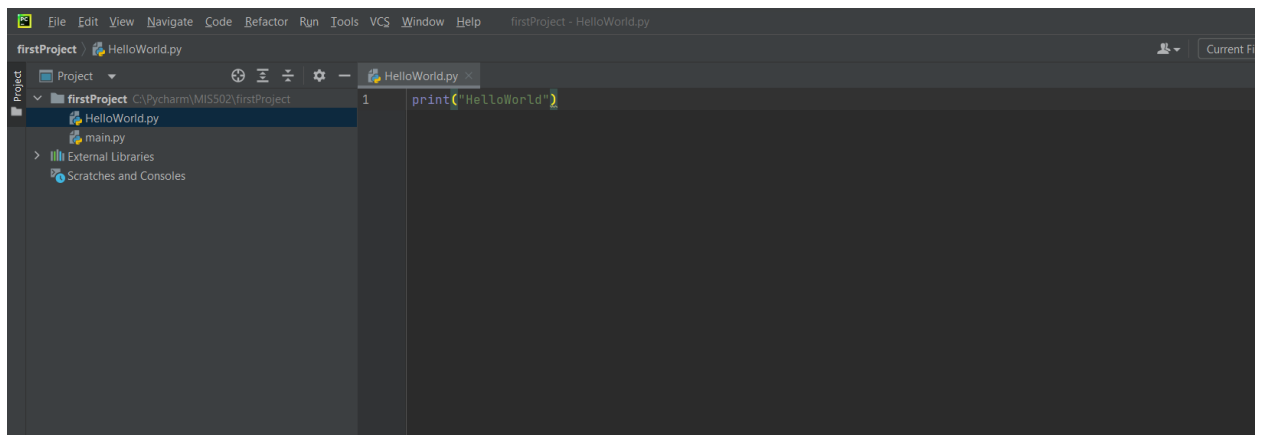
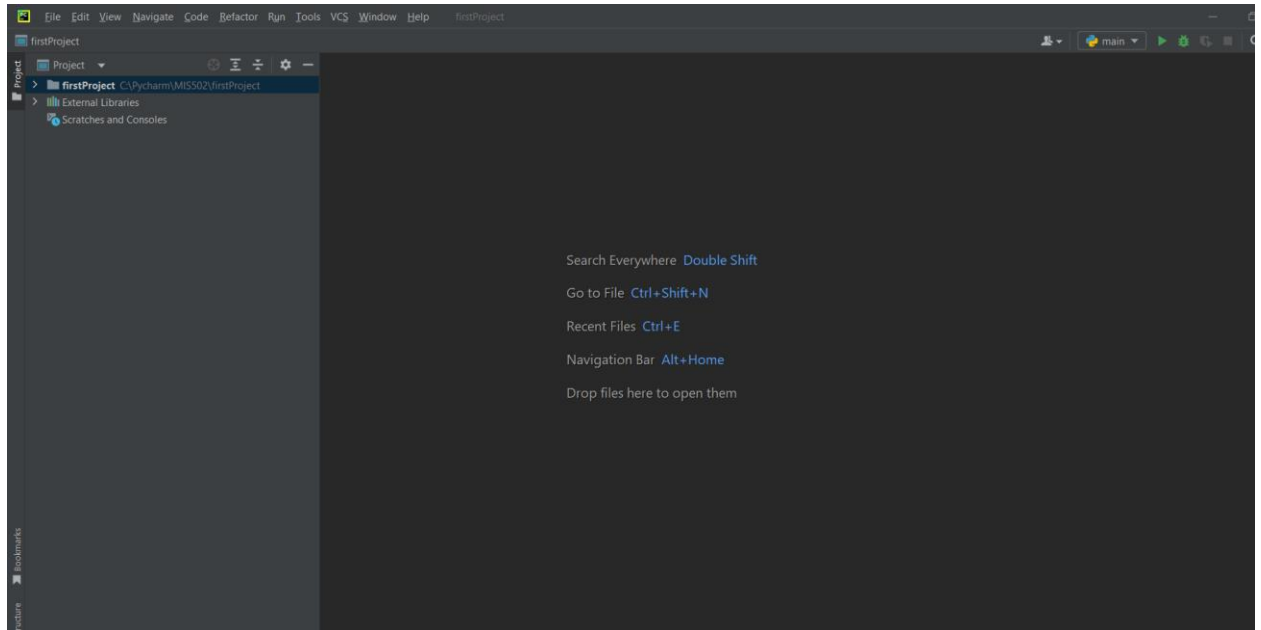
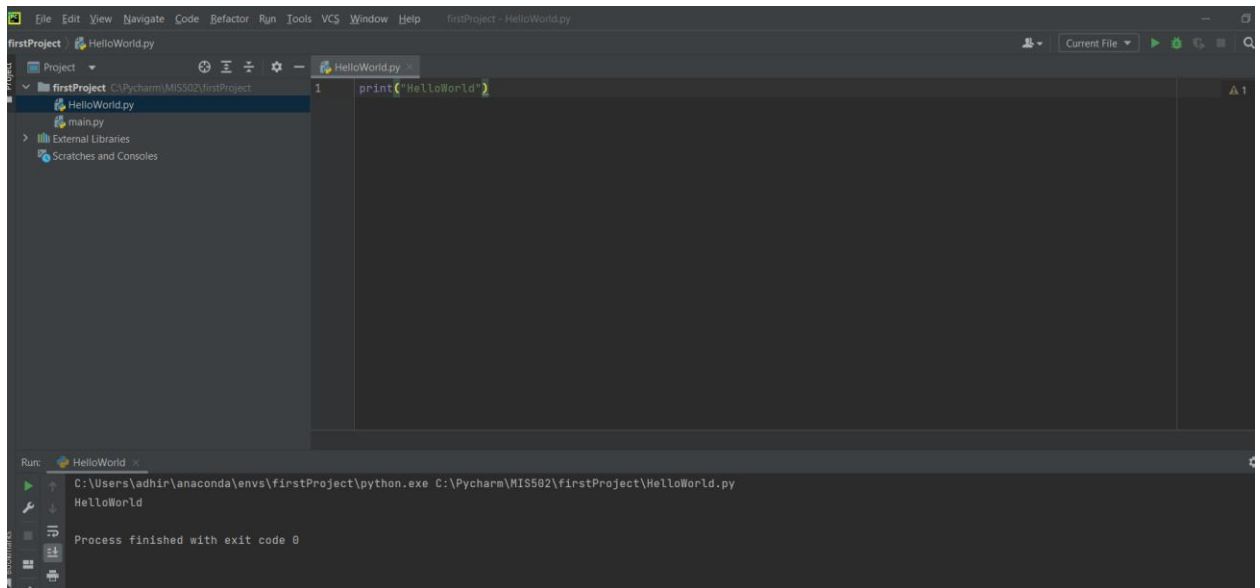


Tutorial 5 :

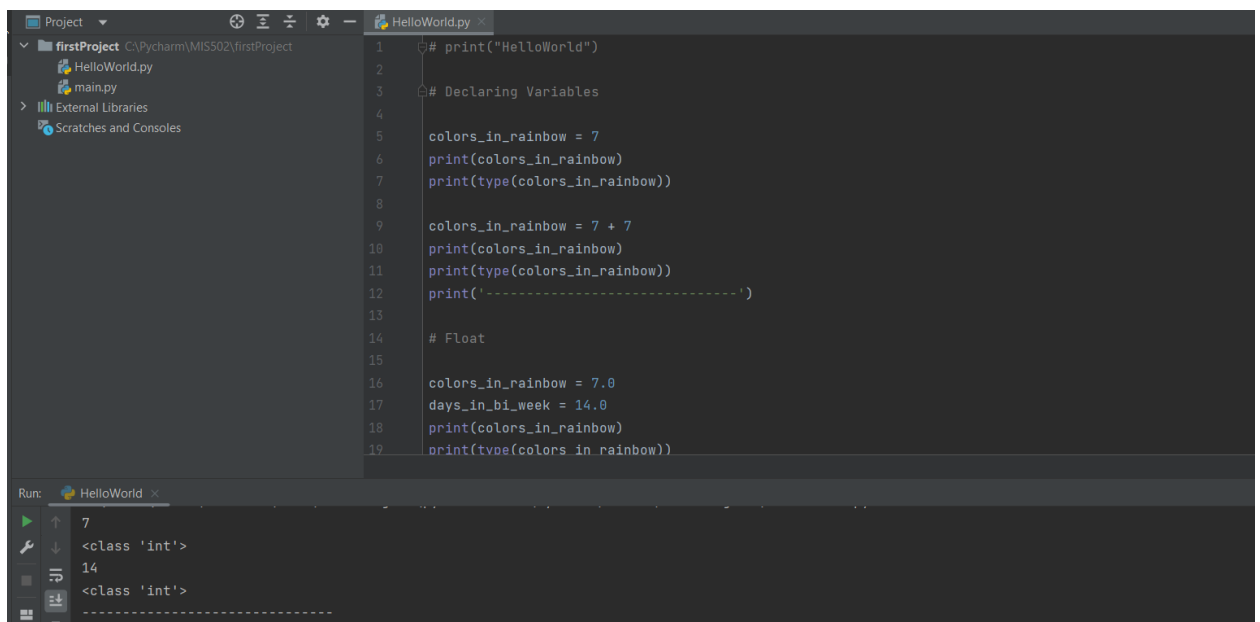
1. Familiar with Pycharm



HelloWorld.py



2. Declaring variables in Python



#Float

```
13
14 # Float
15
16 colors_in_rainbow = 7.0
17 days_in_bi_week = 14.0
18 print(colors_in_rainbow)
19 print(type(colors_in_rainbow))
20 colors_per_day = days_in_bi_week / colors_in_rainbow
21 print(colors_per_day)
22 print(type(colors_per_day))
23 print('-----')
24 # Booleans
25
26 flag = True
27 print('Flag is :', flag)
28 flag = days_in_bi_week < colors_in_rainbow
29 print('Flag is now :', flag)
30
31
```

Run: HelloWorld

C:\Users\adhir\anaconda\envs\firstProject\python.exe C:\Pycharm\MIS502\firstProject\HelloWorld.py

7.0
<class 'float'>
2.0
<class 'float'>

#Boolean

```
14 # Float
15
16 colors_in_rainbow = 7.0
17 days_in_bi_week = 14.0
18 # print(colors_in_rainbow)
19 # print(type(colors_in_rainbow))
20 colors_per_day = days_in_bi_week / colors_in_rainbow
21 # print(colors_per_day)
22 # print(type(colors_per_day))
23 # Booleans
24
25 flag = True
26 print('Flag is :', flag)
27 flag = days_in_bi_week < colors_in_rainbow
28 print('Flag is now :', flag)
29 print('-----')
30
31
32 def factorial(n):
```

Run: HelloWorld

C:\Users\adhir\anaconda\envs\firstProject\python.exe C:\Pycharm\MIS502\firstProject\HelloWorld.py

Flag is : True
Flag is now : False

#Strings

potter_enemies = 9+1

name = 'Harry'

last_name = 'Potter'

passcode = 'Platform@94/3'

address = 'hogwarts'

```
level = "  
location = " "  
no_of_enemies = "10"  
  
print(potter_enemies)  
print(type(potter_enemies))  
print(name)  
print(type(name))  
print(last_name)  
print(type(last_name))  
print(passcode)  
print(type(passcode))  
print(address)  
print(type(address))  
print(level)  
print(type(level))  
print(location)  
print(type(location))  
equality = (potter_enemies == no_of_enemies)  
print(equality)  
print(type(equality))
```

Output:

```
10
<class 'int'>
Harry
<class 'str'>
Potter
<class 'str'>
Platform@94/3
<class 'str'>
hogwarts
<class 'str'>

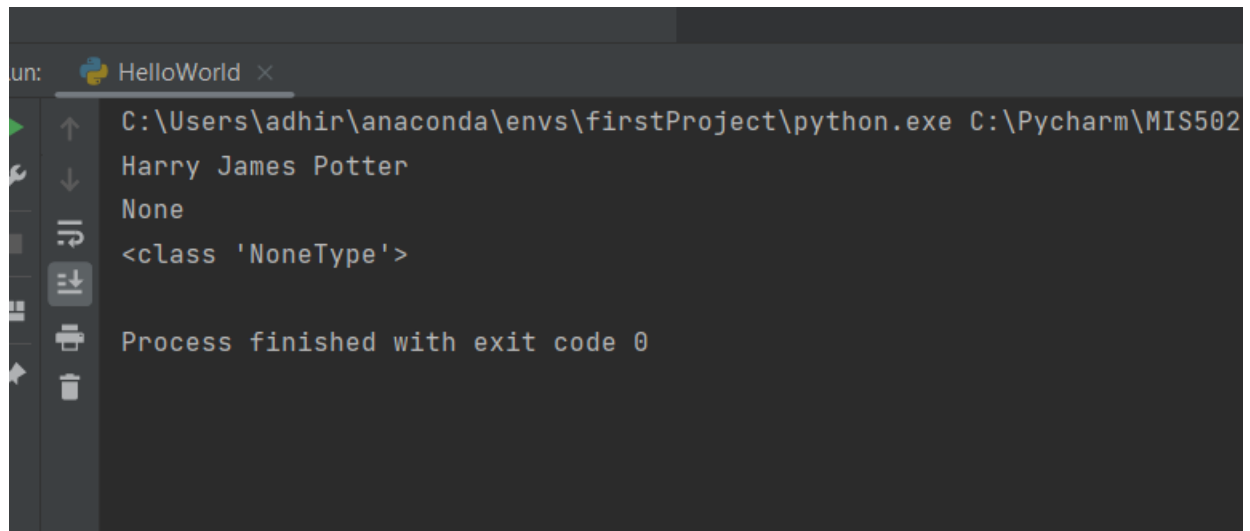
<class 'str'>

<class 'str'>
False
<class 'bool'>

Process finished with exit code 0
```

#None :

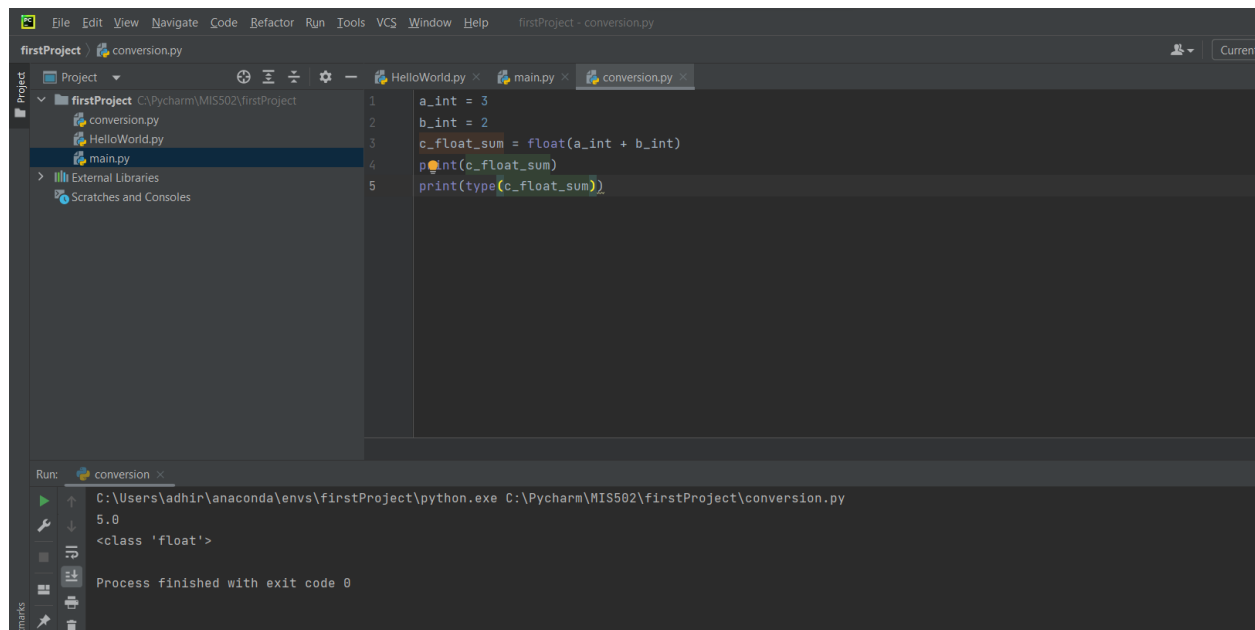
```
name = 'Harry '
middle_name = 'James '
last_name = 'Potter'
fullname = name+middle_name+last_name
print(fullname)
middle_name = None
print(middle_name)
print(type(middle_name))
```



```
Run: HelloWorld ×
C:\Users\adhir\anaconda\envs\firstProject\python.exe C:\Pycharm\MIS502
Harry James Potter
None
<class 'NoneType'>
Process finished with exit code 0
```

Variable conversion :

Int to float



```
File Edit View Navigate Code Refactor Run Tools VCS Window Help firstProject - conversion.py
firstProject conversion.py
Project
  firstProject C:\Pycharm\MIS502\firstProject
    conversion.py
    HelloWorld.py
    main.py
  External Libraries
  Scratches and Consoles
1 a_int = 3
2 b_int = 2
3 c_float_sum = float(a_int + b_int)
4 print(c_float_sum)
5 print(type(c_float_sum))

Run: conversion ×
C:\Users\adhir\anaconda\envs\firstProject\python.exe C:\Pycharm\MIS502\firstProject\conversion.py
5.0
<class 'float'>
Process finished with exit code 0
```

Float to int

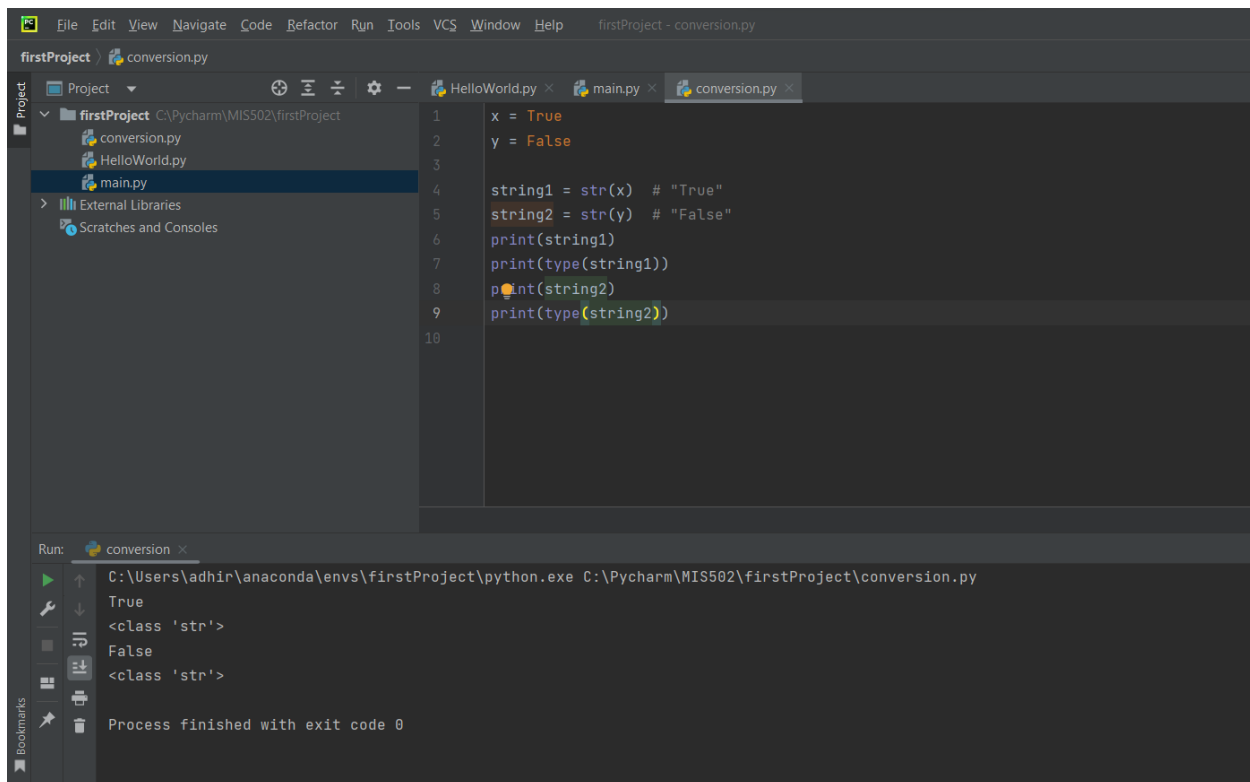
```
a_float = 3.0
b_float = 2.0
answer = int(a_float+b_float)

print(answer)
print(type(answer))
```

```
5
<class 'int'>

Process finished with exit code 0
```

Boolean to string



The screenshot shows the PyCharm IDE interface. The top toolbar includes menus like File, Edit, View, Navigate, Code, Refactor, Run, Tools, VCS, Window, and Help. The project explorer on the left shows a project named 'firstProject' with files 'conversion.py', 'HelloWorld.py', and 'main.py'. The main editor displays the code in 'conversion.py':

```
1 x = True
2 y = False
3
4 string1 = str(x) # "True"
5 string2 = str(y) # "False"
6 print(string1)
7 print(type(string1))
8 print(string2)
9 print(type(string2))
10
```

The Run console at the bottom shows the execution output for 'conversion.py':

```
Run: conversion
C:\Users\adhir\anaconda\envs\firstProject\python.exe C:\Pycharm\MIS502\firstProject\conversion.py
True
<class 'str'>
False
<class 'str'>

Process finished with exit code 0
```

Int and float to string

The screenshot shows the PyCharm IDE with a project named 'firstProject'. The file explorer on the left shows the project structure: 'firstProject' (containing 'conversion.py', 'HelloWorld.py', and 'main.py'), 'External Libraries', and 'Scratches and Consoles'. The 'conversion.py' file is open in the editor, showing the following code:

```
1 num = 123
2
3 float_num = 123.456
4
5
6 str_num = str(num)
7 str_float = str(float_num)
8
9 print(str_num)
10 print(type(str_num))
11 print(str_float)
12 print(type(str_float))
```

The Run console at the bottom shows the output of the script:

```
Run: conversion
C:\Users\adhir\anaconda\envs\firstProject\python.exe C:\Pycharm\MIS502\firstProject\conversion.py
123
<class 'str'>
123.456
<class 'str'>
Process finished with exit code 0
```

String to int and float

The screenshot shows the PyCharm IDE with the same project 'firstProject'. The file explorer on the left shows the project structure: 'firstProject' (containing 'conversion.py', 'HelloWorld.py', and 'main.py'), 'External Libraries', and 'Scratches and Consoles'. The 'conversion.py' file is open in the editor, showing the following code:

```
1 str_num = "123"
2 num = int(str_num)
3 print(num)
4 print(type(num))
5
6 str_float = "99.99"
7 converted = float(str_float)
8 print(converted)
9 print(type(converted))
10
```

The Run console at the bottom shows the output of the script:

```
Run: conversion
C:\Users\adhir\anaconda\envs\firstProject\python.exe C:\Pycharm\MIS502\firstProject\conversion.py
123
<class 'int'>
99.99
<class 'float'>
Process finished with exit code 0
```

Collections in python :


```

# List
my_list = [1, 2, 3, 'four', 'five']
my_list.append(6)
print(my_list)
print(type(my_list))

# Tuple
my_tuple = (1, 2, 3, 'four', 'five')
print(my_tuple[3])
print(type(my_tuple))

# Set
my_set = {1, 2, 3, 'four', 'five'}
my_set.add(6)
print(my_set)
print(type(my_set))

# Dictionary
my_dict = {'name': 'harry', 'age': 30, 'city': 'New York'}
my_dict['age'] = 31
print(my_dict)
print(type(my_dict))

```

Output:

```

[1, 2, 3, 'four', 'five', 6]
<class 'list'>
four
<class 'tuple'>
{1, 2, 3, 6, 'four', 'five'}
<class 'set'>
{'name': 'harry', 'age': 31, 'city': 'New York'}
<class 'dict'>

```

Process finished with exit code 0

Operations on collection

```
my_list = [1, 2, 3, 4, 5]
print(my_list[0])
print(my_list[1:4])
my_list.append(6)
print(my_list)
my_list.remove(3)
print(my_list)

my_tuple = (1, 2, 3, 4, 5)
print(my_tuple[0])
print(my_tuple[1:4])

my_set = {1, 2, 3, 4, 5}
my_set.add(6)
print(my_set)
my_set.remove(3)
print(my_set)
print(3 in my_set)

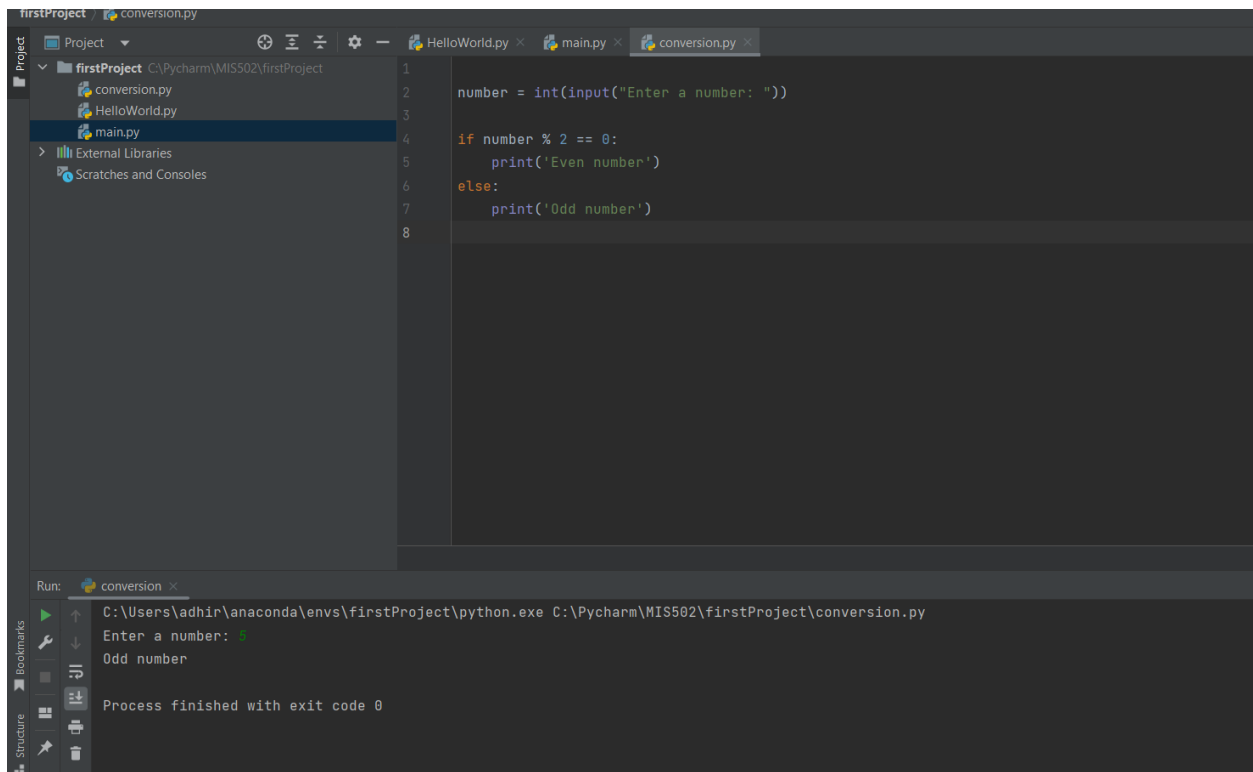
my_dict = {'apple': 3, 'banana': 2, 'orange': 4}
print(my_dict['apple'])
my_dict['pear'] = 1
print(my_dict)
del my_dict['banana']
print(my_dict)
```

output :

```
1
[2, 3, 4]
[1, 2, 3, 4, 5, 6]
[1, 2, 4, 5, 6]
1
(2, 3, 4)
{1, 2, 3, 4, 5, 6}
{1, 2, 4, 5, 6}
False
3
{'apple': 3, 'banana': 2, 'orange': 4, 'pear': 1}
{'apple': 3, 'orange': 4, 'pear': 1}

Process finished with exit code 0
```

If statement :



The screenshot shows the PyCharm IDE with a project named 'firstProject'. The file explorer on the left shows the project structure with files 'conversion.py', 'HelloWorld.py', and 'main.py'. The main editor displays the code in 'conversion.py':

```
1
2 number = int(input("Enter a number: "))
3
4
5 if number % 2 == 0:
6     print('Even number')
7 else:
8     print('Odd number')
```

The Run console at the bottom shows the execution of 'conversion.py' with the following output:

```
Run: conversion
C:\Users\adhir\anaconda\envs\firstProject\python.exe C:\Pycharm\MIS502\firstProject\conversion.py
Enter a number: 1
Odd number
Process finished with exit code 0
```

While loop :

Small calculator program is used

```
import math
while True:
    print("Welcome! Which operation would you like to perform?")
    print("+ for addition")
    print("- for subtraction")
    print("* for multiplication")
    print("/ for division")
    print("% for modulus")
    print("** for exponential")
    print("! for factorial")
    print("Enter 0 to exit")

    operation = input("Enter operation: ")

    if operation == '0':
        print("Exiting program...")
        break

    if operation == '+':
        num1 = float(input("Enter first number: "))
```

```

        num2 = float(input("Enter second number: "))
        result = num1 + num2
        print("Result: ", result)

    elif operation == '-':
        num1 = float(input("Enter first number: "))
        num2 = float(input("Enter second number: "))
        result = num1 - num2
        print("Result: ", result)

    elif operation == '*':
        num1 = float(input("Enter first number: "))
        num2 = float(input("Enter second number: "))
        result = num1 * num2
        print("Result: ", result)

    elif operation == '/':
        num1 = float(input("Enter first number: "))
        num2 = float(input("Enter second number: "))
        result = num1 / num2
        print("Result: ", result)

    elif operation == '%':
        num1 = float(input("Enter first number: "))
        num2 = float(input("Enter second number: "))
        result = num1 % num2
        print("Result: ", result)

    elif operation == '**':
        num1 = float(input("Enter base number: "))
        num2 = float(input("Enter exponent number: "))
        result = num1 ** num2
        print("Result: ", result)

    elif operation == '!':
        num = int(input("Enter a non-negative integer: "))
        result = math.factorial(num)
        print("Result: ", result)

    else:
        print("Invalid input! Please try again.")

```

sample outputs :

```

+ for addition
- for subtraction
* for multiplication
/ for division
% for modulus
** for exponential
! for factorial
Enter 0 to exit
Enter operation: +
Enter first number: 253
Enter second number: -45
Result: 208.0
Welcome! Which operation would you like to perform?
+ for addition
- for subtraction
* for multiplication
/ for division
% for modulus
** for exponential
! for factorial
Enter 0 to exit
Enter operation: **
Enter base number: 5
Enter exponent number: 3
Result: 125.0

```

For loop :

Small factorial program using for loop

```

num = int(input("Enter a number: "))
fact = 1

# loop from 1 to num and multiply the factors
for i in range(1, num + 1):
    fact *= i

print("Factorial of", num, "is", fact)

```

output :

```

Enter a number: 4
Factorial of 4 is 24

Process finished with exit code 0

```