TASK-1

```
# CALCULATOR

from operator import sub,truediv
from functools import reduce

def add(n):
    sum=0
    for i in n:
        sum=sum+i
    return sum

def subt(*n):
    return reduce(sub,n)

def mul(*n):
    prod=1
    for i in n:
        for j in i:
            prod=prod*j
    return prod

def div(*n):
    return reduce(truediv,n)


print("\t\t\tCALCULATOR")
print("\n")
while True:
    print("")
    print("   BASIC OPERATIONS   ")
    print("**********************")
    print("1. ADDITION")
    print("2. SUBTRACTION")
    print("3. MULTIPLICATION  ")
    print("4. DIVISION")
    print("5. EXIT")
    choice=int(input("Enter your choice:"))
    if choice==1:
        while True:
            print("")
            print("ADDITION")
            print("********")
```

```
        S=[]
        ne=int(input("Enter the number of elements:"))
        for i in range(ne):
            ele=float(input("Enter the number to be added:"))
            S.append(ele)
        print("SUM=",add(S))
        ch=input("Do you want to continue addition y/n?")
        if ch=='n' or ch=='N':
            break

if choice==2:
    while True:
        print("")
        print("SUBTRACTION")
        print("**********")
        c=int(input("Enter the number of elements to be used:"))
        if c==2:
            n1=float(input("Enter the first number:"))
            n2=float(input("Enter the second number:"))
            print(n1,"-",n2,"=",subt(n1,n2))
        elif c==3:
            n1=float(input("Enter the first number:"))
            n2=float(input("Enter the second number:"))
            n3=float(input("Emter the third number:"))
            print(n1,"-",n2,"-",n3,"=",subt(n1,n2,n3))
        else:
            n1=float(input("Enter the first number:"))
            n2=float(input("Enter the second number:"))
            n3=float(input("Enter the third number:"))
            n4=float(input("Enter the fourth number:"))
            print(n1,"-",n2,"-",n3,"-",n4,"=",subt(n1,n2,n3,n4))
        ch=input("Do you want to continue subtraction y/n?")
        if ch=='n' or ch=='N':
            break

if choice==3:
    while True:
        print("")
        print("MULTIPLICATION")
        print("**********")
        M=[]
        ne=int(input("Enter the number of elements:"))
        for i in range(ne):
            ele=float(input("Enter the number to be multiplied:"))
```

```
            M.append(ele)
        print("Product=",mul(M))
        ch=input("Do you want to continue multiplication y/n?")
        if ch=='n'or ch=='N':
            break


    if choice==4:
        while True:
            print()
            print("DIVISION")
            print("***********")
            c=int(input("Enter the number of elements to be used:"))
            if c==2:
                n1=float(input("Enter the first number:"))
                n2=float(input("Enter the second number:"))
                print(n1,"/",n2,"=",div(n1,n2))
            elif c==3:
                n1=float(input("Enter the first number:"))
                n2=float(input("Enter the second number:"))
                n3=float(input("Emter the third number:"))
                print(n1,"/",n2,"/",n3,"=",div(n1,n2,n3))
            else:
                n1=float(input("Enter the first number:"))
                n2=float(input("Enter the second number:"))
                n3=float(input("Emter the third number:"))
                n4=float(input("Enter the fourth number:"))
                print(n1,"/",n2,"/",n3,"/",n4,"=",div(n1,n2,n3,n4))
            ch=input("Do you want to continue division y/n?")
            if ch=='n'or ch=='N':
                break

    if choice==5:
        print("Exiting...")
        break
```

OUTPUT

CALCULATOR

BASIC OPERATIONS
****

1. ADDITION
2. SUBTRACTION
3. MULTIPLICATION
4. DIVISION
5. EXIT

Enter your choice:1

ADDITION
****

Enter the number of elements:3

Enter the number to be added:56
Enter the number to be added:34
Enter the number to be added:14
SUM= 104.0

Do you want to continue addition y/n?N

BASIC OPERATIONS
****
1. ADDITION
2. SUBTRACTION
3. MULTIPLICATION
4. DIVISION
5. EXIT

Enter your choice:2

SUBTRACTION
****

Enter the number of elements to be used:4

Enter the first number:43
Enter the second number:13
Enter the third number:2
Enter the fourth number:10
43.0 - 13.0 - 2.0 - 10.0 = 18.0

Do you want to continue subtraction y/n?N

BASIC OPERATIONS

****

1. ADDITION
2. SUBTRACTION
3. MULTIPLICATION
4. DIVISION
5. EXIT

Enter your choice:3

MULTIPLICATION
****

Enter the number of elements:4

Enter the number to be multiplied:23
Enter the number to be multiplied:12
Enter the number to be multiplied:5
Enter the number to be multiplied:6
Product= 8280.0

Do you want to continue multiplication y/n?N

BASIC OPERATIONS
****

1. ADDITION
2. SUBTRACTION
3. MULTIPLICATION
4. DIVISION
5. EXIT

Enter your choice:4

DIVISION
****

Enter the number of elements to be used:4

Enter the first number:100
Enter the second number:2
Enter the third number:2
Enter the fourth number:5
100.0 / 2.0 / 2.0 / 5.0 = 5.0

Do you want to continue division y/n?N

```
  BASIC OPERATIONS
**********
1. ADDITION
2. SUBTRACTION
3. MULTIPLICATION
4. DIVISION
5. EXIT

Enter your choice:5
Exiting...
```

TASK-2

```
# GAME- ROCK PAPER and SCISSORS

import random
print("\n")
print("-----ROCK---PAPER---SCISSORS-----")
C=["ROCK","PAPER","SCISSORS"]
while True:
   Scr=0
   R_scr=0
   while True:
      print("")
      chc=input("Enter your choice (ROCK/PAPER/SCISSORS):")
      choice=chc.upper()
      rn_ch=random.choice(C)
      print("The choice generated by the system:",rn_ch)
      if rn_ch=="ROCK":
         if choice==rn_ch:
            print("Nobody wins")
            Scr=Scr+0
            R_scr=R_scr+0
            print("YOUR SCORE:",Scr)
            print("SYSTEM SCORE:",R_scr)
```

```
    elif choice=="PAPER" and len(choice)>len(rn_ch):
        print("YOU scores")
        Scr=Scr+1
        R_scr=R_scr+0
        print("YOUR SCORE:",Scr)
        print("SYSTEM SCORE:",R_scr)


    elif choice=="SCISSORS" and len(choice)>len(rn_ch):
        print("SYSTEM scores")
        Scr=Scr+0
        R_scr=R_scr+1
        print("YOUR SCORE:",Scr)
        print("SYSTEM SCORE:",R_scr)

    else:
        print("ERROR")



elif rn_ch=="PAPER":
    if choice==rn_ch:
        print("Nobody wins")
        Scr=Scr+0
        R_scr=R_scr+0
        print("YOUR SCORE:",Scr)
        print("SYSTEM SCORE:",R_scr)


    elif choice=="ROCK" and len(choice)<len(rn_ch):
        print("SYSTEM scores")
        Scr=Scr+0
        R_scr=R_scr+1
        print("YOUR SCORE:",Scr)
        print("SYSTEM SCORE:",R_scr)


    elif choice=="SCISSORS" and len(choice)>len(rn_ch):
        print("YOU scores")
        Scr=Scr+1
        R_scr=R_scr+0
        print("YOUR SCORE:",Scr)
```

```
            print("SYSTEM SCORE:",R_scr)

        else:
            print("ERROR")


    elif rn_ch=="SCISSORS":
        if choice==rn_ch:
            print("Nobody wins")
            Scr=Scr+0
            R_scr=R_scr+0
            print("YOUR SCORE:",Scr)
            print("SYSTEM SCORE:",R_scr)


        elif choice=="ROCK" and len(choice)<len(rn_ch):
            print("YOU scores")
            Scr=Scr+1
            R_scr=R_scr+0
            print("YOUR SCORE:",Scr)
            print("SYSTEM SCORE:",R_scr)


        elif choice=="PAPER" and len(choice)<len(rn_ch):
            print("SYSTEM scores")
            Scr=Scr+0
            R_scr=R_scr+1
            print("YOUR SCORE:",Scr)
            print("SYSTEM SCORE:",R_scr)

        else:
            print("ERROR")


    c=input("Do you want to continue the game y/n?")
    if c=="n" or c=="N":
        print("Exiting...")
        break
print("\n\n")
print("---FINAL SCORE---")
print("YOUR SCORE:",Scr)
print("SYSTEM SCORE:",R_scr)
if Scr>R_scr:
    print("---YOU WINS THE GAME--- ")
```

```
    elif R_scr>Scr:
        print("---SYSTEM WINS THE GAME---")

    else:
        print("---DRAW---")

    rmh=input("Do you want to rematch y/n?")
    if rmh=='n' or rmh=='N':
        print("EXITING FROM THE GAME....")
        break
```

OUTPUT

```
-----ROCK---PAPER---SCISSORS-----


Enter your choice (ROCK/PAPER/SCISSORS):rock
The choice generated by the system: ROCK
Nobody wins
YOUR SCORE: 0
SYSTEM SCORE: 0

Do you want to continue the game y/n?y


Enter your choice (ROCK/PAPER/SCISSORS):paper
The choice generated by the system: SCISSORS
SYSTEM scores
YOUR SCORE: 0
SYSTEM SCORE: 1

Do you want to continue the game y/n?y


Enter your choice (ROCK/PAPER/SCISSORS):scissors
The choice generated by the system: PAPER
YOU scores
YOUR SCORE: 1
SYSTEM SCORE: 1

Do you want to continue the game y/n?y
```

Enter your choice (ROCK/PAPER/SCISSORS):rock
The choice generated by the system: SCISSORS
YOU scores
YOUR SCORE: 2
SYSTEM SCORE: 1

Do you want to continue the game y/n?n
Exiting...

---FINAL SCORE---
YOUR SCORE: 2
SYSTEM SCORE: 1
---YOU WINS THE GAME---

Do you want to rematch y/n?n
EXITING FROM THE GAME....

TASK-3

```
# PATTERN FORMATION
for i in range(1,6):
    for j in range(1,i+1):
        print(i,end="")
    print()
```

OUTPUT

```
1
22
333
4444
55555
```