

Lab Assignment 6

(1905337 PRIYANSHU GUPTA)

Q1. A sphere has radius equal to 6, calculate its the volume . An approximate value would do.

Code:

```
1  # -*- coding: utf-8 -*-
2  """
3  Created on Wed Feb  9 11:16:20 2022
4
5  @autor: PRIYANSHU GUPTA
6  """
7  pi=3.14
8  radius=6.0
9  v=(4.0/3.0)*(pi*radius**3)
10 print("The volume of sphere is found to be :",v)
```

Output:

```
In [26]: runfile('E:/T&T/TnT/Lab6_q1.py', wdir='E:/T&T/TnT')
The volume of sphere is found to be : 904.3199999999999
```

Q2. The marks obtained by a student in Physics, Chemistry, English and Maths are 92, 72, 83, and 65 respectively. Add 5 marks to science subjects and find the average marks obtained by him. Calculate the grade using if else statement.

Code:

```
2
3 Created on Wed Feb 9 11:22:25 2022
4
5 @author: PRIYANSHU GUPTA
6 """
7
8 physics=92
9 chemistry=72
10 english=83
11 maths=65
12 physics=physics+5
13 chemistry=chemistry+5
14 total=physics+chemistry+english+maths
15 average=total/4
16 print("The average mark obtained by student is :",average)
17 if(average>=90):
18     print("The Student got O grade.")
19 elif(average>=80 and average <90):
20     print("The Student got E grade.")
21 elif(average>=70 and average <80):
22     print("The Student got A grade.")
23 elif(average>=60 and average <70):
24     print("The Student got B grade.")
25 elif(average>=50 and average <60):
26     print("The Student got C grade.")
27 elif(average>=40 and average <30):
28     print("The Student got D grade.")
29 else:
30     print("The Student Failed")
```

Output:

```
In [27]: runfile('E:/T&T/TnT/Lab6_q2.py', wdir='E:/T&T/TnT')
The average mark obtained by student is : 80.5
The Student got E grade.

In [28]:
```

Q3.A) Write a program which uses a person_age to print number of years left for retirement (a person retires at 65).

Code:

```
1 # -*- coding: utf-8 -*-
2 """
3 Created on Wed Feb 9 11:31:59 2022
4
5 @author: PRIYANSHU GUPTA
6 """
7
8 person_age=45
9 if(person_age>65):
10     print("The person has crossed retirement age")
11 else:
12     print("The person have",65-person_age,"years before retirement")
13
```

Output:

```
In [28]: runfile('E:/T&T/TnT/Lab6_3a.py', wdir='E:/T&T/TnT')
The person have 20 years before retirement
```

B) You can ask the age from the user as well

- `age = input("How old are you? ")`.

```
1  # -*- coding: utf-8 -*-
2  """
3  Created on Wed Feb  9 11:31:59 2022
4
5  @author: PRIYANSHU GUPTA
6  """
7
8  person_age=input("How old are you?")
9  if(int(person_age)>65):
10     print("The person has crossed retirement age")
11  else:
12     print("The person have",65-int(person_age),"years before retirement")
13
```

Output:

```
How old are you?70
The person has crossed retirement age

In [30]: runfile('E:/T&T/TnT/Lab6_q3b.py', wdir='E:/T&T/TnT')

How old are you?43
The person have 22 years before retirement
```

Q4. A student campus has got 3 divisions of girls and 5 divisions of boys. Write a program which asks the user to input number of boys and girls in each division using for loop.

- It should print
- number of girls,
- number of boys
- total number of students.

Sections: 3 for girls A,B,C

Section : 5 for boys A,B,C,D,E

Code:

```
1  # -*- coding: utf-8 -*-
2  """
3  Created on Wed Feb  9 11:31:59 2022
4
5  @author: PRIYANSHU GUPTA
6  """
7
8  girls=[]
9  boys=[]
10 for i in ['A', 'B', 'C']:
11     f=int(input(f"Enter Number of girl in section {i}:"))
12     girls.append(f)
13 for i in ['A', 'B', 'C', 'D', 'E']:
14     f=int(input(f"Enter Number of boys in section {i}:"))
15     boys.append(f)
16 print(f"Total number of boys: {sum(boys)}")
17 print(f"Total number of girls: {sum(girls)}")
18 print(f"Total number of students: {sum(boys)+sum(girls)}")
```

Output:

```
In [36]: runfile('E:/T&T/TnT/untitled4.py', wdir='E:/T&T/TnT')
Enter Number of girl in section A:30
Enter Number of girl in section B:40
Enter Number of girl in section C:50
Enter Number of boys in section A:50
Enter Number of boys in section B:50
Enter Number of boys in section C:30
Enter Number of boys in section D:90
Enter Number of boys in section E:50
Total number of boys: 270
Total number of girls: 120
Total number of students: 390
```

Q5. Write a Python program that prompts the user for his/her amount of money, then reports how many jean pants the person can afford, and how much more money he/she will need to afford an additional jean pant (cost of jean pant = need to afford an additional jean pant. (cost of jean pant = 750))

Code:

```
1  # -*- coding: utf-8 -*-
2  """
3  Created on Wed Feb  9 11:31:59 2022
4
5  @author: PRIYANSHU GUPTA
6  """
7  import math
8  amount=input("Enter the amount of money:")
9  cost_jean=750
10 number_of_jean=math.floor(int(amount)/cost_jean)
11 additional=((number_of_jean+1)*750)-int(amount)
12 print("The number of jean are",number_of_jean)
13 print("Money needed for additional jean",additional)
14
```

Output:

```
In [40]: runfile('E:/T&T/TnT/untitled6.py', wdir='E:/T&T/TnT')

Enter the amount of money:600
The number of jean are 0

In [41]: runfile('E:/T&T/TnT/untitled6.py', wdir='E:/T&T/TnT')

Enter the amount of money:400
The number of jean are 0
Money needed for additional jean 350
```

Q6.a) Write a program which converts 13 hours and 32 minutes into seconds.

Code:

```
1  # -*- coding: utf-8 -*-
2  """
3  Created on Wed Feb  9 11:31:59 2022
4
5  @author: PRIYANSHU GUPTA
6  """
7  hours=13
8  minutes=32
9  total_seconds=hours*60*60+minutes*60
10 print("13hrs and 32 minutes in seconds:",total_seconds)
```

Output:

```
In [47]: runfile('E:/T&T/TnT/Lab6_q6a.py', wdir='E:/T&T/TnT')

13hrs and 32 minutes in seconds: 48720
```

B) WAP to convert given second into its equivalent hour, minute and second as per the following format. Ex. 8860 second = 2 Hour, 27 Minute and 40 Second

Code:


```

1  # -*- coding: utf-8 -*-
2  """
3  Created on Wed Feb  9 12:33:04 2022
4
5  @author: PRIYANSHU GUPTA
6  """
7
8  hrs, mins, secs = 2, 27, 40
9  secs += (hrs*3600) + (mins*60)
10 print('Seconds:', secs)

```

Output:

```

In [49]: runfile('E:/T&T/TnT/untitled12.py', wdir='E:/T&T/TnT')
Seconds: 8860

```

Q7.WAP to find the roots of a quadratic equation $ax^2 + bx + c = 0$ using if-else statement.

Code:

```

1  # -*- coding: utf-8 -*-
2  """
3  Created on Wed Feb  9 11:31:59 2022
4
5  @author: PRIYANSHU GUPTA
6  """
7  a,b,c=map(int, input('Enter a, b, c: ').split())
8  d=b*b-4*a*c
9  if d<0:
10     print('Imaginary roots')
11 elif d==0:
12     r=-b/(2*a)
13     print('Real and equal roots:',r)
14 else:
15     r1=(-b+(d**0.5))/(2*a)
16     r2=(-b-(d**0.5))/(2*a)
17     print('Real and different roots:',r1,'and',r2)

```

Output:

```

In [48]: runfile('E:/T&T/TnT/lab6_q7.py', wdir='E:/T&T/TnT')

Enter a, b, c: 30 40 50
Imaginary roots

```

Q8.WAP to check whether a number n is prime number or not.

Code:

```
1  # -*- coding: utf-8 -*-
2  """
3  Created on Wed Feb  9 12:21:17 2022
4
5  @author: PRIYANSHU GUPTA
6  """
7  n=int(input('Enter number:'))
8  c=0
9  for i in range(2, n):
10     if n%i == 0:
11         c += 1
12         break
13  if c!=0:
14     print('The Number is not prime')
15  else:
16     print('The Number is Prime')
```

Output:

```
In [50]: runfile('E:/T&T/TnT/Lab6_q8.py', wdir='E:/T&T/TnT')

Enter number:139
The Number is Prime
```

Q9.WAP to find the first n numbers of a Fibonacci sequence.

Code:

```
1  # -*- coding: utf-8 -*-
2  """
3  Created on Wed Feb  9 12:21:17 2022
4
5  @author: PRIYANSHU GUPTA
6  """
7  n = int(input('Enter n: '))
8  a, b = 0, 1
9  if n == 1:
10     print(a)
11  elif n == 2:
12     print(a, b)
13  else:
14     print(a, b, end=' ')
15     for i in range(n-2):
16         a, b = b, a+b
17     print(b, end=' ')
```

Output:

```
In [51]: runfile('E:/T&T/TnT/lab6_q9.py', wdi

Enter n: 10
0 1 1 2 3 5 8 13 21 34

In [52]:
```

Q.10.WAP to calculate the factorial of a given number.

Code:

```
1  # -*- coding: utf-8 -*-
2  """
3  Created on Wed Feb  9 12:38:17 2022
4
5  @author: PRIYANSHU GUPTA
6  """
7
8  num=int(input('Enter number:'))
9  factorial = 1
10 if num < 0:
11     print("Factorial of the number is not defined")
12 elif num==0:
13     print("The factorial of 0 is 1")
14 else:
15     for i in range(1,num + 1):
16         factorial = factorial*i
17     print("The factorial of",num,"is",factorial)
18
```

Output:

```
In [54]: runfile('E:/T&T/TnT/lab6_q10.py', wdir='E:/T&T/TnT')

Enter number:5
The factorial of 5 is 120
```