

Lab 4

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

CODE:

```
1  import math
2  r= 6.0
3  V= (4.0/3.0) * math.pi * (r**3)
4  print('The volume of the sphere is: ',V)
5
```

OUTPUT:

```
In [1]: runfile('C:/Users/KIIT/Desktop/Assignments/TNT/Lab4/q1.py', wdir='C:/Users/KIIT/
Desktop/Assignments/TNT/Lab4')
The volume of the sphere is: 904.7786842338603
```

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:

```
1 marks=[92,72,83,65]
2 marks[0]+=5
3 marks[1]+=5
4 tot=0
5 for i in range(0,4):
6     tot+=marks[i]
7     avg = tot/4
8     if avg>=91 and avg<=100:
9         print("Your Grade is O")
10    elif avg>=81 and avg<91:
11        print("Your Grade is E")
12    elif avg>=71 and avg<81:
13        print("Your Grade is A")
14    elif avg>=61 and avg<71:
15        print("Your Grade is B")
16    elif avg>=51 and avg<61:
17        print("Your Grade is C")
18    elif avg>=41 and avg<51:
19        print("Your Grade is D")
20    elif avg>=33 and avg<41:
21        print("Your Grade is E")
22    elif avg>=21 and avg<33:
23        print("Your Grade is F")
24    elif avg>=0 and avg<21:
25        print("Your Grade is G")
26    else:
27        print("Invalid Input!")
28
```

OUTPUT:

```
In [2]: runfile('C:/Users/KIIT/Desktop/Assignments/TNT/Lab4/q2.py', wdir='C:/Users/KIIT/
Desktop/Assignments/TNT/Lab4')
Your Grade is A
```

Q3: A) Write a program which uses a person_age to print number of years left for retirement (a person retires at 65).
B) You can ask the age from the user as well

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

CODE:

```
1  age = int(input("How old are you?"))
2  yearsLeft = 65-age
3  ▼ if(yearsLeft>0):
4      print("Number of years left for retirement is: ",yearsLeft)
5  ▼ else:
6      print("You should retire at the age of 65.")
7
```

OUTPUT:

```
In [3]: runfile('C:/Users/KIIT/Desktop/Assignments/TNT/Lab4/q3.py', wdir='C:/Users/KIIT/Desktop/Assignments/TNT/Lab4')

How old are you?20
Number of years left for retirement is: 45
```

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  sg, sb = 0, 0
2
3  ▼ for i in range(3):
4      sg += int(input(f'Girls in {i+1} grp: '))
5  ▼ for i in range(5):
6      sb += int(input(f'Boys in {i+1} grp: '))
7      print("Total number of girls = ",sg)
8      print("Total number of boys = ",sb)
9      print("Total number of students = ",sg+sb)
10
```

OUTPUT:

```
In [4]: runfile('C:/Users/KIIT/Desktop/Assignments/TNT/Lab4/q4.py', wdir='C:/Users/KIIT/Desktop/Assignments/TNT/Lab4')

Girls in 1 grp: 10
Girls in 2 grp: 13
Girls in 3 grp: 12
Boys in 1 grp: 15
Boys in 2 grp: 13
Boys in 3 grp: 10
Boys in 4 grp: 9
Boys in 5 grp: 12
Total number of girls = 35
Total number of boys = 59
Total number of students = 94
```

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 = 750). (cost of jean pant = 750)

CODE:

```
1  amt = int(input('Enter the amount of money: '))
2  jeans = amt // 750
3  additional = ((jeans + 1) * 750) - amt
4  print('Number of jeans can be bought:', jeans)
5  print('Amount needed for additional jean: ', additional)
6
```

OUTPUT:

```
In [5]: runfile('C:/Users/KIIT/Desktop/Assignments/TNT/Lab4/q5.py', wdir='C:/Users/KIIT/Desktop/Assignments/TNT/Lab4')

Enter the amount of money: 2000
Number of jeans can be bought: 2
Amount needed for additional jean: 250
```

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

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 hrs, mins= 13, 32
2 secs = (hrs*3600) + (mins*60)
3 print('Equivalent number of seconds:', secs)
4
5 seconds=int(input('Enter the number of seconds: '))
6 seconds = seconds % (24 * 3600)
7 hour = seconds // 3600
8 seconds %= 3600
9 minutes = seconds // 60
10 seconds %= 60
11 print("Hours:Minutes:Seconds = ",hour,minutes,seconds)
12
```

OUTPUT:

```
In [6]: runfile('C:/Users/KIIT/Desktop/Assignments/TNT/Lab4/q6.py', wdir='C:/Users/KIIT/Desktop/Assignments/TNT/Lab4')
Equivalent number of seconds: 48720

Enter the number of seconds: 8860
Hours:Minutes:Seconds =  2 27 40
```


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

CODE:

```
1  a, b, c = map(int, input('Enter a, b, c: ').split())
2
3  d = b**2 - 4*a*c
4
5  if d < 0:
6      print('It has imaginary roots')
7  elif d == 0:
8      r = -b / (2*a)
9      print('It has real and equal roots:', r)
10 else:
11     r1 = (-b + (d**0.5)) / (2*a)
12     r2 = (-b - (d**0.5)) / (2*a)
13     print('It has real and different roots:', r1, 'and', r2)
14
```

OUTPUT:

```
In [7]: runfile('C:/Users/KIIT/Desktop/Assignments/TNT/Lab4/q7.py', wdir='C:/Users/KIIT/Desktop/Assignments/TNT/Lab4')

Enter a, b, c: 3 9 3
It has real and different roots: -0.3819660112501051 and -2.618033988749895
```

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

CODE:

```
1  n = int(input('Enter a number: '))
2  c = 0
3
4  ▼ for i in range(2, n):
5  ▼     if n%i == 0:
6         c += 1
7         break
8  ▼ if c != 0:
9         print('Number is not prime')
10 ▼ else:
11     print('Number is prime')
```

OUTPUT:

```
In [8]: runfile('C:/Users/KIIT/Desktop/Assignments/TNT/Lab4/q8.py', wdir='C:/Users/KIIT/
Desktop/Assignments/TNT/Lab4')

Enter a number: 33
Number is not prime
```


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

CODE:

```
1  n = int(input('Enter n (Fibonacci series): '))
2
3  a, b = 0, 1
4
5  ▼ if n == 1:
6      print(a)
7  ▼ elif n == 2:
8      print(a, b)
9  ▼ else:
10     print(a, b, end=' ')
11     ▼ for i in range(n-2):
12         a, b = b, a+b
13         print(b, end=' ')
14
```

OUTPUT:

```
In [9]: runfile('C:/Users/KIIT/Desktop/Assignments/TNT/Lab4/q9.py', wdir='C:/Users/KIIT/Desktop/Assignments/TNT/Lab4')

Enter n (Fibonacci series): 10
0 1 1 2 3 5 8 13 21 34
```

Q10: WAP to calculate the factorial of a given number.

CODE:

```
1  n = int(input('Enter n (Factorial): '))
2
3  fact = 1
4  for i in range(2, n+1):
5      fact *= i
6
7  print(fact)
```

OUTPUT:

```
In [10]: runfile('C:/Users/KIIT/Desktop/Assignments/TNT/Lab4/q10.py', wdir='C:/Users/KIIT/
Desktop/Assignments/TNT/Lab4')

Enter n (Factorial): 11
39916800
```