

# Python Fundamentals

## Exercise 1

Write Python code that prints your name, student number and email address.

An example runs of the program:

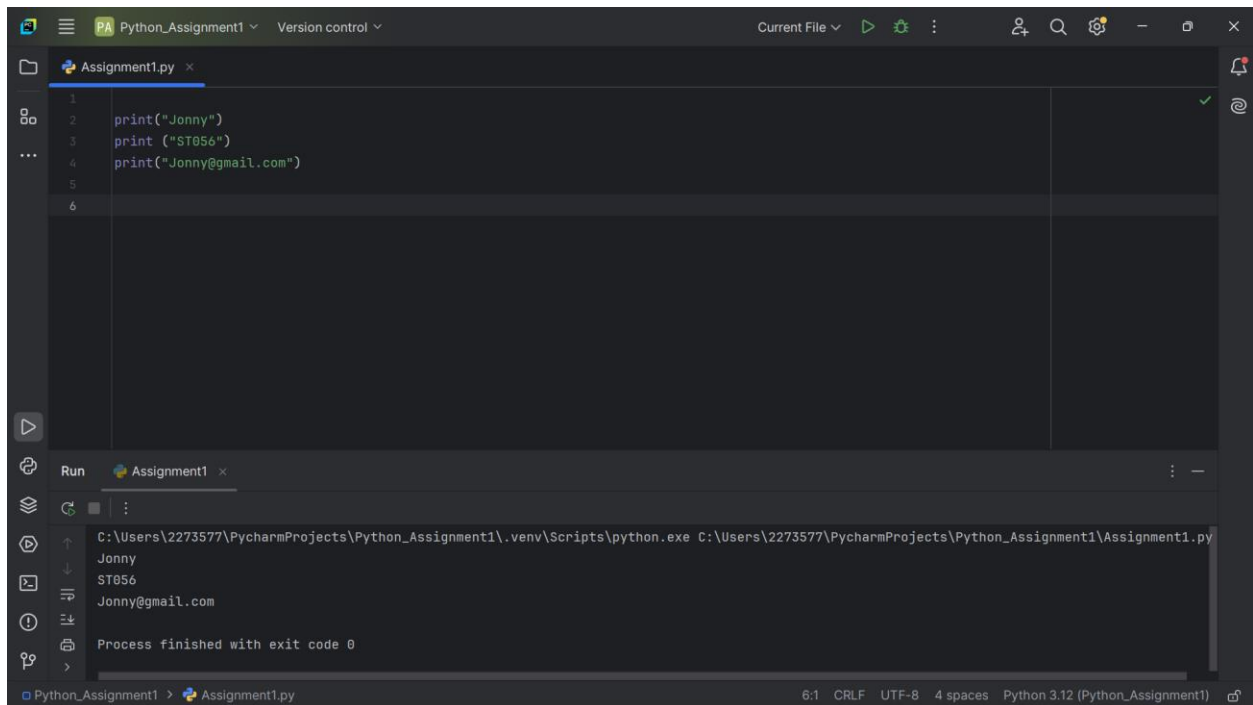
Bob

ST1001

[bob@gmail.com](mailto:bob@gmail.com)

**Solution:** This code prints the name, student number, and email address on separate lines using the `\n` newline character.

```
print("Jonny")
print ("ST056")
print("Jonny@gmail.com")
```



The screenshot shows the PyCharm IDE interface. The main editor window displays a file named `Assignment1.py` with the following Python code:

```
1 print("Jonny")
2
3 print ("ST056")
4 print("Jonny@gmail.com")
5
6
```

Below the editor, the `Run` console is visible, showing the output of the script:

```
Run Assignment1 x
C:\Users\2273577\PycharmProjects\Python_Assignment1\.venv\Scripts\python.exe C:\Users\2273577\PycharmProjects\Python_Assignment1\Assignment1.py
Jonny
ST056
Jonny@gmail.com
Process finished with exit code 0
```

The status bar at the bottom indicates the file encoding is UTF-8, the line ending is CRLF, and the Python version is 3.12.

## Exercise 2

Write Python code that prints your name, student number and email address using escape sequences.

An example runs of the program:

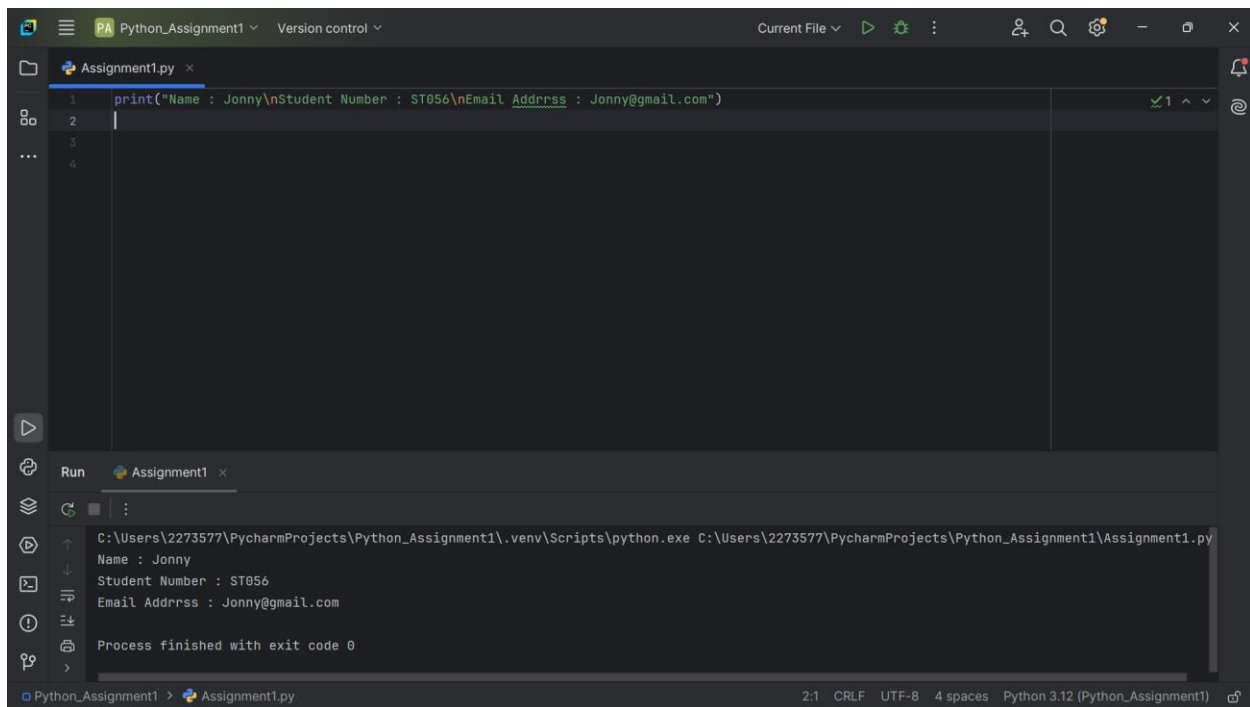
Bob

ST1001

bob@gmail.com

**Solution:** This code uses the `\n` escape sequence to print each piece of information on a new line.

```
print("Name : Jonny\nStudent Number : ST056\nEmail Addrsss :  
Jonny@gmail.com")
```



The screenshot shows the PyCharm IDE interface. The top toolbar includes icons for file operations, version control, and running code. The main editor window displays a file named `Assignment1.py` with the following Python code on line 1:

```
print("Name : Jonny\nStudent Number : ST056\nEmail Addrsss : Jonny@gmail.com")
```

Below the editor, the 'Run' console shows the output of the program:

```
Run Assignment1 x
C:\Users\2273577\PycharmProjects\Python_Assignment1\.venv\Scripts\python.exe C:\Users\2273577\PycharmProjects\Python_Assignment1\Assignment1.py
Name : Jonny
Student Number : ST056
Email Addrsss : Jonny@gmail.com
Process finished with exit code 0
```

The status bar at the bottom indicates the file encoding is UTF-8, uses 4 spaces for indentation, and is running Python 3.12.

### Exercise 3

Write Python code that add, subtract, multiply and divide the two numbers. You can use the two numbers 14 and 7. An example run of the program:

14 + 7 = 21

14 \* 7 = 98

14 - 7 = 7

14 / 7 = 2

**Solution:** This code defines two numbers, performs the four basic arithmetic operations, and prints the results using formatted strings.

```
num1=14
```

```
num2=7
```

```
addition=num1 + num2
```

```
subtraction=num1 - num2
```

```
multiplication=num1 * num2
```

```
devision=num1 / num2
```

```
print(f"{num1}+{num2}={addition}")
```

```
print(f"{num1}-{num2}={subtraction}")
```

```
print(f"{num1}*{num2}={multiplication}")
```

```
print(f"{num1}/{num2}={devision}")
```

The image shows a PyCharm IDE window with a dark theme. The top toolbar includes icons for file operations, a search icon, and a run icon. The main editor displays a file named 'Assignment1.py' with the following Python code:

```
1 num1=14
2 num2=7
3
4 addition=num1 + num2
5 subtraction=num1 - num2
6 multiplication=num1 * num2
7 devision=num1 / num2
8
9 print(f"{num1}+{num2}={addition}")
10 print(f"{num1}-{num2}={subtraction}")
11 print(f"{num1}*{num2}={multiplication}")
12 print(f"{num1}/{num2}={devision}")
13
14
15
```

Below the editor is a 'Run' window showing the execution of 'Assignment1'. The command line shows the path to the Python interpreter and the script file. The output displays the results of the arithmetic operations:

```
C:\Users\2273577\PycharmProjects\Python_Assignment1\.venv\Scripts\python.exe C:\Users\2273577\PycharmProjects\Python_Assignment1\Assignment1.py
14+7=21
14-7=7
14*7=98
14/7=2.0
Process finished with exit code 0
```

The status bar at the bottom indicates the file encoding is UTF-8, uses 4 spaces for indentation, and is running Python 3.12.

## Exercise 4

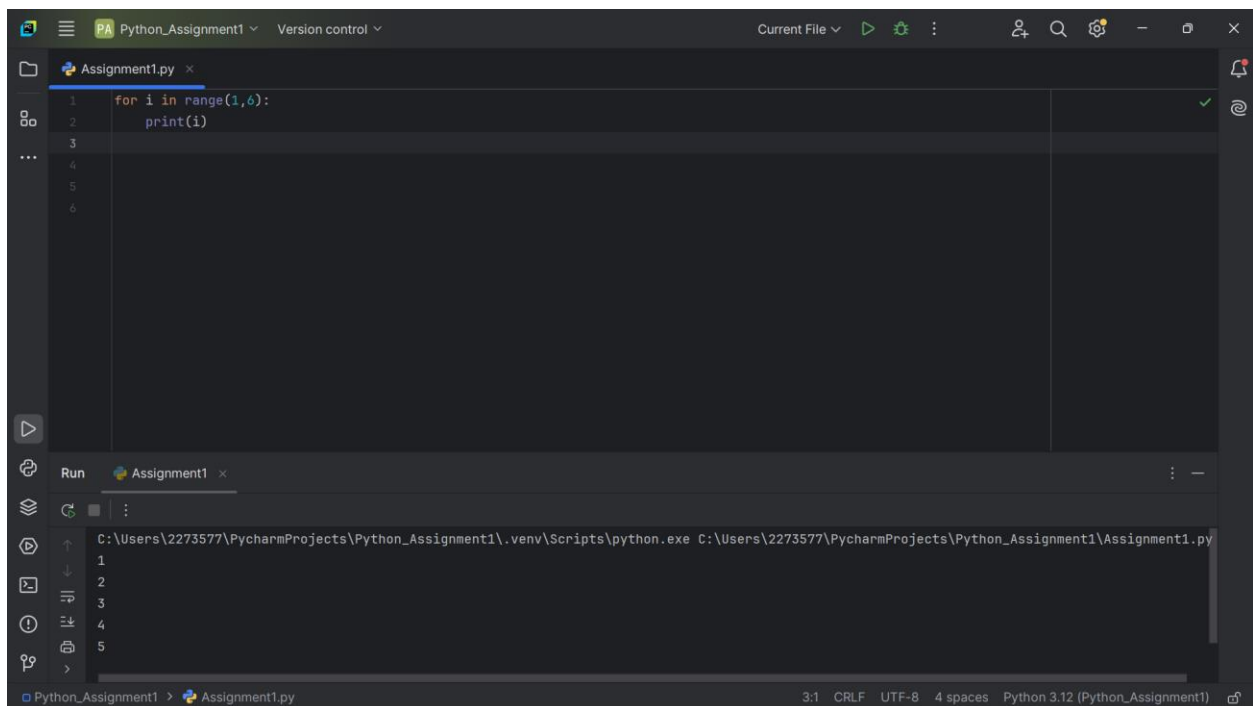
Write Python code that displays the numbers from 1 to 5 as steps.

An example runs of the program:

1  
2  
3  
4  
5

**Solution:** This code uses a for loop to iterate through the range of numbers from 1 to 5 and prints each number on a new line.

```
for i in range(1,6):  
    print(i)
```



The screenshot shows the PyCharm IDE interface. The top toolbar includes icons for file operations, a search icon, and a play button. The main editor window displays a file named 'Assignment1.py' with the following code:

```
1 for i in range(1,6):  
2     print(i)  
3  
4  
5  
6
```

Below the editor is a 'Run' window showing the execution command and output:

```
Run Assignment1 x  
C:\Users\2273577\PycharmProjects\Python_Assignment1\.venv\Scripts\python.exe C:\Users\2273577\PycharmProjects\Python_Assignment1\Assignment1.py  
1  
2  
3  
4  
5
```

The status bar at the bottom indicates the file encoding is UTF-8, uses 4 spaces for indentation, and is running Python 3.12.

## Exercise 5

Write Python code that outputs the following sentence (including the quotation marks and line break) to the screen:

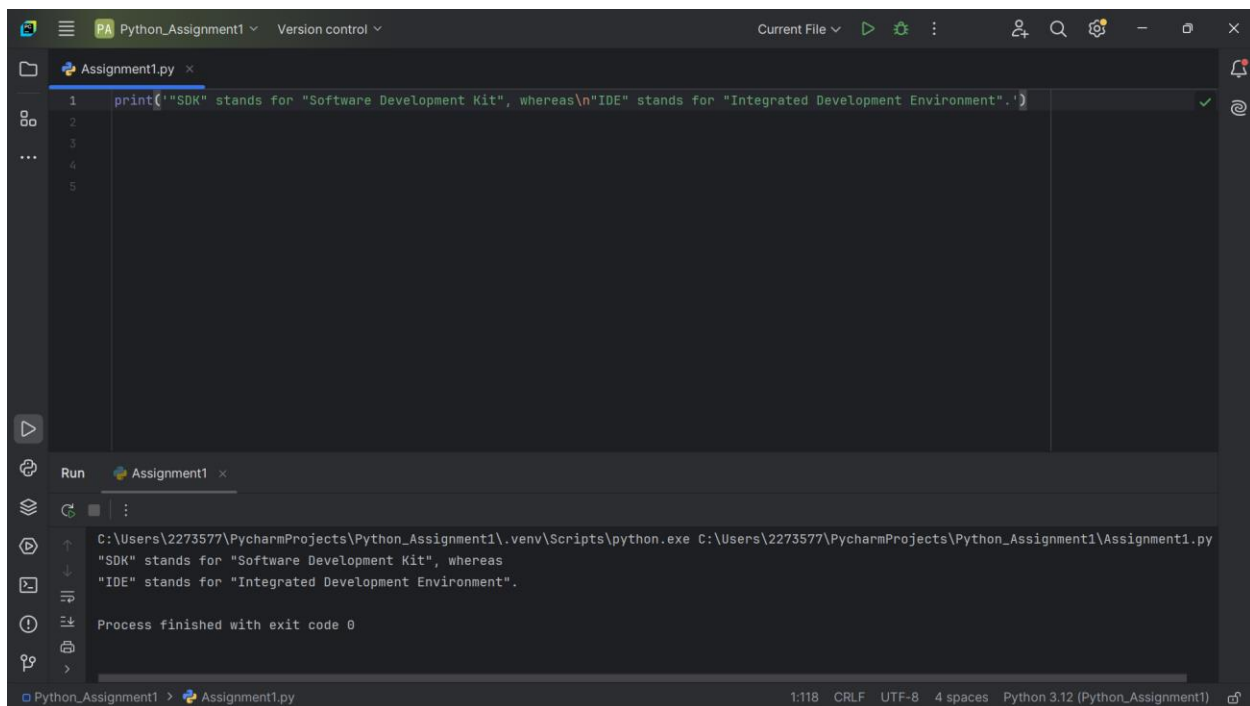
An example runs of the program:

"SDK" stands for "Software Development Kit", whereas

"IDE" stands for "Integrated Development Environment".

**Solution:** This code uses escape sequences `\n` for the line break to format the output correctly.

**`print("SDK" stands for "Software Development Kit", whereas\n"IDE" stands for "Integrated Development Environment".)`**



The screenshot shows the PyCharm IDE interface. The top toolbar includes icons for file operations, running, and debugging. The main editor window displays a file named `Assignment1.py` with the following code:

```
1 print("SDK" stands for "Software Development Kit", whereas\n"IDE" stands for "Integrated Development Environment".)
```

Below the editor, the `Run` console is visible, showing the execution of the code. The output is:

```
C:\Users\2273577\PycharmProjects\Python_Assignment1\.venv\Scripts\python.exe C:\Users\2273577\PycharmProjects\Python_Assignment1\Assignment1.py
"SDK" stands for "Software Development Kit", whereas
"IDE" stands for "Integrated Development Environment".
Process finished with exit code 0
```

The status bar at the bottom indicates the file encoding is UTF-8, the line length is 118, and the Python version is 3.12.

## Exercise 6

Practice and check the output

```
print("python is an \"awesome\" language.")
print("python\n\t2023")
print('I\'m from Entri.\b')
print("\65")
print("\x65")
print("Entri", "2023", sep="\n")
print("Entri", "2023", sep="\b")
print("Entri", "2023", sep="*", end="\b\b\b\b")
```

**Solution:** The backslash (\) is used to escape the double quotes within the string.

**print("python is an \"awesome\" language.")**

**Solution:** The \n creates a new line, and \t adds a tab space.

**print("python\n\t2023")**

**Solution:** The backslash (\) is used to escape the single quote within the string. The \b is a backspace character, but it doesn't have a visible effect here.

**print('I\'m from Entri.\b')**

**Solution:** \65 is an octal escape sequence representing the character '5'.

**print("\65")**

**Solution:** \x65 is a hexadecimal escape sequence representing the character 'e'.

**print("\x65")**

**Solution:** The sep parameter specifies the separator between the arguments, which is a newline character here.

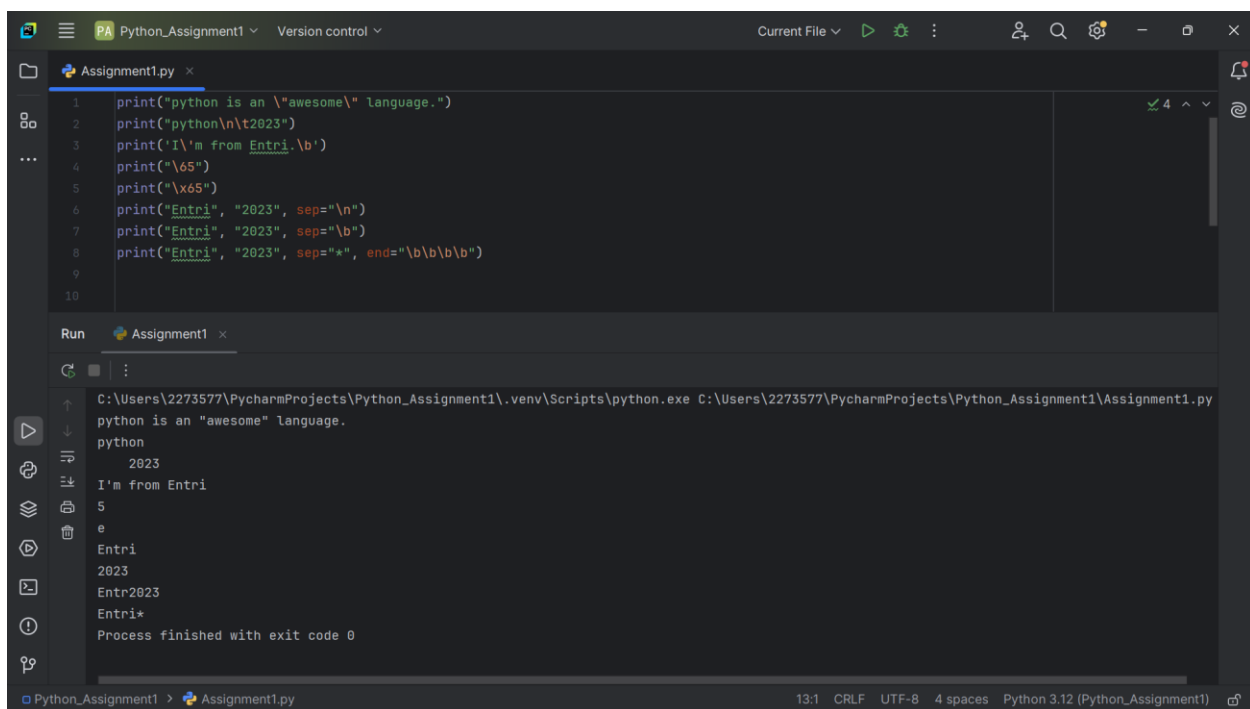
**print("Entri", "2023", sep="\n")**

**Solution:** The sep parameter specifies the separator between the arguments, which is a backspace character here.

```
print("Entri", "2023", sep="\b")
```

**Solution:** The sep parameter specifies the separator between the arguments, which is an asterisk (\*) here. The end parameter specifies what to print at the end, which is four backspace characters here.

```
print("Entri", "2023", sep="*", end="\b\b\b\b")
```



The screenshot shows the PyCharm IDE interface. The top toolbar includes icons for file operations, running, and debugging. The main editor window displays a file named 'Assignment1.py' with the following code:

```
1 print("python is an \"awesome\" language.")
2 print("python\n\t2023")
3 print('I\'m from Entri.\b')
4 print("\x65")
5 print("\x65")
6 print("Entri", "2023", sep="\n")
7 print("Entri", "2023", sep="\b")
8 print("Entri", "2023", sep="*", end="\b\b\b\b")
9
10
```

Below the editor is the 'Run' console, which shows the output of the script:

```
Run Assignment1 x
C:\Users\2273577\PycharmProjects\Python_Assignment1\.venv\Scripts\python.exe C:\Users\2273577\PycharmProjects\Python_Assignment1\Assignment1.py
python is an "awesome" language.
python
    2023
I'm from Entri
5
e
Entri
2023
Entr2023
Entri*
Process finished with exit code 0
```

The status bar at the bottom indicates the file encoding is UTF-8, the line ending is CRLF, and the Python version is 3.12.



## Exercise 7

Define the variables below. Print the types of each variable. What is the sum of your variables? (Hint: use a type conversion function.) What datatype is the sum?

```
num=23
```

```
textnum="57"
```

```
decimal=98.3
```

**Solution:** The sum of the variables is calculated by converting var3 to an integer, and the datatype of the sum is float.

```
a=10
```

```
b=65.6
```

```
c="55"
```

```
print(type(a))
```

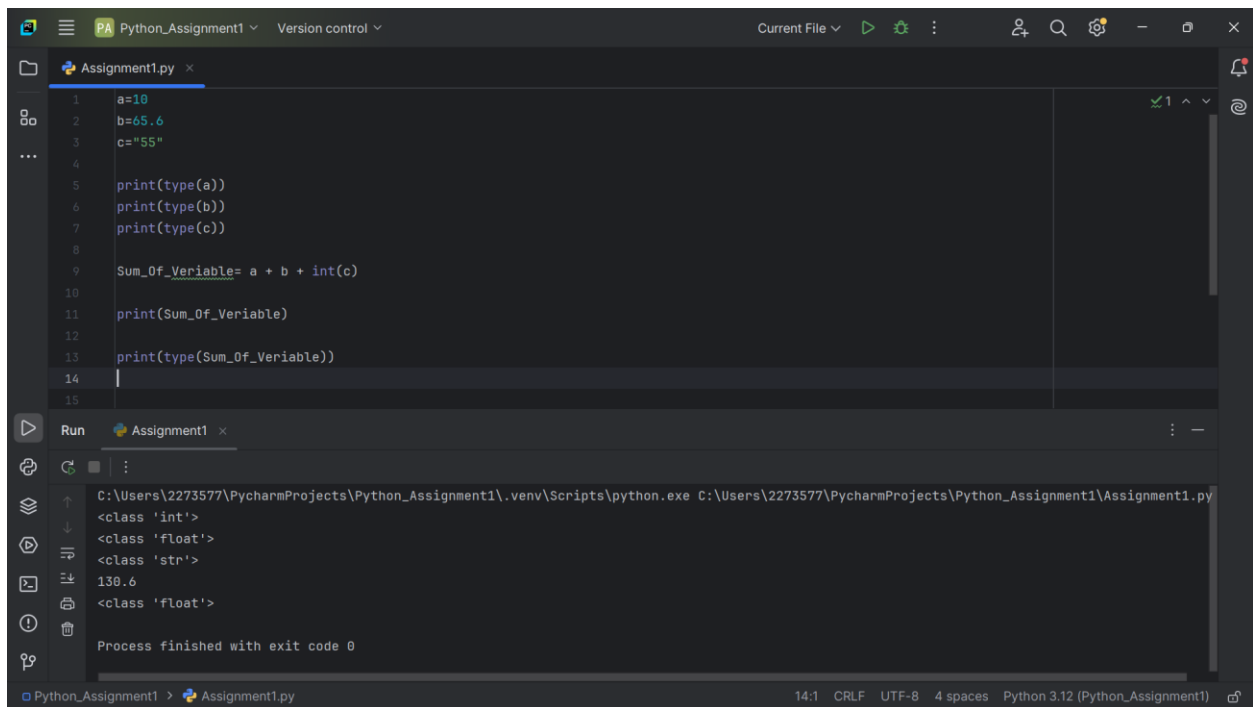
```
print(type(b))
```

```
print(type(c))
```

```
Sum_Of_Variable= a + b + int(c)
```

```
print(Sum_Of_Variable)
```

```
print(type(Sum_Of_Variable))
```



## Exercise 8

calculate the number of minutes in a year using variables for each unit of time. print a statement that describes what your code does also. Create three variables to store no of days in a year, minute in a hour, hours in a day, then calculate the total minutes in a year and print the values

(hint) total number of minutes in an year =No.of days in an year \* Hours in a day \* Minutes in an hour

**Solution:** This code calculates the total number of minutes in a year by multiplying the number of days in a year, hours in a day, and minutes in an hour.

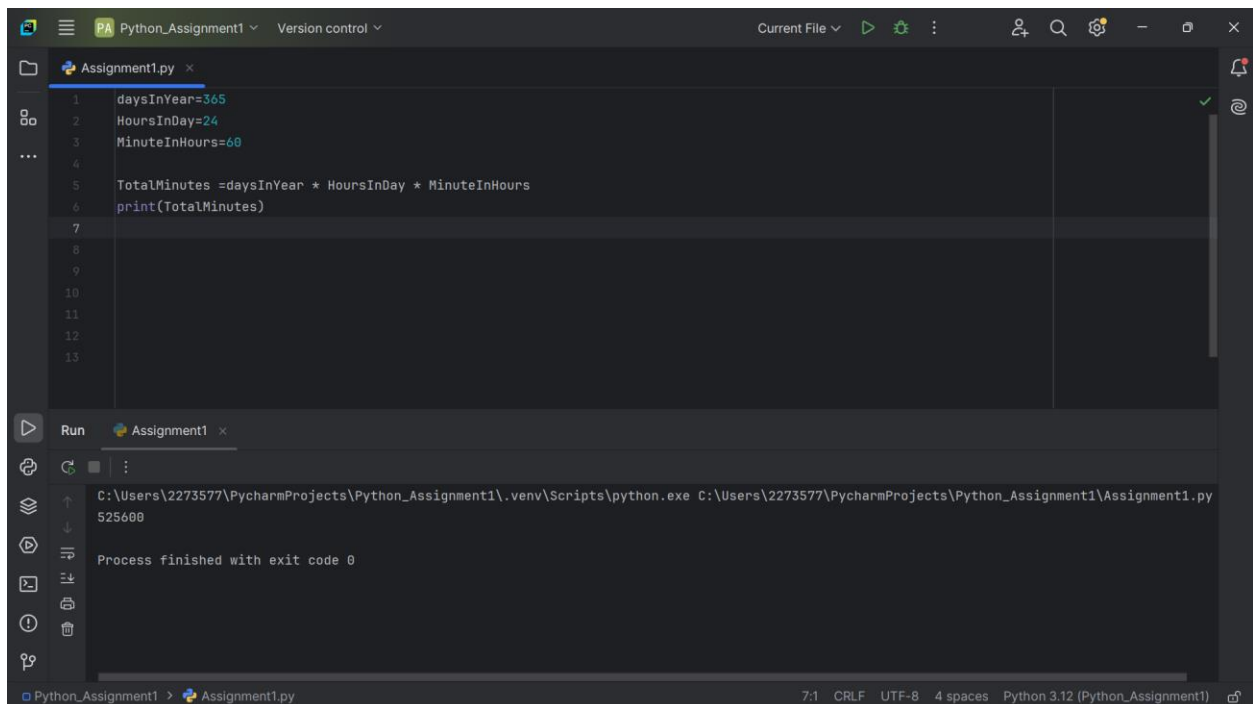
**daysInYear=365**

**HoursInDay=24**

**MinuteInHours=60**

**TotalMinutes =daysInYear \* HoursInDay \* MinuteInHours**

**print(TotalMinutes)**



The screenshot shows the PyCharm IDE interface. The top toolbar includes icons for file operations, running, and debugging. The main editor window displays a file named 'Assignment1.py' with the following code:

```
1 daysInYear=365
2 HoursInDay=24
3 MinuteInHours=60
4
5 TotalMinutes =daysInYear * HoursInDay * MinuteInHours
6 print(TotalMinutes)
7
8
9
10
11
12
13
```

Below the editor is the 'Run' console. It shows the command executed: `C:\Users\2273577\PycharmProjects\Python_Assignment1\.venv\Scripts\python.exe C:\Users\2273577\PycharmProjects\Python_Assignment1\Assignment1.py`. The output is `525600`. Below the output, it states 'Process finished with exit code 0'.

The bottom status bar indicates the file encoding is UTF-8, the line length is 7:1, and the Python version is 3.12.

## Exercise 9

Write Python code that asks the user to enter his/her name and then output/prints his/her name with a greeting.

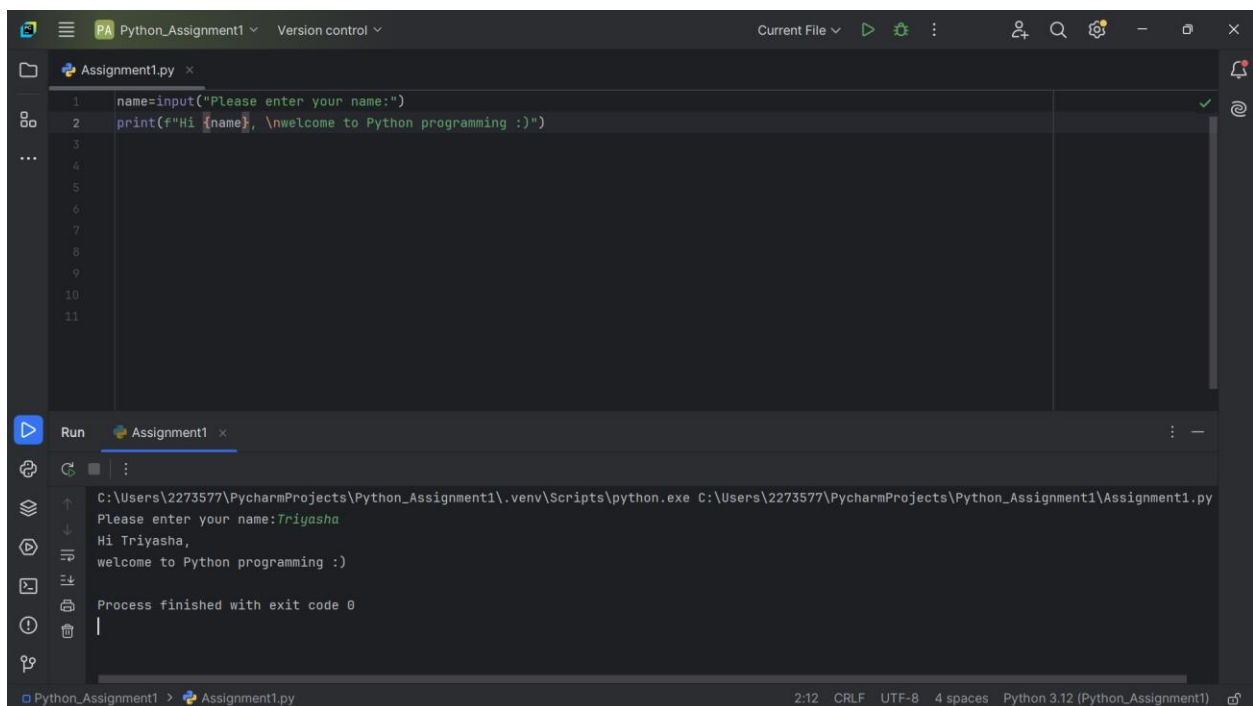
An example runs of the program:

Please enter you name: Tony

Hi Tony, welcome to Python programming :)

**Solution:** This code asks the user for their name and prints a personalized greeting.

```
name=input("Please enter your name:")  
print(f"Hi {name}, \nwelcome to Python programming :)")
```



The screenshot shows the PyCharm IDE interface. The top toolbar includes icons for file operations, a search icon, and a run button. The main editor window displays a file named 'Assignment1.py' with the following code:

```
1 name=input("Please enter your name:")  
2 print(f"Hi {name}, \nwelcome to Python programming :)")  
3  
4  
5  
6  
7  
8  
9  
10  
11
```

Below the editor is a 'Run' window titled 'Assignment1'. It shows the command executed: `C:\Users\2273577\PycharmProjects\Python_Assignment1\.venv\Scripts\python.exe C:\Users\2273577\PycharmProjects\Python_Assignment1\Assignment1.py`. The output of the program is displayed as follows:

```
Please enter your name:Triyasha  
Hi Triyasha,  
welcome to Python programming :)  
  
Process finished with exit code 0
```

The status bar at the bottom indicates the file encoding is UTF-8, the line ending is CRLF, and the Python version is 3.12.

## Exercise 10

Name your file: PoundsToDollars.py

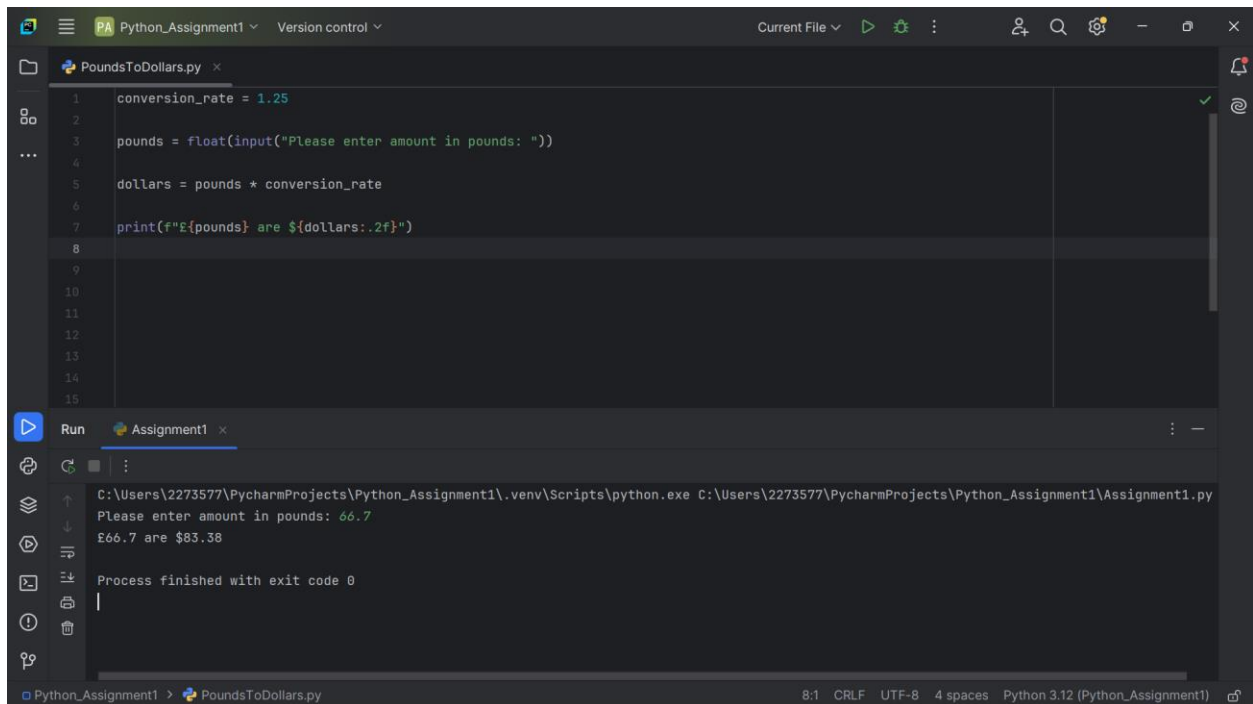
Write a program that asks the user to enter an amount in pounds (£) and the program calculates and converts an amount in dollar (\$)

An example runs of the program:

Please enter amount in pounds: XXX

£ XXX are \$ XXX

**Solution:** This code converts an amount entered in pounds to dollars using a predefined conversion rate.



The screenshot shows a PyCharm IDE window with a file named `PoundsToDollars.py` open. The code in the editor is as follows:

```
1 conversion_rate = 1.25
2
3 pounds = float(input("Please enter amount in pounds: "))
4
5 dollars = pounds * conversion_rate
6
7 print(f"£{pounds} are ${dollars:.2f}")
8
9
10
11
12
13
14
15
```

Below the editor, the 'Run' window shows the execution of the program. The command prompt displays the following output:

```
C:\Users\2273577\PycharmProjects\Python_Assignment1\.venv\Scripts\python.exe C:\Users\2273577\PycharmProjects\Python_Assignment1\Assignment1.py
Please enter amount in pounds: 66.7
£66.7 are $83.38
Process finished with exit code 0
```

The status bar at the bottom indicates the file encoding is UTF-8, the line ending is CRLF, and the Python version is 3.12.

```
conversion_rate = 1.25
```

```
pounds = float(input("Please enter amount in pounds: "))
```

```
dollars = pounds * conversion_rate
```

```
print(f"£{pounds} are ${dollars:.2f}")
```

