Lab Assignment 4
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Question:

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

```
r = int(input("Enter  radius: "))
vol = (4*22*r*r*r)/(3*7)
print('Volume:', vol)
```

```
In [42]: runfile('C:/Users/KIIT/Desktop/TnT Lab/
Lab 4/q1.py', wdir='C:/Users/KIIT/Desktop/TnT
Lab/Lab 4')

Enter  radius: 5
Volume: 523.8095238095239
```

2. 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.

```
p, c, e, m = 92, 72, 83, 65

p += 5
c += 5

def grade(m):
    ans = 'F'
    if m >= 90:
        ans = 'O'
    elif m >= 80:
        ans = 'E'
    elif m >= 70:
        ans = 'A'
    elif m >= 60:
        ans = 'B'
    elif m >= 50:
        ans = 'C'
    elif m >= 40:
        ans = 'D'
    return ans

print('Physics grade: ', grade(p))
print('Chemistry grade: ', grade(c))
print('English grade: ', grade(e))
print('Maths grade: ', grade(m))
```

```
In [43]: runfile('C:/Users/KIIT/Desktop/TnT Lab/
Lab 4/q2.py', wdir='C:/Users/KIIT/Desktop/TnT
Lab/Lab 4')
Physics grade:  O
Chemistry grade:  A
English grade:  E
Maths grade:  B
```

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

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

print(65-age)
```

```
In [44]: runfile('C:/Users/KIIT/Desktop/TnT Lab/
Lab 4/q3.py', wdir='C:/Users/KIIT/Desktop/TnT
Lab/Lab 4')

How old are you? 21
44
```

4. 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.

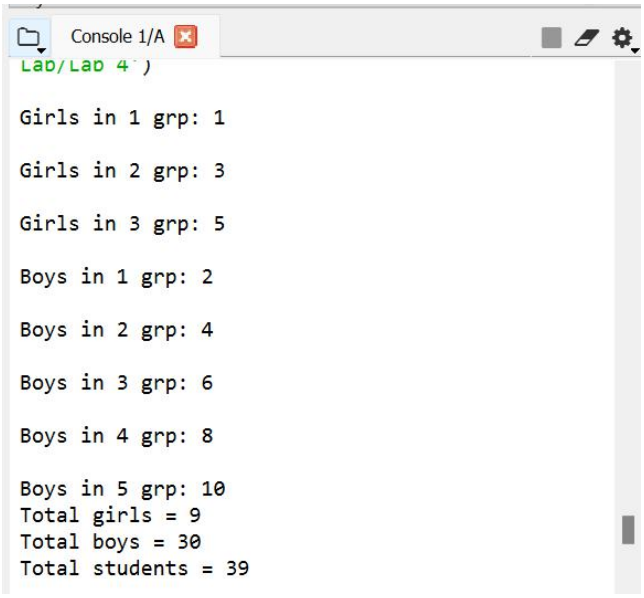
- It should print
- number of girls,
- number of boys
- total number of students.

Sections:3 for girls A,B,C
Section :5 for boys A,B,C,D,E

```
gd, bd = 3, 5
ng, nb = 0, 0

for i in range(gd):
    ng += int(input(f'Girls in {i+1} grp: '))
for i in range(bd):
    nb += int(input(f'Boys in {i+1} grp: '))

print('Total girls =', ng)
print('Total boys =', nb)
print('Total students =', (ng+nb))
```



5. 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)

```
money = int(input('Enter money: '))

jeans = money // 750

additional = ((jeans + 1) * 750) - money

print('Jeans can be bought:', jeans)
print('Money for additional jean: ', additional)
```

```
In [46]: runfile('C:/Users/KIIT/Desktop/TnT Lab/
Lab 4/q5.py', wdir='C:/Users/KIIT/Desktop/TnT
Lab/Lab 4')

Enter money: 1700
Jeans can be bought: 2
Money for additional jean:  550
```

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

```
hrs, mins, secs = 2, 27, 40

secs += (hrs*3600) + (mins*60)

print('Seconds:', secs)
```

```
In [47]: runfile('C:/Users/KIIT/Desktop/TnT Lab/
Lab 4/q6.py', wdir='C:/Users/KIIT/Desktop/TnT
Lab/Lab 4')
Seconds: 8860
```

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

```
a, b, c = map(int, input('Enter a, b, c: ').split())

d = b*b - 4*a*c

if d < 0:
   print('Imaginary roots')
elif d == 0:
   r = -b / (2*a)
   print('Real and equal roots:', r)
else:
   r1 = (-b + (d**0.5)) / (2*a)
   r2 = (-b - (d**0.5)) / (2*a)
   print('Real and different roots:', r1, 'and', r2)
```

```
In [49]: runfile('C:/Users/KIIT/Desktop/TnT Lab/
Lab 4/q7.py', wdir='C:/Users/KIIT/Desktop/TnT
Lab/Lab 4')

Enter a, b, c: 2 5 3
Real and different roots: -1.0 and -1.5
```

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

```
n = int(input('Enter number: '))

c = 0

for i in range(2, n):
   if n%i == 0:
      c += 1
      break

if c != 0:
   print('Not prime')
else:
   print('Prime')
```

```
In [50]: runfile('C:/Users/KIIT/Desktop/TnT Lab/
Lab 4/q8.py', wdir='C:/Users/KIIT/Desktop/TnT
Lab/Lab 4')

Enter number: 5
Prime

In [51]: runfile('C:/Users/KIIT/Desktop/TnT Lab/
Lab 4/q8.py', wdir='C:/Users/KIIT/Desktop/TnT
Lab/Lab 4')

Enter number: 6
Not prime
```

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

```
n = int(input('Enter n: '))

a, b = 0, 1

if n == 1:
   print(a)
elif n == 2:
   print(a, b)
else:
   print(a, b, end=' ')
   for i in range(n-2):
      a, b = b, a+b
      print(b, end=' ')
```

```
In [52]: runfile('C:/Users/KIIT/Desktop/TnT Lab/
Lab 4/q9.py', wdir='C:/Users/KIIT/Desktop/TnT
Lab/Lab 4')

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

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

```
n = int(input('Enter n: '))

f = 1

for i in range(2, n+1):
    f *= i

print('Factorial=', f)
```

```
In [53]: runfile('C:/Users/KIIT/Desktop/TnT Lab/
Lab 4/q10.py', wdir='C:/Users/KIIT/Desktop/TnT
Lab/Lab 4')

Enter n: 5
Factorial= 120
```