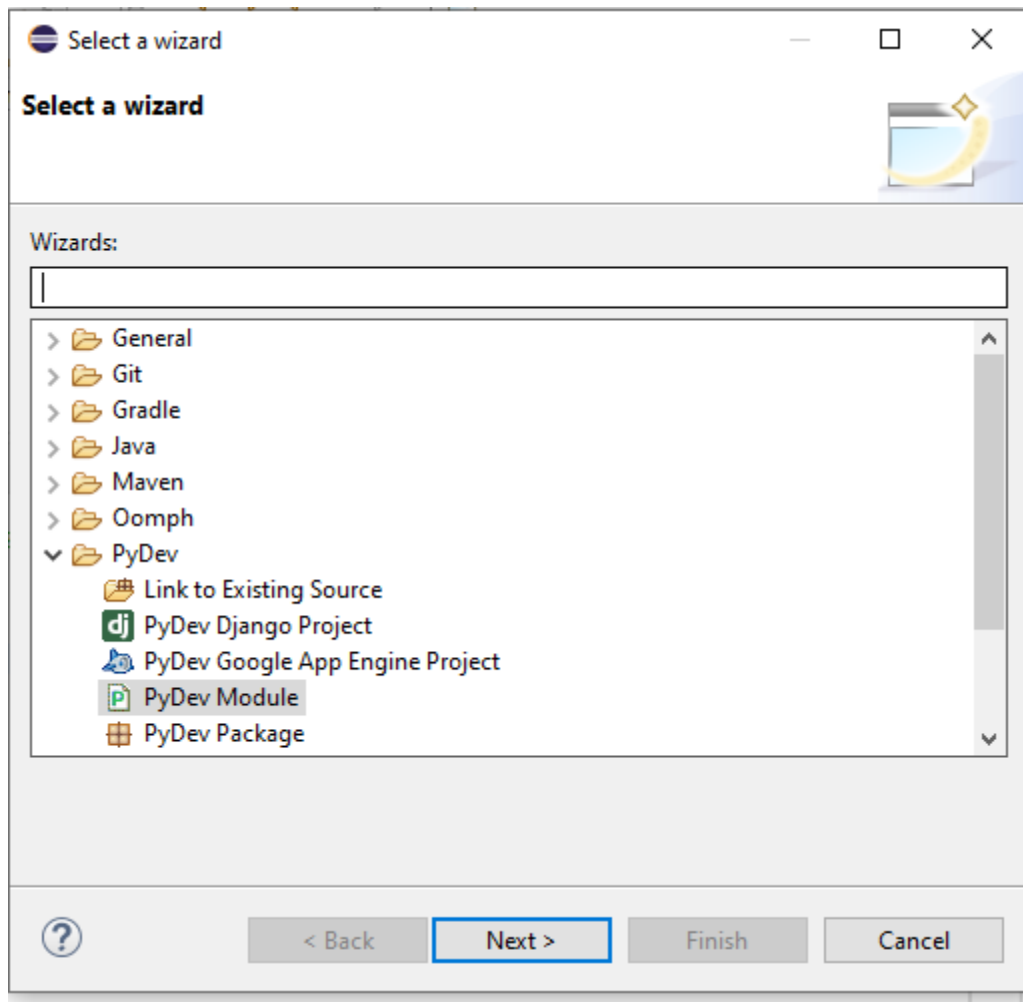


Exercises

Section 4.1: Basics of python and programming

Exercise 4.1.1: Create a python project.

Answer:



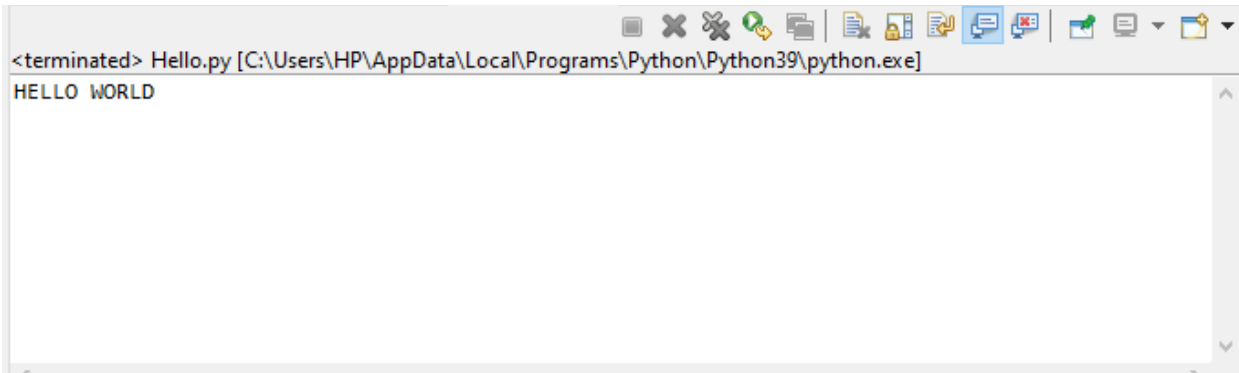
Exercise: 4.1.2 : Write a Hello World Program.

A screenshot of a code editor window. The editor has two tabs: 'test' and 'Hello'. The 'Hello' tab is active. The code is as follows:

```
1 '''  
2 Created on Jan 8, 2021  
3  
4 @author: HP  
5 '''  
6 print("HELLO WORLD")
```

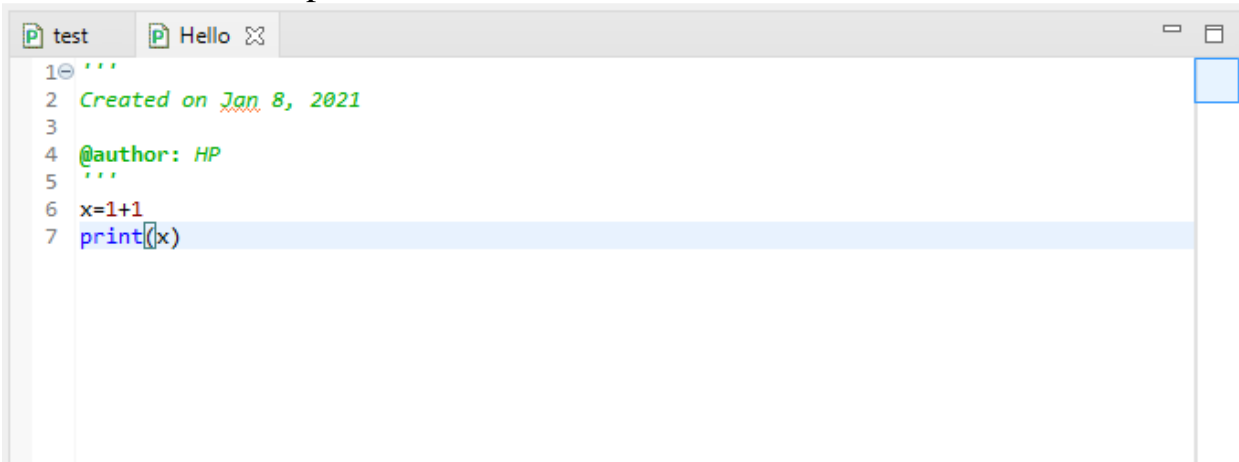
The line containing the print statement is highlighted in blue.

Output:

A screenshot of a Python terminal window. The title bar shows the file name 'Hello.py' and the path '[C:\Users\HP\AppData\Local\Programs\Python\Python39\python.exe]'. The terminal output displays 'HELLO WORLD' on a single line.

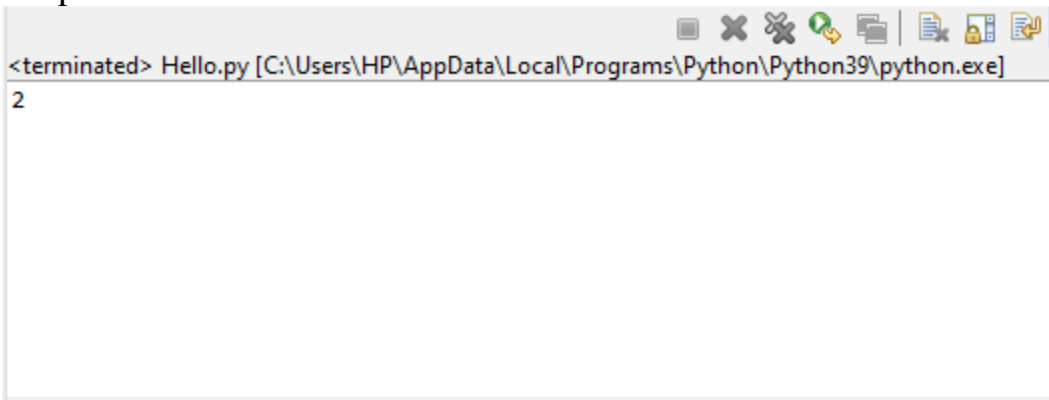
```
<terminated> Hello.py [C:\Users\HP\AppData\Local\Programs\Python\Python39\python.exe]
HELLO WORLD
```

Exercise 4.1.3: Compute 1+1

A screenshot of a Python IDE showing a file named 'test'. The code includes a docstring with creation date and author, followed by a calculation and a print statement.

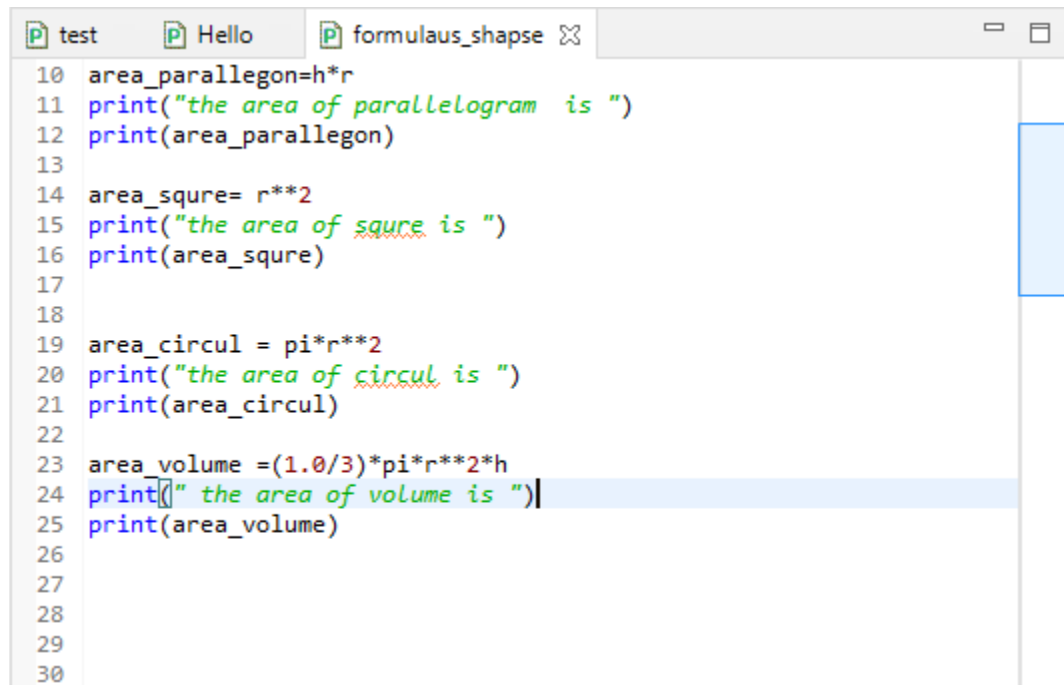
```
1 """
2 Created on Jan 8, 2021
3
4 @author: HP
5 """
6 x=1+1
7 print(x)
```

Output:

A screenshot of a Python terminal window showing the output of the previous code. The title bar is the same as the first image. The terminal output displays the number '2' on a single line.

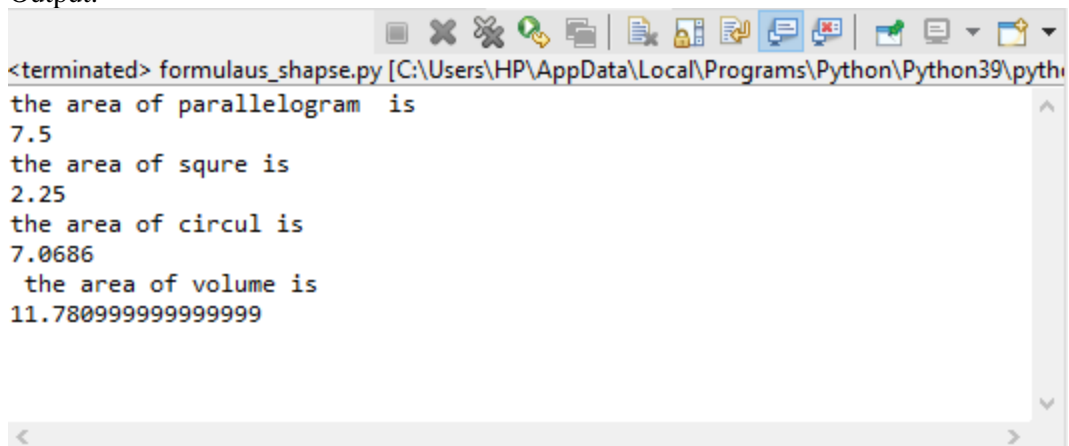
```
<terminated> Hello.py [C:\Users\HP\AppData\Local\Programs\Python\Python39\python.exe]
2
```

Exercise 4.1.4: Type in program text.



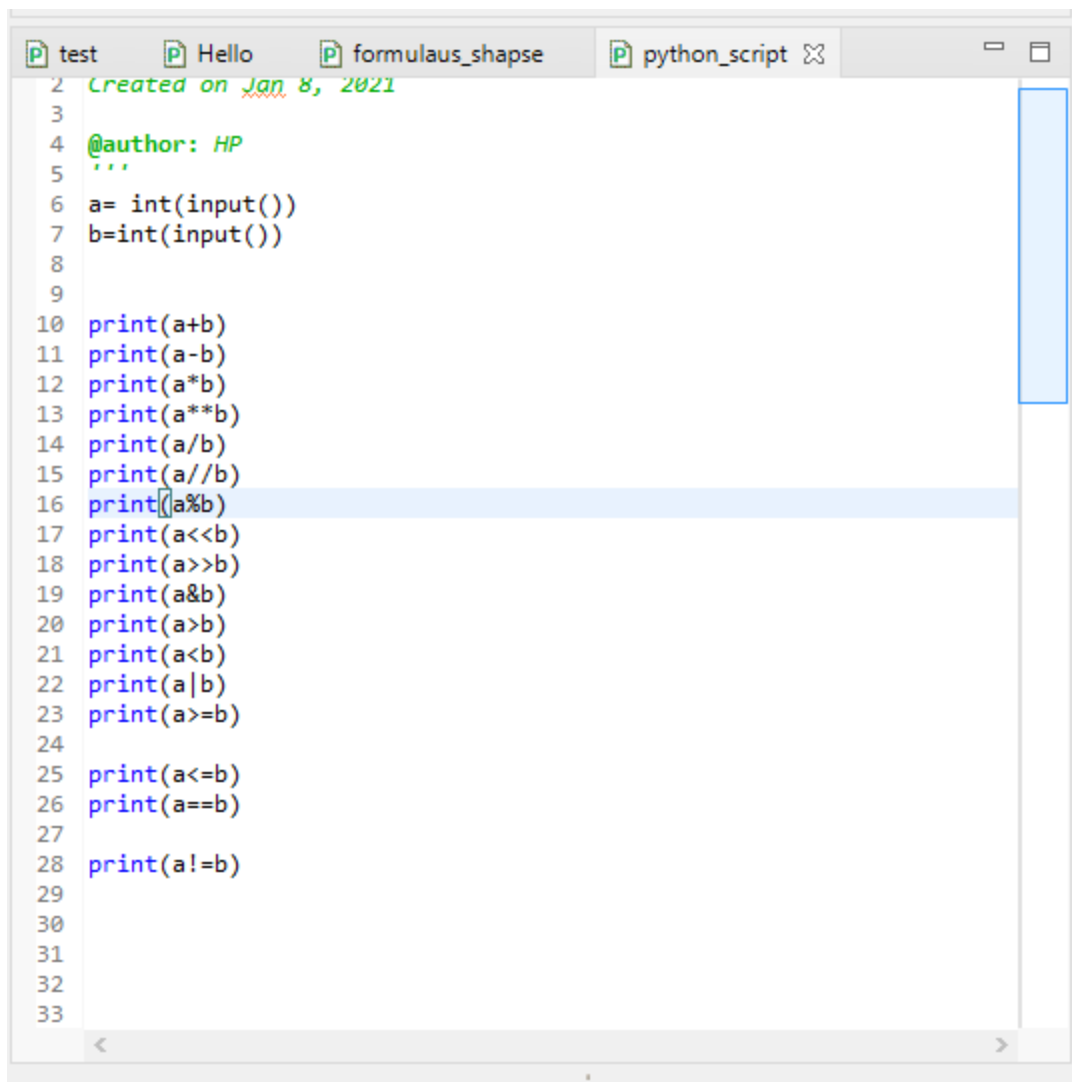
```
10 area_parallelogon=h*r
11 print("the area of parallelogram is ")
12 print(area_parallelogon)
13
14 area_squre= r**2
15 print("the area of squre is ")
16 print(area_squre)
17
18
19 area_circul = pi*r**2
20 print("the area of circul is ")
21 print(area_circul)
22
23 area_volume =(1.0/3)*pi*r**2*h
24 print(" the area of volume is ")
25 print(area_volume)
26
27
28
29
30
```

Output:



```
<terminated> formulaus_shapse.py [C:\Users\HP\AppData\Local\Programs\Python\Python39\pyth
the area of parallelogram is
7.5
the area of squre is
2.25
the area of circul is
7.0686
the area of volume is
11.780999999999999
```

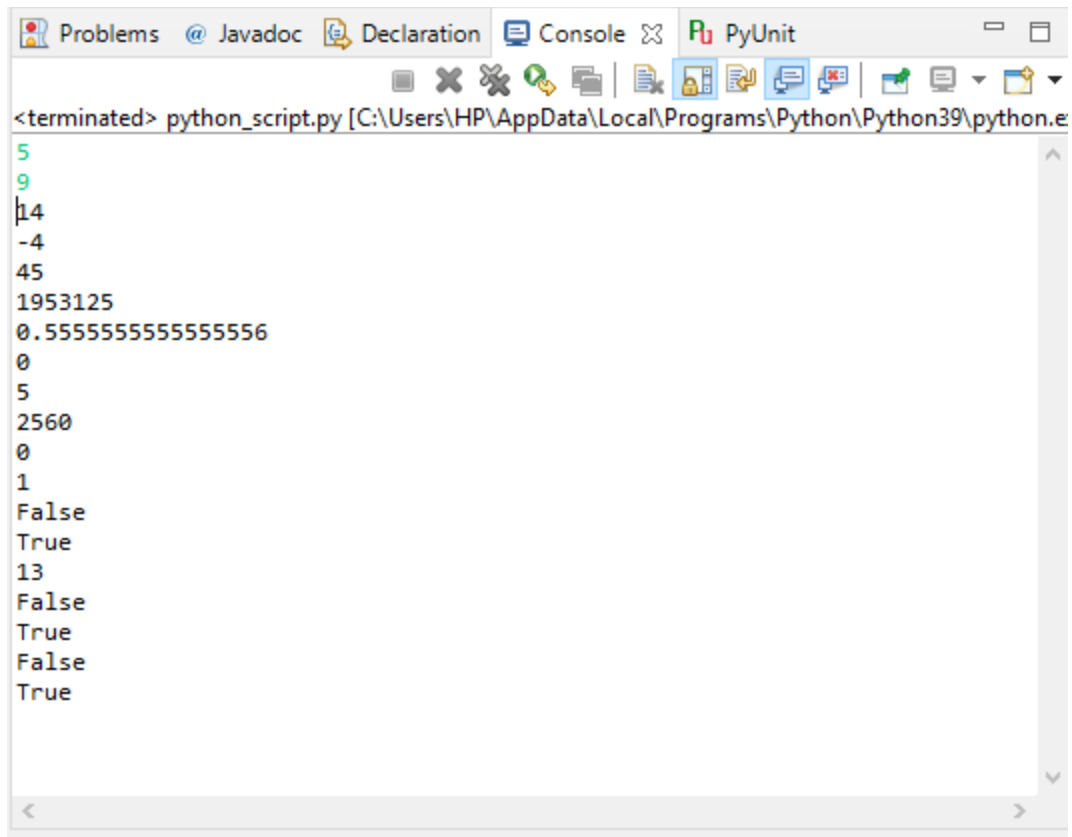
Section 4.1: Create and run basic example.



The image shows a screenshot of a code editor window with four tabs: 'test', 'Hello', 'formulaus_shapse', and 'python_script'. The 'python_script' tab is active. The code is as follows:

```
2 Created on Jan 8, 2021
3
4 @author: HP
5 ...
6 a= int(input())
7 b=int(input())
8
9
10 print(a+b)
11 print(a-b)
12 print(a*b)
13 print(a**b)
14 print(a/b)
15 print(a//b)
16 print(a%b)
17 print(a<<b)
18 print(a>>b)
19 print(a&b)
20 print(a>b)
21 print(a<b)
22 print(a|b)
23 print(a>=b)
24
25 print(a<=b)
26 print(a==b)
27
28 print(a!=b)
29
30
31
32
33
```

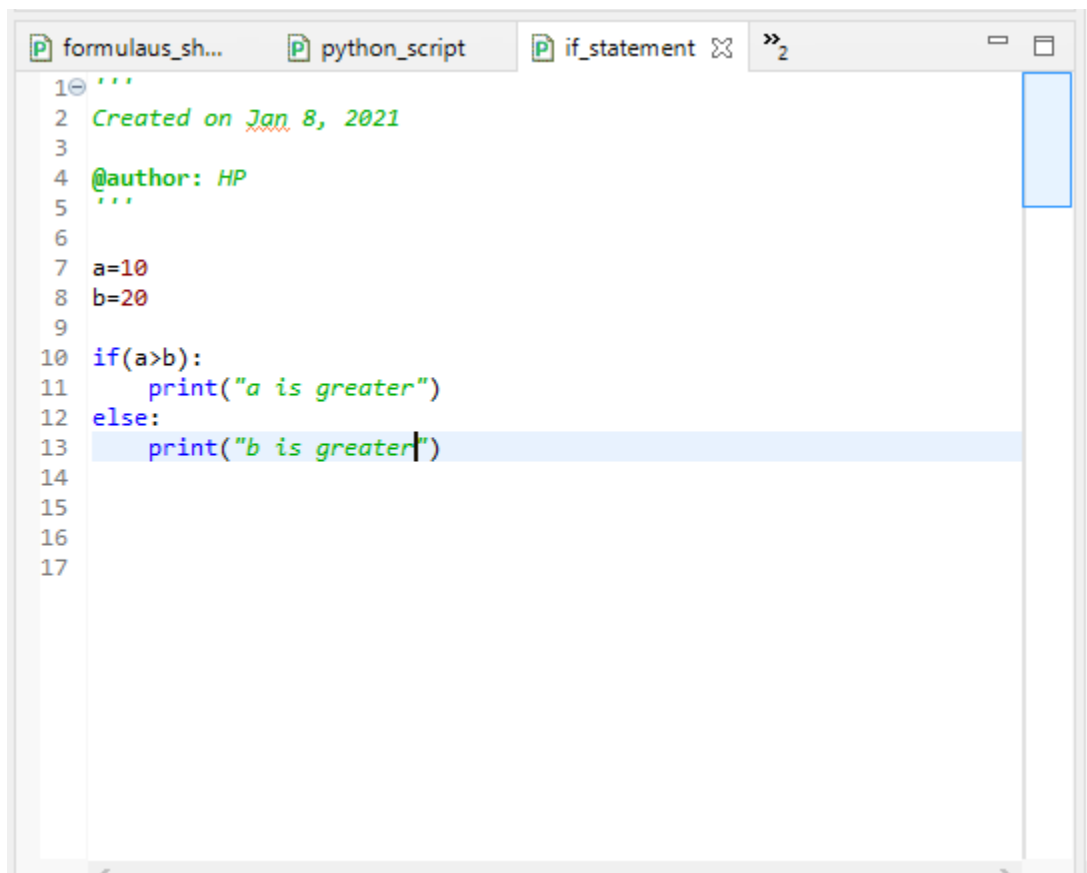
Output:



The screenshot shows an IDE window with a tab labeled "PyUnit". Below the tab is a toolbar with various icons. The main area is a console window titled "<terminated> python_script.py [C:\Users\HP\AppData\Local\Programs\Python\Python39\python.e". The console displays the following output:

```
5
9
14
-4
45
1953125
0.5555555555555556
0
5
2560
0
1
False
True
13
False
True
False
True
```

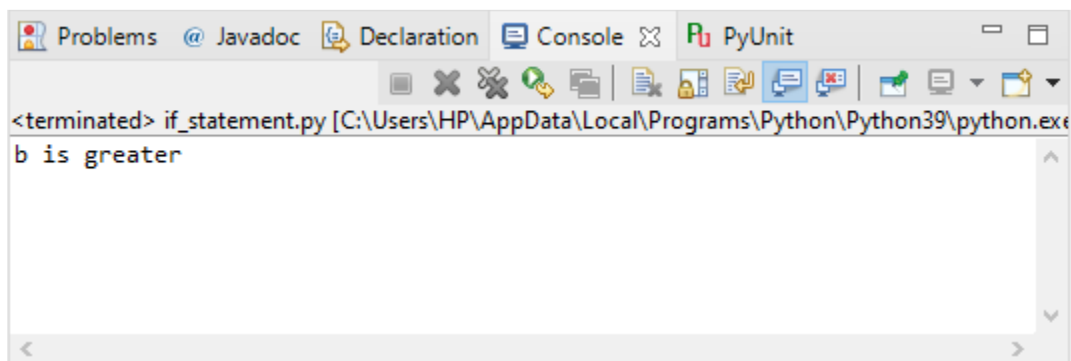
Exercise 4.2.2: The if statement:



The screenshot shows a Python IDE with three tabs: 'formulaus_sh...', 'python_script', and 'if_statement'. The 'if_statement' tab is active, displaying a Python script. The script includes a docstring with the author 'HP' and a date 'Jan 8, 2021'. It then defines two variables, 'a' and 'b', with values 10 and 20 respectively. An if-else statement follows, which prints 'a is greater' if 'a' is greater than 'b', and 'b is greater' otherwise. The line 'print("b is greater")' is currently selected.

```
1 '''  
2 Created on Jan 8, 2021  
3  
4 @author: HP  
5 '''  
6  
7 a=10  
8 b=20  
9  
10 if(a>b):  
11     print("a is greater")  
12 else:  
13     print("b is greater")  
14  
15  
16  
17
```

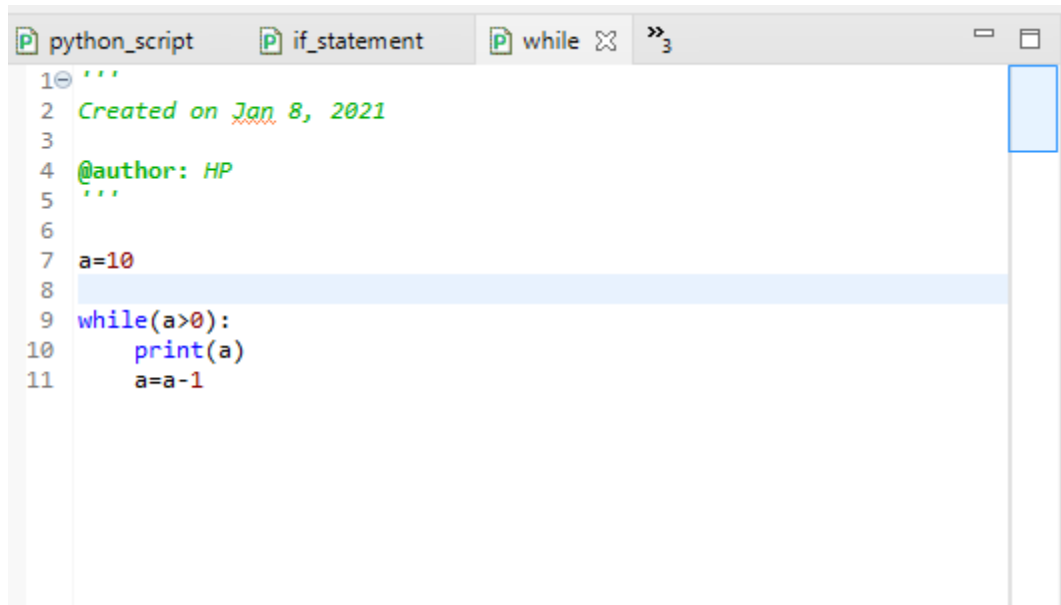
Output:



The screenshot shows the 'Console' tab of the Python IDE. It displays the output of the script: '<terminated> if_statement.py [C:\Users\HP\AppData\Local\Programs\Python\Python39\python.exe]' followed by 'b is greater'. The console also shows standard icons for running, debugging, and other IDE functions.

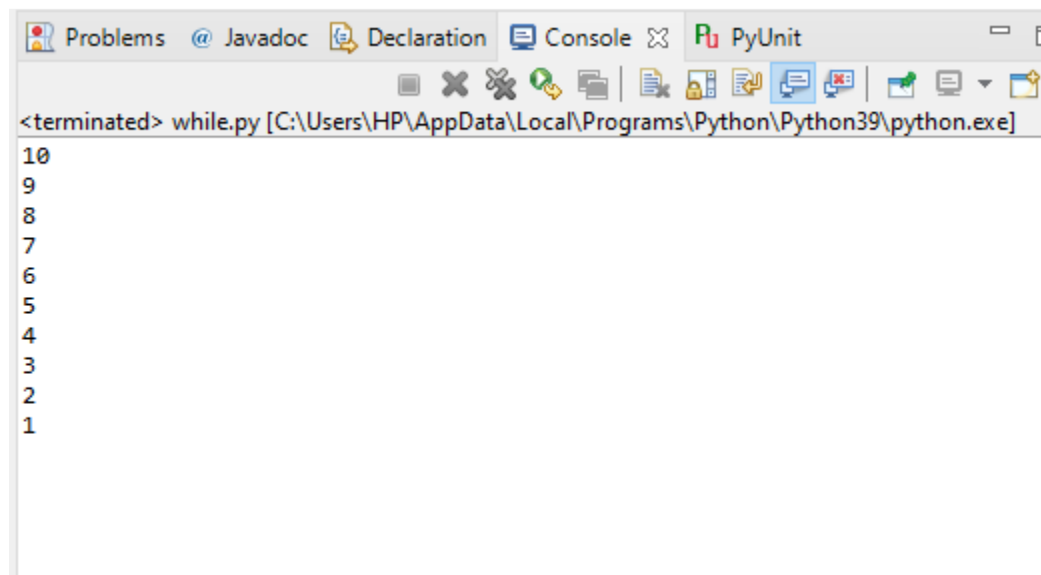
```
<terminated> if_statement.py [C:\Users\HP\AppData\Local\Programs\Python\Python39\python.exe]  
b is greater
```

Exercise 4.2.3: The while Statement



```
python_script  if_statement  while  »3
1 '''
2 Created on Jan 8, 2021
3
4 @author: HP
5 '''
6
7 a=10
8
9 while(a>0):
10     print(a)
11     a=a-1
```

Output:



```
Problems  Javadoc  Declaration  Console  PyUnit
<terminated> while.py [C:\Users\HP\AppData\Local\Programs\Python\Python39\python.exe]
10
9
8
7
6
5
4
3
2
1
```

Conclusion: Python is a language that is remarkably easy to learn, and it can be used as a stepping stone into other programming languages and frameworks. If you're an absolute beginner and this is your first time working with any type of coding language, that's something you definitely want. Python is widely used, including by a number of big companies like Google, Pinterest, Instagram, Disney, Yahoo!, Nokia, IBM, and many others. The Raspberry Pi – which is a mini computer and DIY lover's dream – relies on Python as it's main programming language too. You're probably wondering why either of these things

matter, and that's because once you learn Python, you'll never have a shortage of ways to utilize the skill. Not to mention, since a lot of big companies rely on the language, you can make good money as a Python developer.

1) Python can be used to develop prototypes, and quickly because it is so easy to work with and read.

2) Most automation, data mining, and big data platforms rely on Python. This is because it is the ideal language to work with for general purpose tasks.

3) Python allows for a more productive coding environment than massive languages like C# and Java. Experienced coders tend to stay more organized and productive when working with Python, as well.