Function Practical Programs

1. Write a python program to perform the basic arithmetic operations in a menu-driven program with different functions. The output should be like this:

Select an operator to perform the task:

'+' for Addition

'-' for Subtraction

'*' for Multiplication

'/' for Division

```
def main():
    print('+ for Addition')
    print('- for Subtraction')
    print('* for Multiplication')
    print('/ for Division')
    ch = input("Enter your choice:")
    if ch=='+':
        x=int(input("Enter value of a:"))
        y=int(input("Enter value of b:"))
        print("Addition:",add(x,y))
    elif ch=='-':
        x=int(input("Enter value of a:"))
        y=int(input("Enter value of b:"))
        print("Subtraction:",sub(x,y))
    elif ch=='*':
        x=int(input("Enter value of a:"))
        y=int(input("Enter value of b:"))
        print("Multiplication",mul(x,y))
    elif ch=='/':
        x=int(input("Enter value of a:"))
        y=int(input("Enter value of b:"))
        print("Division",div(x,y))
    else:
```

```
        print("Invalid character")
def add(a,b):
    return a+b
def sub(a,b):
    return a-b
def mul(a,b):
    return a*b
def div(a,b):
    return a/b
main()
```

2. Write a python program to enter a temperature in Celsius into Fahrenheit by using function.

```
 def tempConvert():
 cels = float(input("Enter temperature in celsius: "))
 fh = (cels * 9/5) + 32
 print('%.2f Celsius is: %0.2f Fahrenheit' %(cels, fh))
 tempConvert()
```

3. Write a python program using a function to print Fibonacci series up to n numbers.

```
def fibo():
    n=int(input("Enter the number:"))
    a=0
    b=1
    temp=0
    for i in range(0,n):
        temp = a + b
        b = a
        a= temp
        print(a, end=" ")
```

```
fibo()
```

4. Write a python program to return factorial series up to n numbers using a function.

```
def facto():
    n=int(input("Enter the number:"))
    f=1
    for i in range(1,n+1):
        f*=i
        print(f, end=" ")
facto()
```

5. Write a python program to accept username "Admin" as default argument and password 123 entered by user to allow login into the system.

```
def user_pass(password,username="Admin"):
    if password=='123':
        print("You have logged into system")
    else:
        print("Password is incorrect!!!!!!")
password=input("Enter the password:")
user_pass(password)
```

6. Write menu-driven python program using different functions for the following menu: 1 Check no. is Palindrome or not

2 Check no. is Armstrong or not

3 Exit

```
 def checkPalin(n):
    temp=n
    rem=0
    rev=0
    while(n>0):
        rem=n%10
        rev=rev*10+rem
```

```
        n=n//10
    if(temp==rev):
        print("The number is a palindrome!")
    else:
        print("The number is not a palindrome!")
def checkArmstrong(n):
    temp=n
    rem=0
    arm=0
    while(n>0):
        rem=n%10
        arm+=rem**3
        n=n//10
    if(temp==arm):
        print("The number is an armstrong!")
    else:
        print("The number is not an armstrong!")
def menu():
    print("1.Check no. is Palindrome:")
    print("2.Check no. is Armstrong:")
    print("3.Exit")
    opt=int(input("Enter option:"))
    no=int(input("Enter number to check:"))
    if opt==1:
            checkPalin(no)
    elif opt==2:
        checkArmstrong(no)
    elif opt==3:
        sys.exit()
    else:
        print("Invalid option")
```

```
menu()
```

7. Write a python program using a function to print prime numbers between 11 to 200.

```
start =11
end =200
print("Prime numbers between", start, "and", end, "are:")
for n in range(start, end + 1):
  if n > 1:
     for i in range(2, n):
        if (n % i) == 0:
           break
     else:

        print(n,",",end=" ")
```

8. Write a python program to demonstrate the concept of variable length argument to calculate sum and product of the first 10 numbers.

```
 def sum10(*n):
   total=0
   for i in n:
      total=total + i
   print("Sum of first 10 Numbers:",total)
sum10(1,2,3,4,5,6,7,8,9,10)

def product10(*n):
   pr=1
   for i in n:
     pr=pr * i
   print("Product of first  10 Numbers:",pr)
product10(1,2,3,4,5,6,7,8,9,10)
```

9. Write a python program to find maximum and minimum numbers among given 4 numbers.

Method 1: Using If..elif..else

```
def find_max():
  n1=int(input("Enter number1:"))
  n2=int(input("Enter number2:"))
  n3=int(input("Enter number3:"))
  n4=int(input("Enter number4:"))
  if n1>n2 and n1>n3 and n1>n4:
     print(n1," is maximum")
  elif n2>n1 and n2>n3 and n2>n4:
     print(n2," is maximum")
  elif n3>n1 and n3>n2 and n3>n4:
     print(n3," is maximum")
  elif n4>n1 and n4>n2 and n4>n3:
     print(n2," is maximum")
  else:
     print("All are equals")
```

Method 2: Using list

```
def find_max():
  l=[]
  max1=0
  for i in range(4):
     n=int(input("Enter number into list:"))
     l.append(n)
  print("The list is:",l)
  for i in l:
     if i>max1:
        max1=i
  print("Max:",max1)
```

Method 3: Using max function

```
def find_max():
    l=[]
    max1=0
    for i in range(4):
        n=int(input("Enter number into list:"))
        l.append(n)
    max1=max(l)
    print("Max:",max1)
```

Method 4: Using sort() function

```
def find_max():
    l=[]
    max1=0
    for i in range(4):
        n=int(input("Enter number into list:"))
        l.append(n)
    l.sort()
    print("Max:",l[-1])
```

10. Write a python program to print the following patterns using functions: 1. Diamond Pattern with *

2. Butterfly Pattern with *

3. Triangle Pattern with *

```
def pattern_diamond(n):
    no = 0
    for i in range(1, n + 1):
```

```
        for j in range (1, (n - i) + 1):
            print(end = " ")
        while no != (2 * i - 1):
            print("*", end = "")
            no = no + 1
        no = 0
        print()
    k = 1
    no = 1
    for i in range(1, n):
        for j in range (1, k + 1):
            print(end = " ")
        k = k + 1
        while no <= (2 * (n - i) - 1):
            print("*", end = "")
            no = no + 1
        no = 1
        print()
num=int(input("Enter no or lines to print:"))
pattern_diamond(num)

def pattern_butterfly(n):
    for i in range(1, n + 1):
        for j in range(1, 2 * n + 1):
            if (i < j):
                print("", end = " ");
            else:
                print("*", end = "");
            if (i <= ((2 * n) - j)):
                print("", end = " ");
            else:
```

```
            print("*", end = "");
        print("");
    for i in range(1, n + 1):
        for j in range(1, 2 * n + 1):
            if (i > (n - j + 1)):
                print("", end = " ");
            else:
                print("*", end = "");
            if ((i + n) > j):
                print("", end = " ");
            else:
                print("*", end = "");
        print("");
num=int(input("Enter no or lines to print:"))
pattern_butterfly(num);

def pattern_triangle(n):
    for i in range(1, n+1):
        for j in range(1, i+1):
            print("* ",end="")
        print("\r")
num=int(input("Enter no or lines to print:"))
pattern_triangle(num)
```