

Sub : Python assignment

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1.calculateSal

Read the question carefully and follow the input and output format.

Karen got salary for this month and she spends 20% of her salary for food and 30% of her salary for travel. If she takes care of other shifts she will get 2% of the salary per day. Given her salary and the number of shifts she handled. Calculate how much she can save in her pocket after spending all these?

Input and Output Format :

First line of input consists of an integer, salary. Next line correspond to the number of shifts.

Output consist of an integer, which is saving.

1) Print "Salary too large" when salary is greater than 8000.

2) Print "Shifts too small" when the shift is less than 0.

3) Print "Salary too small" when the salary is less than 0.

Include a function named calculateSal(int salary, int shifts) whose return type is an integer, which is the saving

The screenshot shows the PyCharm IDE with the file 'Calculate Salary\_1.py' open. The code defines a function 'calculateSal' that takes 'sal' and 'shift' as inputs. It calculates 'saving' based on the input values and prints the result. The Run console shows the following output:

```
Run: Calculate Salary_1
C:\Users\agg920987\AppData\Local\Programs\Python\Python37-32\python.exe "C:/Users/agg920987/PycharmProjects/python Assignment/python Assignment/Calculate Salary_1.py"
enter salary: 7000
enter shifts: 5
4200.0
Process finished with exit code 0
```

The screenshot shows the PyCharm IDE with the file 'Calculate Salary\_1.py' open. The code is the same as in the first screenshot. The Run console shows the following output:

```
Run: Calculate Salary_1
C:\Users\agg920987\AppData\Local\Programs\Python\Python37-32\python.exe "C:/Users/agg920987/PycharmProjects/python Assignment/python Assignment/Calculate Salary_1.py"
enter salary: 8001
enter shifts: 1
salary is too large
Process finished with exit code 0
```

## 2.Repeated Salary Count

John is working as a clerk in an organization where N number of people are working. His boss has asked him to get the count of employees who get same salary. Help him to get the count of repeated salary.

Include a function named `countRepeaters` that accepts 2 arguments and returns an int. The first argument is the input array and the second argument is an int that corresponds to the size of the array. The function returns an int that corresponds to the number of repeaters.

If the size of the array is negative or if any of the array elements are negative, print "Invalid Input" and terminate the program.

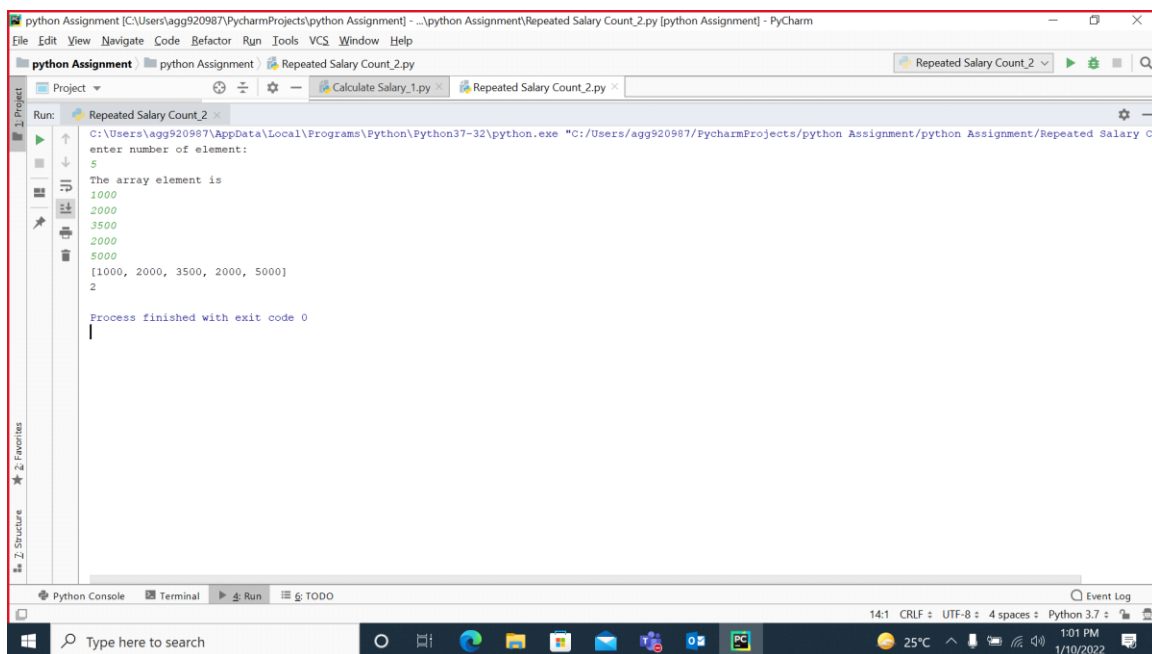
Input and Output Format:

Input consists of  $n+1$  integers. The first integer corresponds to  $n$ , the number of elements in the array. The next ' $n$ ' integers correspond to the elements in the array.

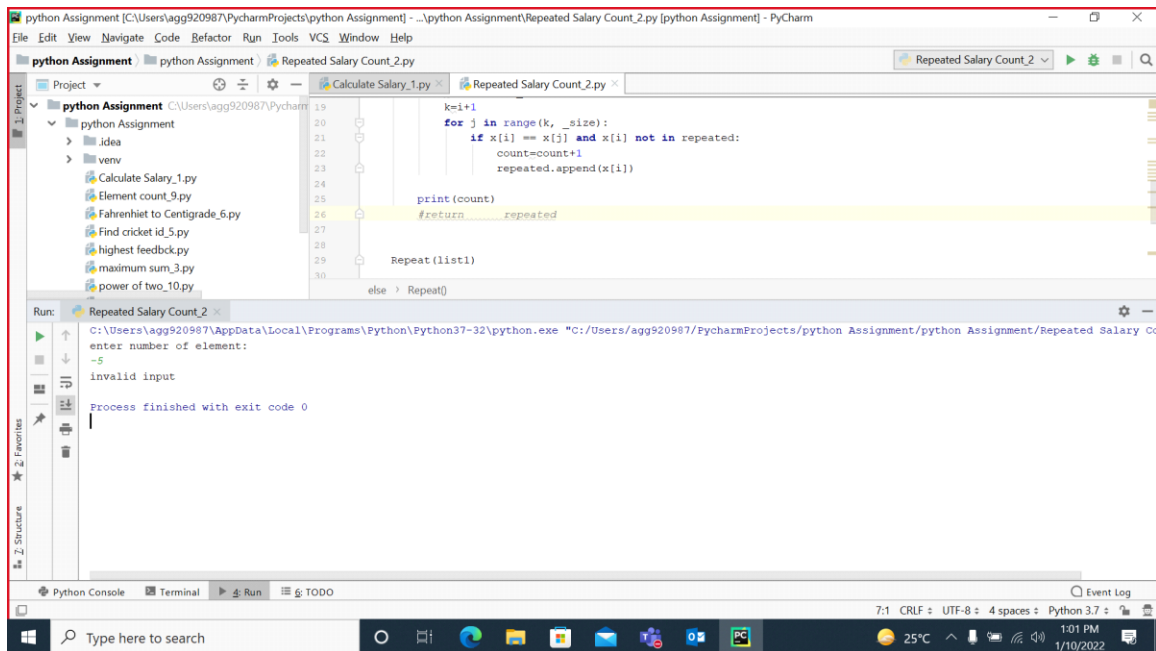
Output consists of an integer that corresponds to the number of repeaters.

Assume that utmost one element in the array would repeat.

Assume that the maximum number of elements in the array is 20.



```
python Assignment [C:\Users\agg920987\PycharmProjects\python Assignment] - ...\python Assignment\Repeated Salary Count_2.py (python Assignment) - PyCharm
File Edit View Navigate Code Refactor Run Tools VCS Window Help
Project python Assignment Repeated Salary Count_2.py
Run: Repeated Salary Count_2
C:\Users\agg920987\AppData\Local\Programs\Python\Python37-32\python.exe "C:\Users\agg920987\PycharmProjects\python Assignment\python Assignment\Repeated Salary Count_2.py"
enter number of element:
5
The array element is
1000
2000
3500
2000
5000
[1000, 2000, 3500, 2000, 5000]
2
Process finished with exit code 0
```



### 3.maximumSum

Read the question carefully and follow the input and output format.

Given an Integer array, find out sum of Even and odd Numbers individually and find the maximum.

Input and Output Format :

First line of input consists of n, the number of elements. Next n lines correspond to the array elements. Output consist of maximum of odd and even sum.

1) Print "Invalid array size" when size of the array is a negative number and terminate the program.

2) Print "Invalid input" when there is any negative numbers available in the input array and terminate the program.

Include a function named maximumSum(int numbers[], int size) whose return type is an integer

The screenshot shows the PyCharm IDE with a project named 'python Assignment'. The file explorer on the left lists several Python files, including 'maximum sum\_3.py'. The main editor displays the code for 'maximum sum\_3.py', which prompts the user to enter the number of elements and then the elements themselves. The code uses a list to store the elements and a loop to calculate the sum. The Run console at the bottom shows the output of the program, which matches the expected results for the input 5 and elements [12, 13, 14, 15, 16].

```
1 list1=[]
2 num=int(input("enter number of element:\n"))
3 if (num<0):
4     print("invalid Array size")
5 else:
6     print("The array element is")
7     for i in range (0,num):
8         element=int(input())
9         list1.append(element)
10    print(list1)
11
12
```

Run: maximum sum\_3 x  
C:\Users\agg920987\AppData\Local\Programs\Python\Python37-32\python.exe "C:/Users/agg920987/PycharmProjects/python Assignment/python Assignment/maximum sum\_3.py"  
enter number of element:  
5  
The array element is  
12  
13  
14  
15  
16  
[12, 13, 14, 15, 16]  
Even sum is: 42  
Odd sum is: 28  
42  
None  
Process finished with exit code 0

The screenshot shows the PyCharm IDE with the same project and code as the first screenshot. However, the Run console shows an error. The user entered '-13' for the number of elements, which is less than 0. The program correctly identifies this as an 'invalid Array size' and prints the message. The Run console also shows the exit code 0, indicating that the program ran without any exceptions.

```
1 list1=[]
2 num=int(input("enter number of element:\n"))
3 if (num<0):
4     print("invalid Array size")
5 else:
6     print("The array element is")
7     for i in range (0,num):
8         element=int(input())
9         list1.append(element)
10    print(list1)
11
12
```

Run: maximum sum\_3 x  
C:\Users\agg920987\AppData\Local\Programs\Python\Python37-32\python.exe "C:/Users/agg920987/PycharmProjects/python Assignment/python Assignment/maximum sum\_3.py"  
enter number of element:  
-13  
invalid Array size  
Process finished with exit code 0

#### 4.Product of Digits

In a car racing video game, the car is an object. You can drive the car, turn the car, or stop the car when needed but you need to drive long. You will get money according to the Km you have travelled. For example if you have travelled 123 km then the product of the km (ie  $1*2*3 = 6$ ) would be the amount you win. Write a program to find the product of the digits in

the given input number.

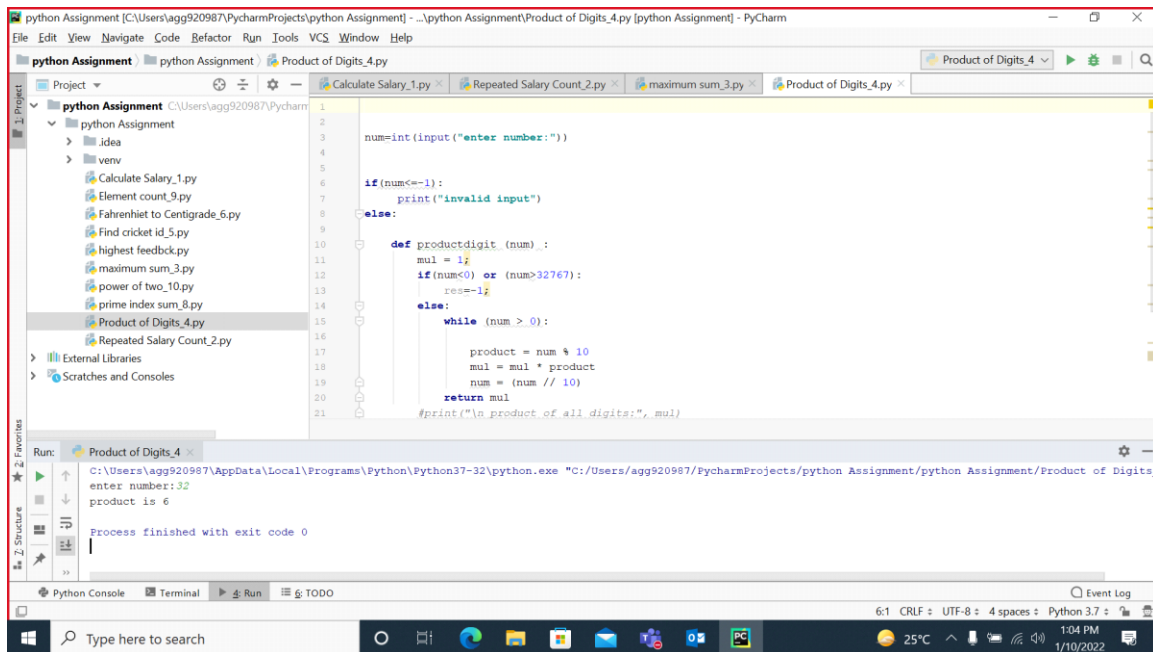
Include a function named productDigits that accepts an integer argument and returns an integer that corresponds to the product of digits in the integer.

The function returns -1 if the input number is negative or greater than 32767.

If the function returns -1, print Invalid Input.

Input and Output Format:

Input consists of an integer



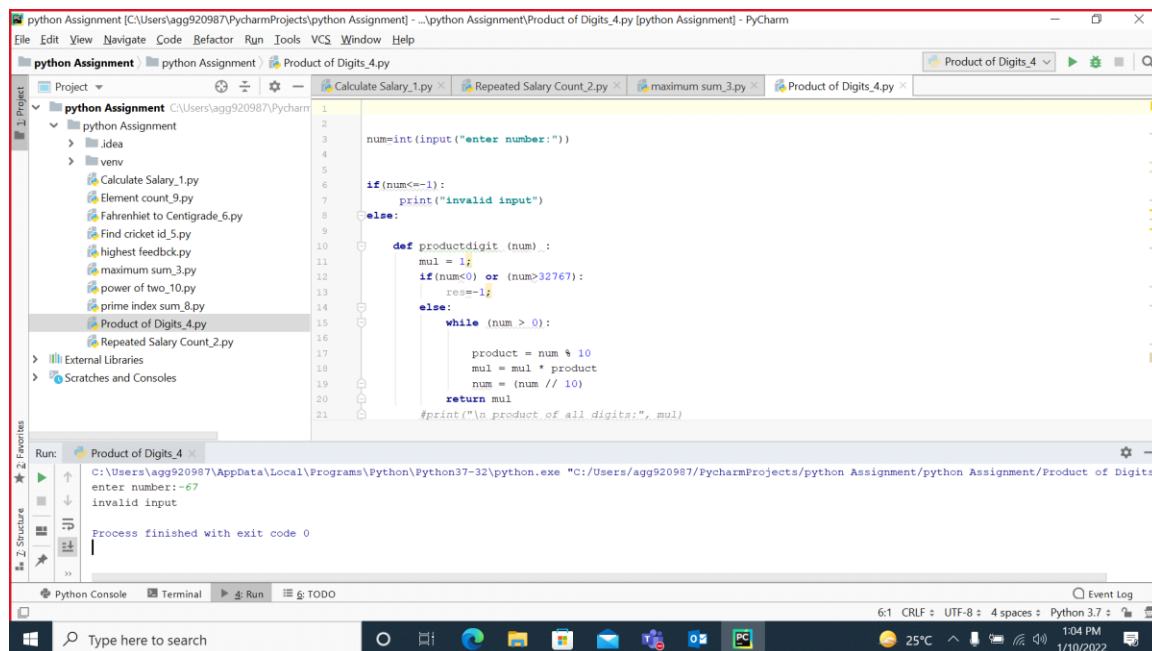
The screenshot displays the PyCharm IDE interface. The main editor window shows the code for 'Product of Digits\_4.py'. The code defines a function 'productdigit' that calculates the product of digits of a given number. The function returns -1 for negative numbers or numbers greater than 32767. For valid numbers, it uses a while loop to calculate the product of digits. The main part of the code takes user input, checks if it's valid, and prints the result or 'Invalid Input'.

```
1 num=int(input("enter number:"))
2
3
4
5
6 if (num<=-1):
7     print("Invalid Input")
8 else:
9
10     def productdigit (num) :
11         mul = 1
12         if (num<0) or (num>32767):
13             res=-1
14         else:
15             while (num > 0):
16                 product = num % 10
17                 mul = mul * product
18                 num = (num // 10)
19             return mul
20
21 #print("\n product of all digits:", mul)
```

The Run window at the bottom shows the execution output:

```
Run: Product of Digits_4
C:\Users\agg920987\AppData\Local\Programs\Python\Python37-32\python.exe "C:/Users/agg920987/PycharmProjects/python Assignment/python Assignment/Product of Digits_4.py"
enter number:32
product is 6
Process finished with exit code 0
```

The status bar at the bottom indicates the file encoding is UTF-8, 4 spaces for indentation, and Python 3.7 is the interpreter used. The system clock shows 1:04 PM on 1/10/2022.



## 5.findCricketerId

Read the question carefully and follow the input and output format.

Given an input array first Index indicates the cricketer's id and second index indicates the score and so on.....Find out the cricketer's id who scored more than given score

Input and Output Format :

First line of input consists of n, the number of elements. Next n lines correspond to the array elements.The next line of the input consists of an integer that corresponds to the given score. Output consist of an integer array, which contains cricketer's id who have scored more than the given score.

- 1) Print "Invalid array size" when size of the array is negative and terminate the program .
- 2) Print "Invalid input" when there is any negative numbers available in the input array and terminate the program.
- 3) Print "Invalid score" when the score is negative.

Include a function named findCricketerId(int array[], int size, int score) whose return type is void.

The output array is stored in a global variable named cricketer.

```
python Assignment [C:\Users\agg920987\PycharmProjects\python Assignment] - ...python Assignment\Find cricket id_5.py [python Assignment] - PyCharm
File Edit View Navigate Code Refactor Run Tools VCS Window Help
python Assignment python Assignment Find cricket id_5.py Find cricket id_5
Project python Assignment C:\Users\agg920987\Pycharm
python Assignment
idea
venv
Calculate Salary_1.py
Find cricket id_5.py
Run: Find cricket id_5
C:\Users\agg920987\AppData\Local\Programs\Python\Python37-32\python.exe "C:\Users\agg920987\PycharmProjects\python Assignment\python Assignment\Find cricket id_5.py"
6
1
1000
5
2000
3
4000
1000
Sample Output
5
3
Process finished with exit code 0
Python Console Terminal Run TODO
15:1 CRLF UTF-8 4 spaces Python 3.7 1:07 PM 1/10/2022
```

```
python Assignment [C:\Users\agg920987\PycharmProjects\python Assignment] - ...python Assignment\Find cricket id_5.py [python Assignment] - PyCharm
File Edit View Navigate Code Refactor Run Tools VCS Window Help
python Assignment python Assignment Find cricket id_5.py Find cricket id_5
Project python Assignment C:\Users\agg920987\Pycharm
python Assignment
idea
venv
Calculate Salary_1.py
Find cricket id_5.py
Run: Find cricket id_5
C:\Users\agg920987\AppData\Local\Programs\Python\Python37-32\python.exe "C:\Users\agg920987\PycharmProjects\python Assignment\python Assignment\Find cricket id_5.py"
6
1
1000
5
3000
3
4000
-1000
Invalid score
Process finished with exit code 0
Python Console Terminal Run TODO
13:1 CRLF UTF-8 4 spaces Python 3.7 1:08 PM 1/10/2022
```

## 6.Fahrenhiet to Centigrade

Write a program to convert given temperature from Fahrenheit to Centigrade.

Formula:

$$C/5 = (F-32)/9$$

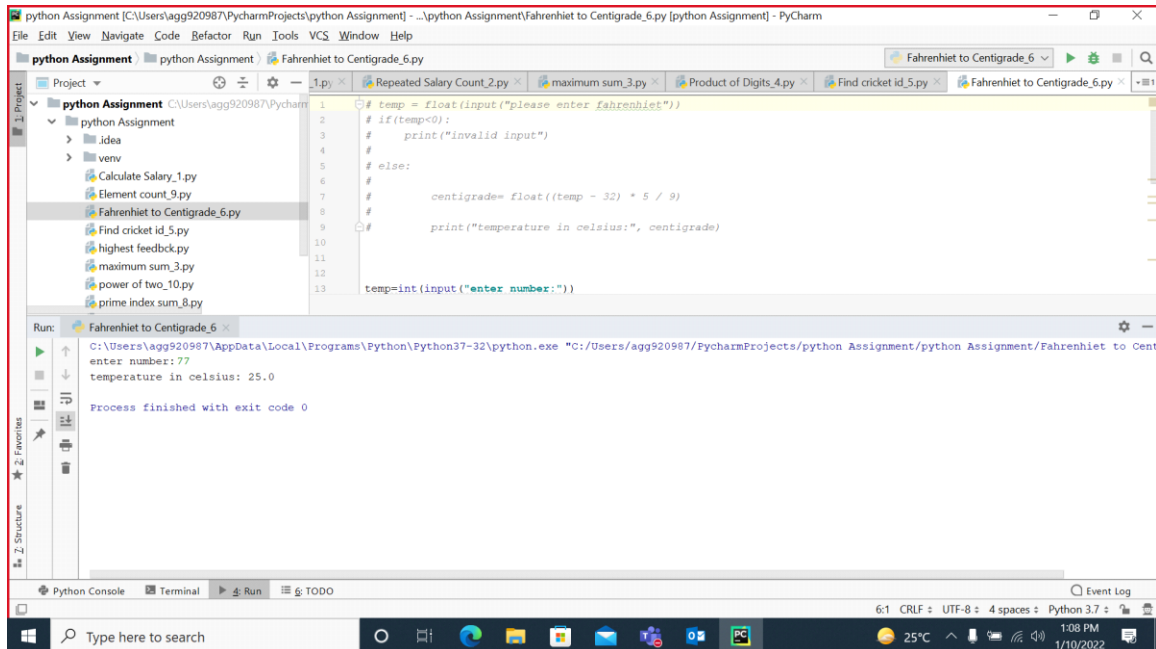
C stands for Centigrade.



F stands for Fahrenheit.

Include a function named `convertToCentigrade` that accepts an integer argument and returns a float that corresponds to the centigrade equivalent.

If the input is a negative number, print `Invalid Input` and terminate the program

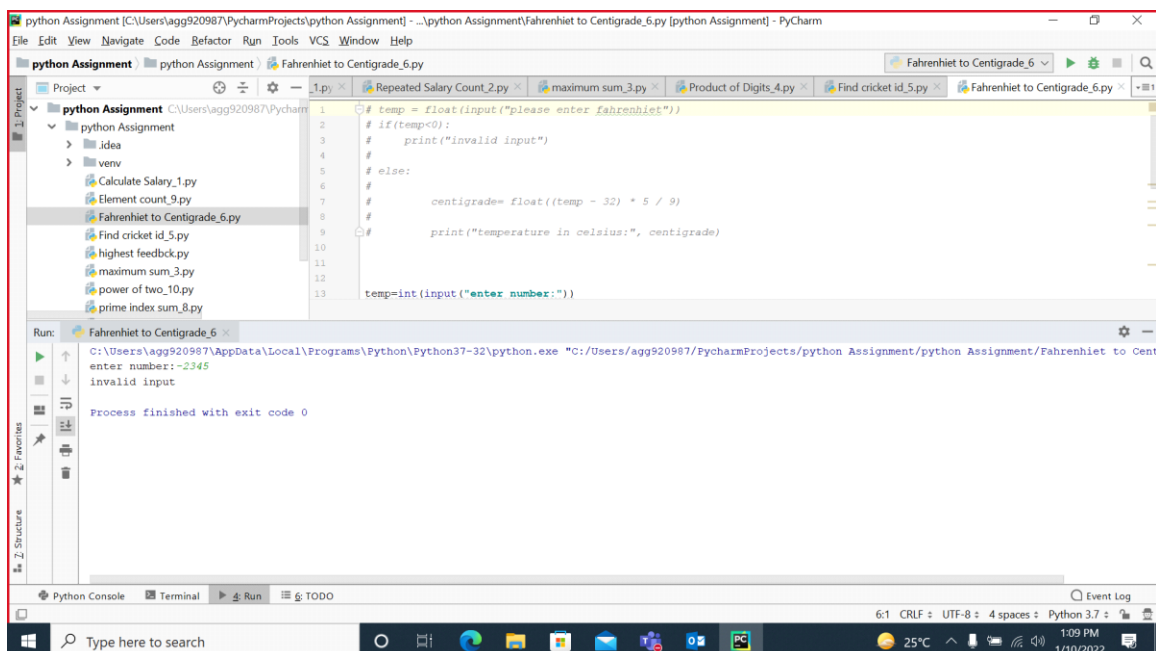


The screenshot shows the PyCharm IDE with the file `Fahrenheit to Centigrade_6.py` open. The code defines a function `convertToCentigrade` that takes an integer `temp` and returns a float `centigrade` calculated as  $(temp - 32) * 5 / 9$ . The main program prompts the user to enter a Fahrenheit temperature, checks if it's negative (printing "Invalid input"), and then prints the converted temperature in Celsius. The Run console shows the output for input 77: "temperature in celsius: 25.0".

```
1 # temp = float(input("please enter fahrenheit"))
2 # if(temp<0):
3 #     print("Invalid input")
4 # else:
5 #     #
6 #     centigrade= float((temp - 32) * 5 / 9)
7 #     #
8 #     print("temperature in celsius:", centigrade)
9 #
10
11
12
13 temp=int(input("enter number:"))
```

Run: Fahrenheit to Centigrade\_6

```
C:\Users\agg920987\AppData\Local\Programs\Python\Python37-32\python.exe "C:\Users\agg920987\PycharmProjects\python Assignment\python Assignment\Fahrenheit to Centigrade_6.py"
enter number:77
temperature in celsius: 25.0
Process finished with exit code 0
```



The screenshot shows the same PyCharm IDE setup, but the Run console shows the output for input -2345: "invalid input". This demonstrates the program's validation logic for negative numbers.

```
1 # temp = float(input("please enter fahrenheit"))
2 # if(temp<0):
3 #     print("Invalid input")
4 # else:
5 #     #
6 #     centigrade= float((temp - 32) * 5 / 9)
7 #     #
8 #     print("temperature in celsius:", centigrade)
9 #
10
11
12
13 temp=int(input("enter number:"))
```

Run: Fahrenheit to Centigrade\_6

```
C:\Users\agg920987\AppData\Local\Programs\Python\Python37-32\python.exe "C:\Users\agg920987\PycharmProjects\python Assignment\python Assignment\Fahrenheit to Centigrade_6.py"
enter number:-2345
invalid input
Process finished with exit code 0
```

## 7.highestFeedBack

Read the question carefully and follow the input and output format.

In a company there are some managers working on two different projects (MetLife and Hardfort). When the feedback was taken their feedback was present in both MetLife Feedback as well as Hardfort Feedback. Write a method to create a consolidated feedback for the managers for MetLife and HardForts. For those working on both the projects the highest feedback is taken. In the 2 given arrays, the First Index represents the Employee id and second one Represents The Feed Back Score and so on....

Input and Output Format:

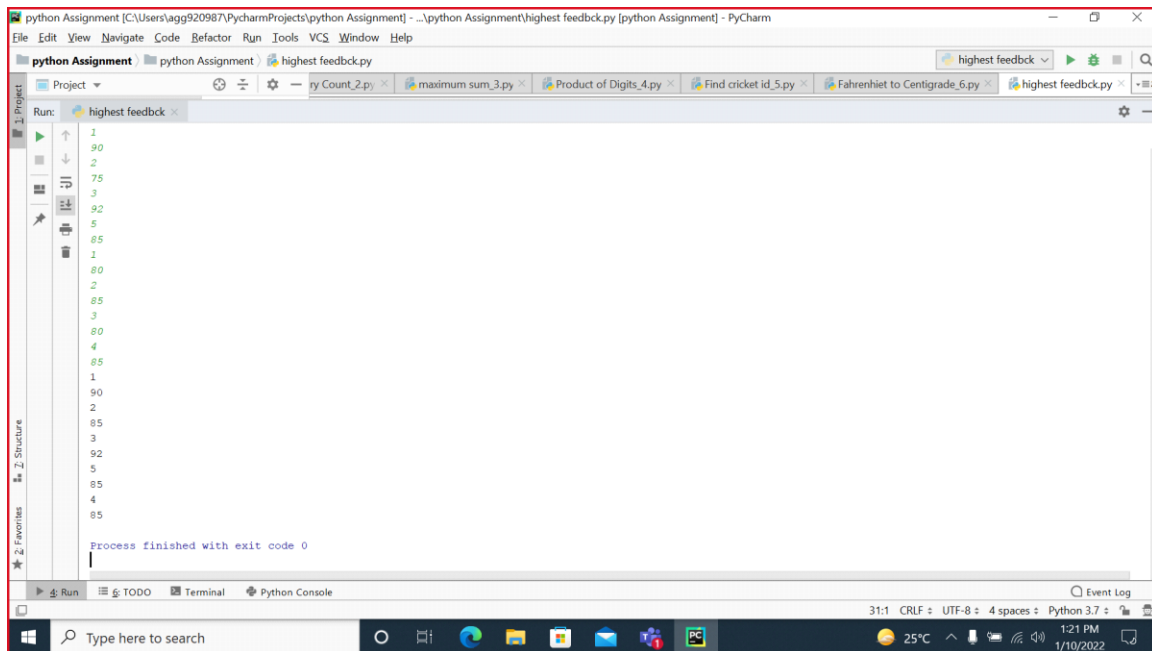
First line corresponds to n, the size of the array. The next n lines correspond to the elements of the first array. The next n lines correspond to the elements in the second array. Output corresponds to the consolidated feedback score.

1) Print "Invalid array size" when size of the array is a negative number and terminate the program

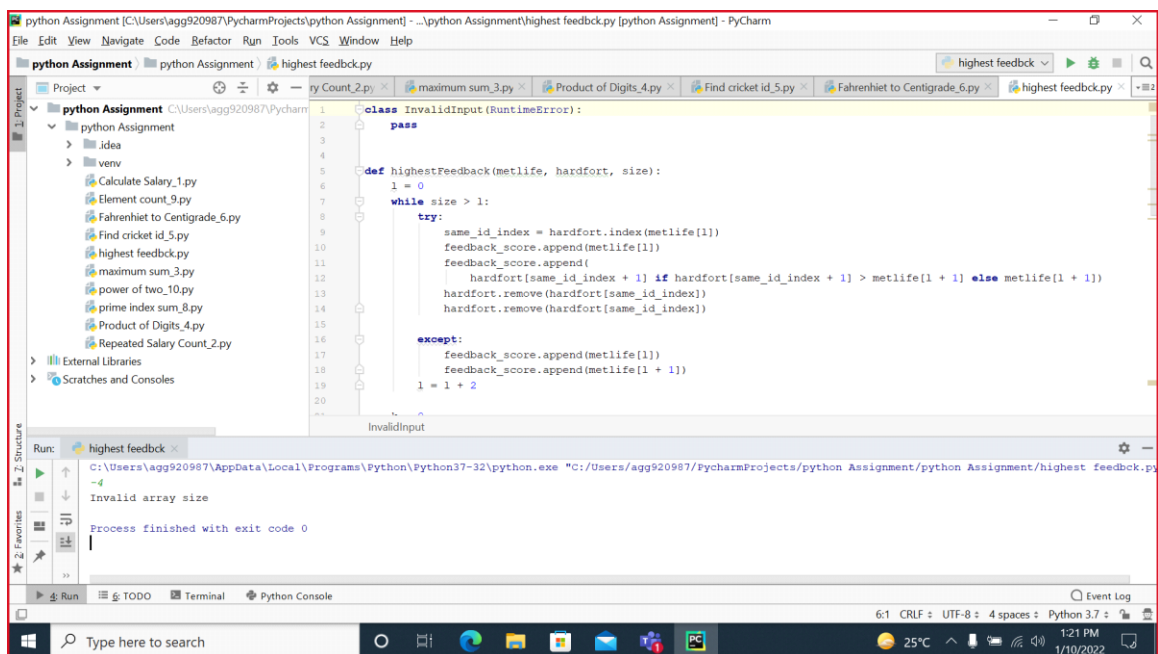
2) Print "Invalid input" when there is any negative number available in the input array and terminate the program

Include a function named `highestFeedBack(int metlife[],int hardfort[],int size)` whose return type is void.

The output array is stored in a global variable named `feedback`.



The screenshot shows the PyCharm IDE with the file `highest feedback.py` open. The Run window at the bottom displays the output of the program, which consists of a list of numbers: 1, 90, 2, 75, 3, 92, 5, 85, 1, 80, 2, 85, 3, 80, 4, 85, 1, 90, 2, 85, 3, 92, 5, 85, 4, 85. Below the output, it states "Process finished with exit code 0". The top toolbar shows the Run button (a green play icon) is active.



The screenshot shows the PyCharm IDE with the file `highest feedback.py` open. The Run window at the bottom displays an error message: "Invalid array size". The error is a `RuntimeError` with the message "Invalid array size". The code in the editor shows a function `highestFeedback` that takes `metlife`, `hardfort`, and `size` as arguments. The function has a `while` loop that tries to access `metlife[1]` and `hardfort[same_id_index + 1]`. The error occurs at line 10, where `metlife[1]` is accessed. The top toolbar shows the Run button (a green play icon) is active.

## 8.primeIndexSum

Read the question carefully and follow the input and output format.

Given an Integer array. Find the average of the numbers located on the Prime Indexes of the Array. Consider 0 index as 1 and 1 index is 2 and so on.....

Hint :Consider 1 is not a prime number

Input and Output Format :

First line of input consists of n, the number of elements. Next n lines correspond to the array elements . Output consists of an Integer, the prime index sum.

1) Print "Invalid array size" when size of the array is a negative number.

2) Print "Invalid input" when there is any negative numbers available in the input array.

Include a function named primeIndexSum(int array[], int size) whose return type is an integer

The screenshot shows the PyCharm IDE with the file `prime index sum_8.py` open. The code defines a `NegativeNumberError` class, an `isPrime` function, and a `primeIndexSum` function. The `primeIndexSum` function iterates through the array, checking for negative numbers and prime numbers. The Run window shows the execution of `prime index sum_8` with the following input: `7`, `2`, `4`, `5`, `1`, `9`, `3`, `8`, `6`. The output is `Process finished with exit code 0`.

The screenshot shows the PyCharm IDE with the file `prime index sum_8.py` open. The code is the same as in the previous screenshot. The Run window shows the execution of `prime index sum_8` with the following input: `-7`. The output is `Invalid array size`. The error message `NegativeNumberError` is also visible in the Run window.

## 9.Element Count

Write a program to find the number of times a particular number occurs in a given input array.

Include a function named findElementCount that accepts 3 arguments and returns an int. The first argument is the input array, the second argument is an int that corresponds to the size of the array and the third argument is the element to be searched for. The function returns an int that corresponds to the number of times the search element occurs in the array.

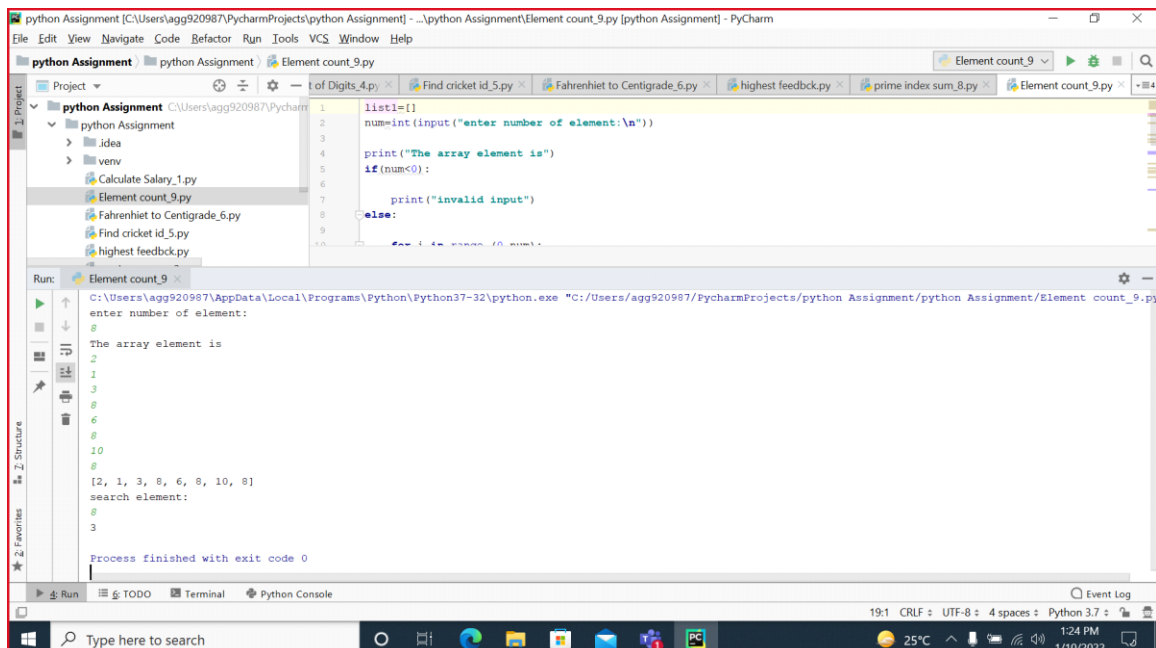
If the size of the array is negative or if any element in the array is negative, print “Invalid Input” and terminate the program.

Input and Output Format:

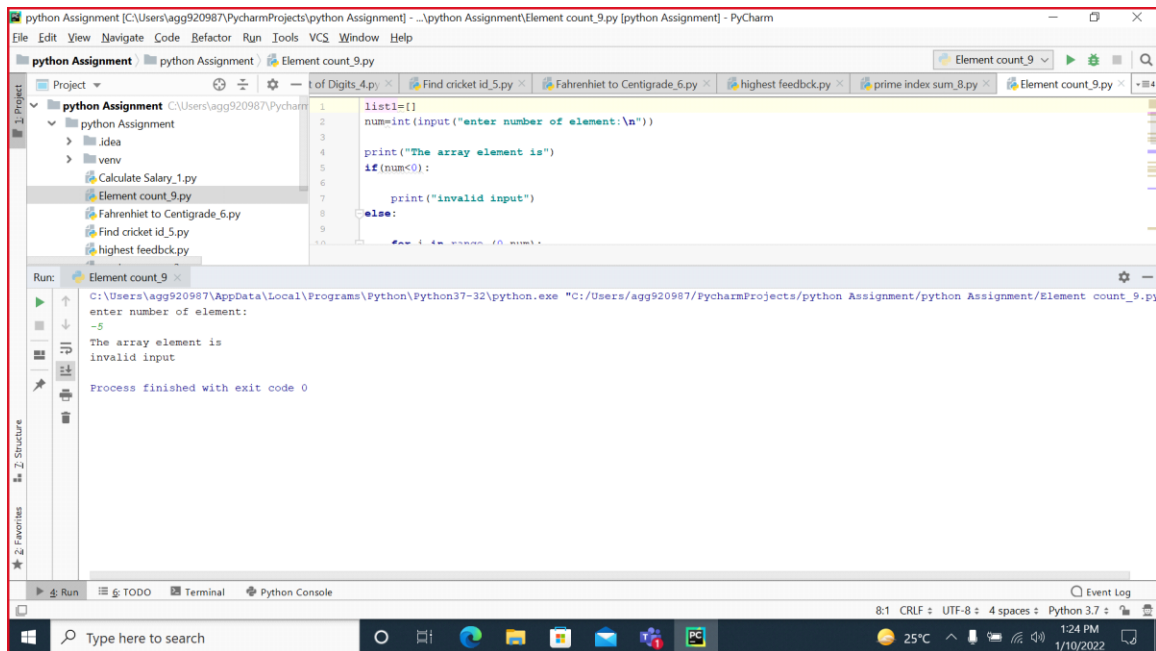
Input consists of n+2 integers. The first integer corresponds to n, the number of elements in the array. The next 'n' integers correspond to the elements in the array. The last integer corresponds to the element whose count needs to be found.

Output consists of an integer that corresponds to the number of times the search element occurs in the array.

Assume that the maximum number of elements in the array is 20.



```
python Assignment [C:\Users\agg920987\PycharmProjects\python Assignment] - ...\python Assignment\Element count_9.py [python Assignment] - PyCharm
File Edit View Navigate Code Refactor Run Tools VCS Window Help
python Assignment python Assignment Element count_9.py
Project
python Assignment C:\Users\agg920987\Pycharm
  python Assignment
    idea
    venv
    Calculate Salary_1.py
    Element count_9.py
    Fahrenheit to Centigrade_6.py
    Find cricket id_5.py
    highest feedback.py
Run: Element count_9
C:\Users\agg920987\AppData\Local\Programs\Python\Python37-32\python.exe "C:\Users\agg920987\PycharmProjects\python Assignment\python Assignment\Element count_9.py"
enter number of element:
8
The array element is
2
1
3
6
0
10
8
[2, 1, 3, 6, 0, 10, 8]
search element:
8
3
Process finished with exit code 0
```



## 10. powerOfTwo

Read the question carefully and follow the input and output format.

Check whether given number is a power of 2 or not .If yes Print 'Yes' else 'No'

Input and Output Format :

Input consists of an integer number. And output is a single line that displays 'Yes' or 'No'

Print "Number too small" if the number is less than 0

Print "Number too large" if the number is greater than 32767

Include a function named powerOfTwo(int n) that returns an integer.

python Assignment [C:\Users\agg920987\PycharmProjects\python Assignment] - ...python Assignment\power of two\_10.py [python Assignment] - PyCharm

File Edit View Navigate Code Refactor Run Tools VCS Window Help

python Assignment python Assignment power of two\_10.py

Project

- python Assignment
- python Assignment
  - idea
  - venv
  - Calculate Salary\_1.py
  - Element count\_9.py
  - Fahrenheit to Centigrade\_6.py
  - Find cricket id\_5.py
  - highest feedbck.py
  - maximum sum\_3.py
  - power of two\_10.py
  - prime index sum\_8.py
  - Product of Digits\_4.py
  - Repeated Salary Count\_2.py
- External Libraries
- Scratches and Consoles

```
1 def powerOfTwo(n):
2     if n <= 0:
3         return False
4     else:
5         return n & (n - 1) == 0
6
7
8 #print("Question No:10")
9 n = int(input("Enter a Number:"))
10 if (n < 0):
11     print("Number is too small...")
12     exit()
13 elif (n >= 32767):
14     print("Number is too large...")
15     exit()
16
17 if powerOfTwo(n):
18     print("Yes")
19 else:
20     print("No")
21
powerOfTwo()
```

Run: power of two\_10

C:\Users\agg920987\AppData\Local\Programs\Python\Python37-32\python.exe "C:\Users\agg920987\PycharmProjects\python Assignment\python Assignment\power of two\_10.py"

Enter a Number:3

No

Process finished with exit code 0

Run TODO Terminal Python Console

6:1 CRLF : UTF-8 : 4 spaces : Python 3.7 : 1:24 PM 1/10/2022

python Assignment [C:\Users\agg920987\PycharmProjects\python Assignment] - ...python Assignment\power of two\_10.py [python Assignment] - PyCharm

File Edit View Navigate Code Refactor Run Tools VCS Window Help

python Assignment python Assignment power of two\_10.py

Project

- python Assignment
- python Assignment
  - idea
  - venv
  - Calculate Salary\_1.py
  - Element count\_9.py
  - Fahrenheit to Centigrade\_6.py
  - Find cricket id\_5.py
  - highest feedbck.py
  - maximum sum\_3.py
  - power of two\_10.py
  - prime index sum\_8.py
  - Product of Digits\_4.py
  - Repeated Salary Count\_2.py
- External Libraries
- Scratches and Consoles

```
1 def powerOfTwo(n):
2     if n <= 0:
3         return False
4     else:
5         return n & (n - 1) == 0
6
7
8 #print("Question No:10")
9 n = int(input("Enter a Number:"))
10 if (n < 0):
11     print("Number is too small...")
12     exit()
13 elif (n >= 32767):
14     print("Number is too large...")
15     exit()
16
17 if powerOfTwo(n):
18     print("Yes")
19 else:
20     print("No")
21
powerOfTwo()
```

Run: power of two\_10

C:\Users\agg920987\AppData\Local\Programs\Python\Python37-32\python.exe "C:\Users\agg920987\PycharmProjects\python Assignment\python Assignment\power of two\_10.py"

Enter a Number:34569

Number is too large...

Process finished with exit code 0

Run TODO Terminal Python Console

6:1 CRLF : UTF-8 : 4 spaces : Python 3.7 : 1:25 PM 1/10/2022

