INFORMATICS INSTITUTE OF TECHNOLOGY

FOUNDATION CERTIFICATE IN HIGHER STUDIES

Module: Doc 333 Programming 1

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Assessment Type: Individual Course Work

Assignment Number: 1

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1. Problem:

Design a Python program to input specified number of positive integers (maximum of 10 numbers). Only positive integer numbers are allowed. Proper error messages must be displayed for incorrect inputs. Once all the numbers are entered,

1. User must be able to get the highest number when “Highest Value“ option is selected.
2. User must be able to get the lowest number when “Lowest Value“ option is selected.
3. User must be able to get the average of all the numbers when “Average Value“ option is selected.
4. User must be able to filter and display all the even numbers when “Filter Even“ option is selected.

2. Problem understanding:

A Python program must be developed to request a maximum of 10 positive integer numbers from the user, with the user being able to select their preferred option and receive the appropriate response. An appropriate error message should be displayed if any of the inputs are incorrect or invalid.

3. Algorithm:

1. Start
2. Initialize variable
3. Display the Main Menu
4. User must select Option 1
5. User should enter the amount(positive integer value till 10) of numbers he/she wishes to input. If input value is a negative integer or if value>10 program must display error message
6. After entering user’s desired input, user must choose between options 2-6
7. Option 2: User must be able to get the highest number between the given inputs
8. Option 3 : User must be able to get the lowest number
9. Option 4: User must be able to get the average of all the numbers
10. Option 5 : User must be able to filter and display all the even numbers
11. When option 6 is selected, exit the program with a message “Exiting! See you again!”
12. End.

1. Python code

```python
print\
    ("\n\t\t\t\tWONDER CALCULATOR\n\t\t\t\t================")


def menu():
    print("""
    \t\t\t    Main Menu\n
    \t\t 1.Enter Positive Integers
    \t\t 2.Display Highest Number
    \t\t 3.Display Lowest Number
    \t\t 4.Display Average
    \t\t 5.Display Even Numbers\n
    \t\t 6.Exit
    """)


def function_1():
    try:
        while True:
            selection = int(input("\nInput what you want to do with the numbers : "))

            if selection == 1:
                break

            while (selection < 7) and (selection > 1):
                list1.sort()
                if selection == 2:
                    print("The highest number is:", (list1[len(list1) - 1]))
                    break

                elif selection == 3:
                    print("The lowest number is:", (list1[0]))
                    break

                elif selection == 4:
                    average = sum(list1) / amount
                    print("The average is:", average)
                    break

                elif selection == 5:
                    print("The even numbers are: ")
                    for items in list1:
                        if items % 2 == 0:
                            print(items)
                    break

                elif selection == 6:
                    exit("Exiting! See you again!")

                else:
                    print("Error")

    except ValueError:
        print("Please enter only integers")


while True:
    try:
        amount = 0
        count = 0
        menu()
        x = int(input("Please indicate your option: "))
        if x == 1:
            amount = int(input("How many numbers do you want to input? : "))
            list1 = []
            if amount > 0:
                if amount < 11:
                    while count < amount:
                        num = int(input("Enter a positive number : "))
                        list1.append(num)
                        count += 1
                        if count == amount:
                            print("The number of inputs are over")
                            function_1()
                else:
                    print("Only numbers up to 10")
            else:
                print("Only positive integer numbers")

    except ValueError:
        print("Please enter only integers")
```

Figure 1| Python code

2. *Test Case Table*

Test Case #	Inputs				Expected Output	Actual Output	Remarks
	Option (1)	**No. Of Inputs**	**Inputs**	**Option (2-6)**			
1	1	4	34, 54, 12, 11	2	The Highest Number Is : 54	The Highest Number Is : 54	Test Case Pass
2	1	3	31,10,4	3	The Lowest Number Is: 4	The Lowest Number Is: 4	Test Case Pass
3	1	5	4, 23, 12, 65, 78	4	The Average Is : 36.4	The Average Is : 36.4	Test Case Pass
4	1	4	32, 88, 12, 63	5	The Even Numbers Are: 12, 32, 88	The Even Numbers Are: 12, 32, 88	Test Case Pass
5	1	4	12, 32, 11,9	6	“Exiting! See You Again!”	Exiting! See You Again!	Test Case Pass
6	1	-12			“Only Positive Integer Numbers”	“Only Positive Integer Numbers”	Test Case Pass

Table 1| Test case Table

3. *Test case Evidence*

Test 1

```
main ×
"/Users/oshadhirajakaruna/PycharmProjects/assignment 1 doc 333/venv/bin/python" /Users/osh

                WONDER CALCULATOR
                =================

                    Main Menu

            1.Enter Positive Integers
            2.Display Highest Number
            3.Display Lowest Number
            4.Display Average
            5.Display Even Numbers

            6.Exit

Please indicate your option: 1
How many numbers do you want to input? : 4
Enter a positive number : 34
Enter a positive number : 54
Enter a positive number : 12
Enter a positive number : 11
The number of inputs are over

Input what you want to do with the numbers : 2
The highest number is: 54
```

Figure 2| Test 1

Test 2

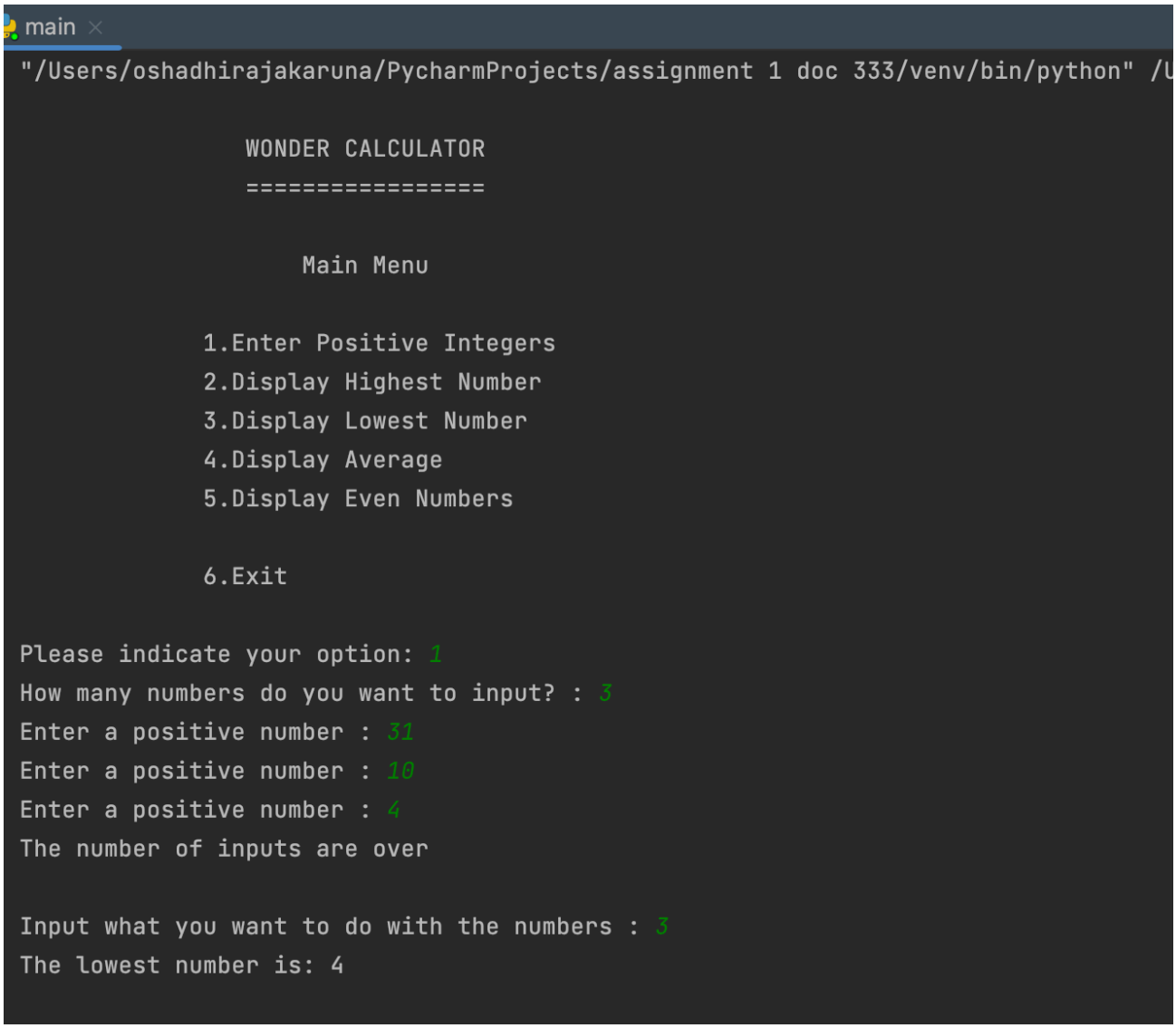

Figure 3|Test 2

Test 3

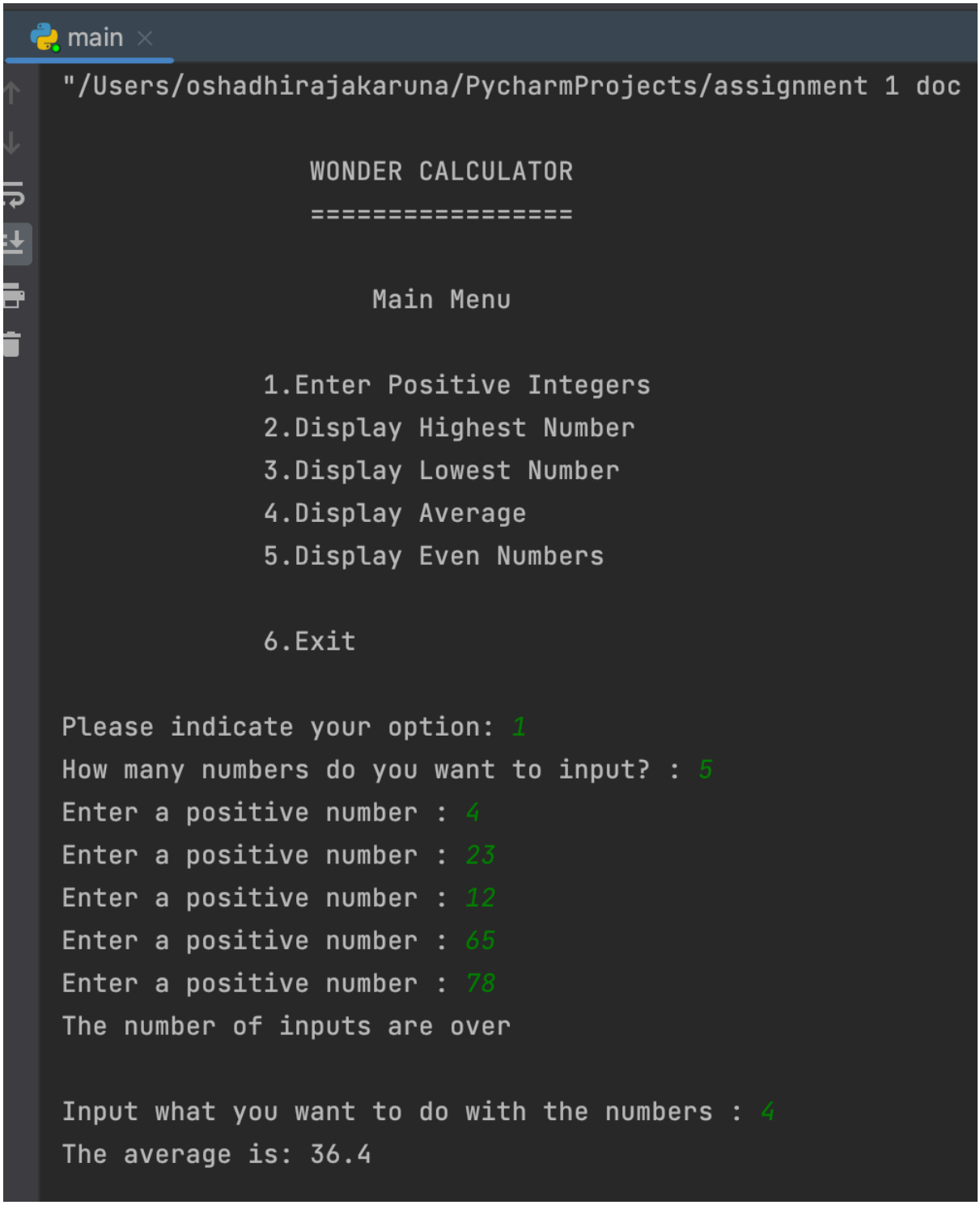

Figure 4|Test 3

Test 4

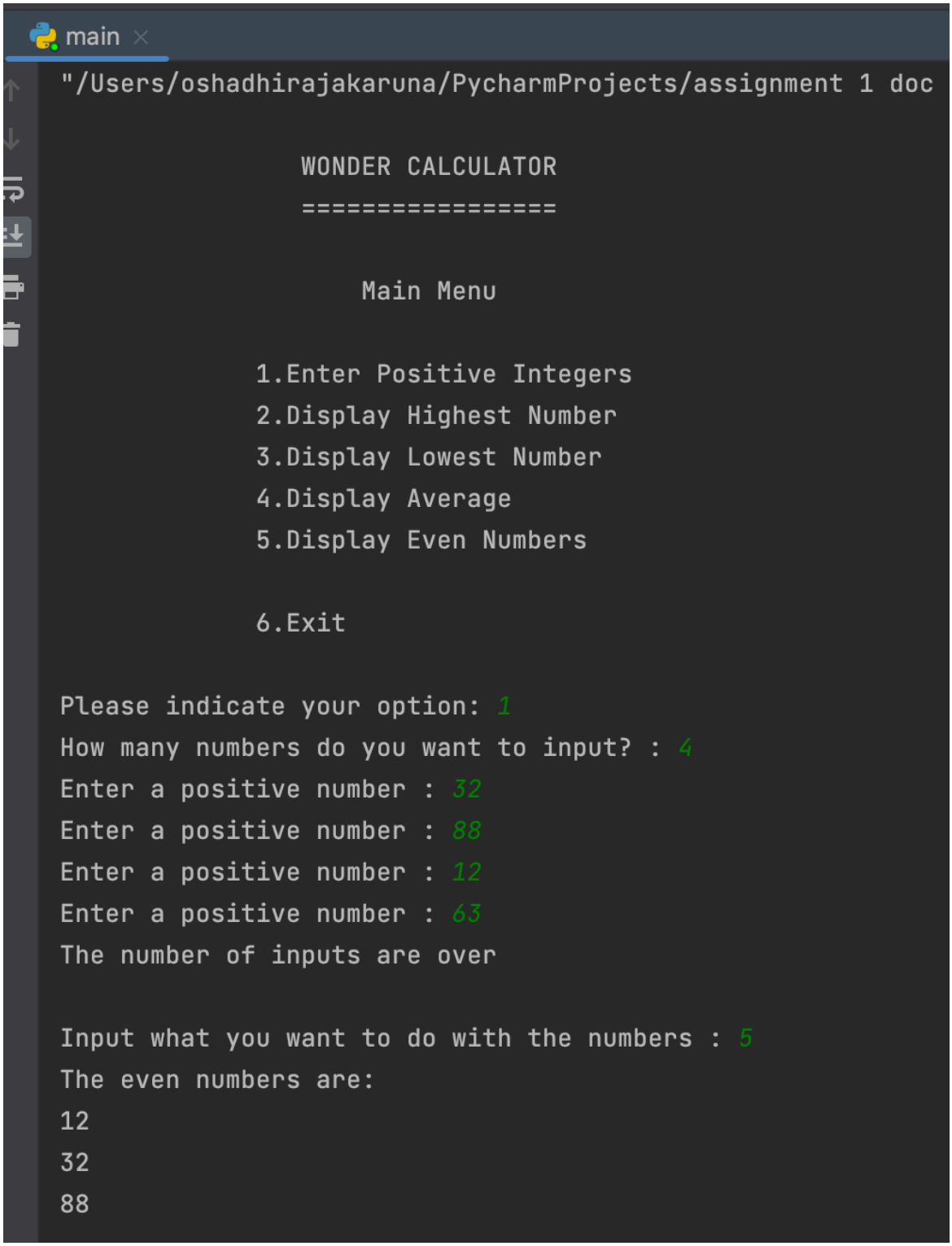

Figure 5|Test 4

Test 5

```
"/Users/oshadhirajakaruna/PycharmProjects/assignment 1 doc 33

                WONDER CALCULATOR
                =================

                    Main Menu

            1.Enter Positive Integers
            2.Display Highest Number
            3.Display Lowest Number
            4.Display Average
            5.Display Even Numbers

            6.Exit

Please indicate your option: 1
How many numbers do you want to input? : 4
Enter a positive number : 12
Enter a positive number : 32
Enter a positive number : 11
Enter a positive number : 9
The number of inputs are over

Input what you want to do with the numbers : 6
Exiting! See you again!
```

Figure 6| Test 5

Test 6

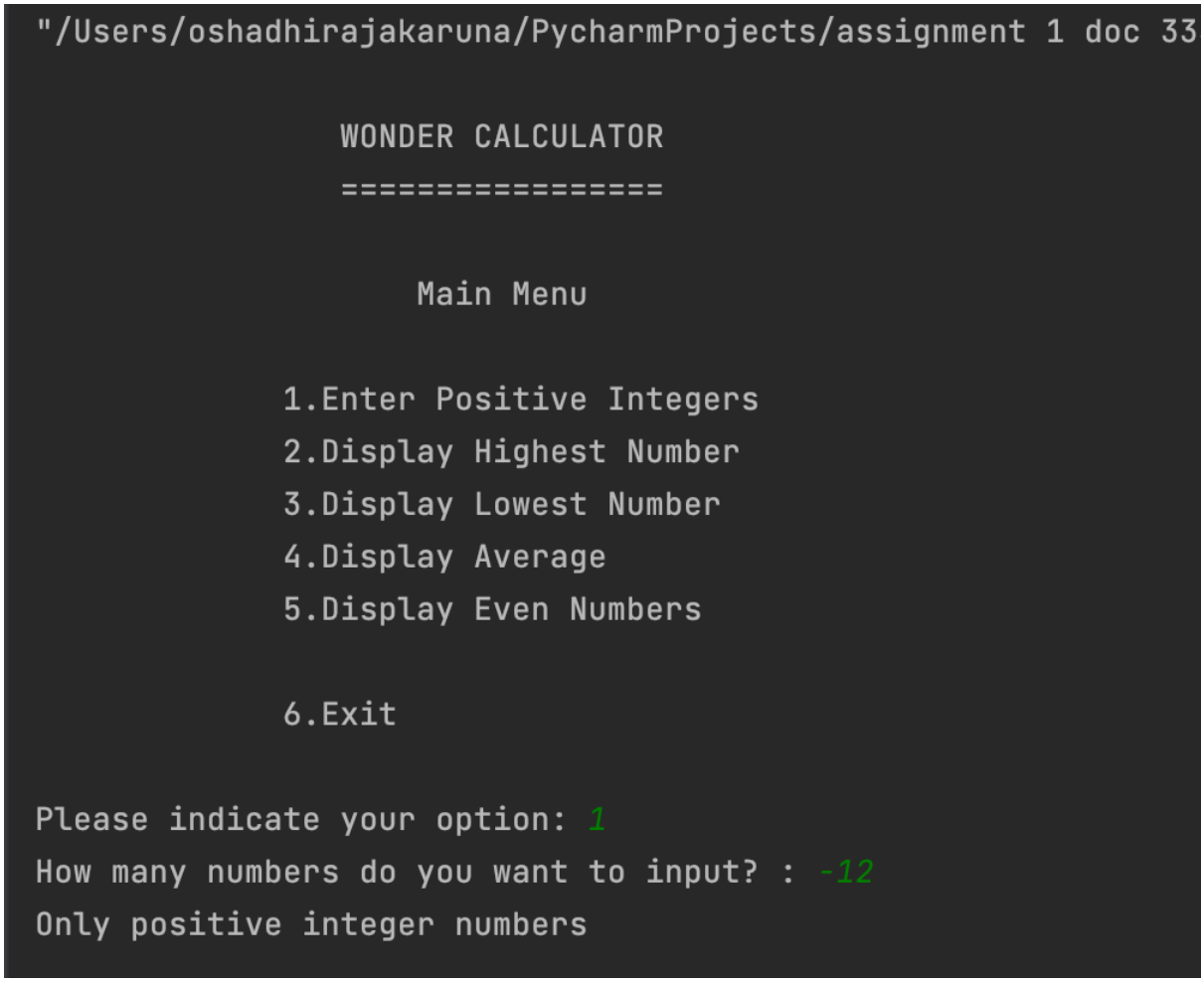

Figure 7|Test 6

Test 7

```
"/Users/oshadhirajakaruna/PycharmProjects/assignment 1 doc 33

                WONDER CALCULATOR
                =================

                    Main Menu

            1.Enter Positive Integers
            2.Display Highest Number
            3.Display Lowest Number
            4.Display Average
            5.Display Even Numbers

            6.Exit

Please indicate your option: 1
How many numbers do you want to input? : 15
Only numbers up to 10
```

Figure 8|Test 7