1. Write a program to perform different arithmetic operations on two given numbers.

Algorithm 1:

Step 1: Start
Step 2:read two number a & b and one operator op
Step 3: if op='+'
Print a+b
Else if op='-'
Print a-b
Else if op='X'
Print aXb
Else if op='/' and b!=0
Prinf a/b
Else if b==0
Print "Division by zero"
End of if
Step 4: stop

Program 1:

```
a=float(input("Enter the first number:"))
b=float(input("Enter the second number:"))
op=input("Enter the operator[+, -, *, /]:")
if op == '+':
    print(a,'+',b,'=',a+b)
elif op == '-':
    print(a,'-',b,'=',a-b)
elif op == '*':
   print(a,'*',b,'=',a*b)
elif op =='/' and b!= 0:
   print(a,'/',b,'=',a/b)
elif b == 0 :
   print("Division by zero")
```

Output 1:

```
Enter the first number:20
Enter the second number:5
Enter the operator[+, -, *, /]:+
20.0 + 5.0 = 25.0
```

2. A cashier has currency notes of denominations 10, 50, and 100. If the amount to be withdrawn is input through the keyboard using input() function in tens, find the total number of currency notes of each denomination the cashier will have to give to the withdrawer.

Algorithm 2:

Step 1: Start
Step 2:read amt
Step 3: hund=integer(amt/100)
Step 4:fif=integer((amt-hund X 100)/50)
Step 5:ten=integer((amt-((hund X 100)+(fif X 50)))/10)
Step 6: print hund
Step 7:print fif
Step 8: print ten
Step 4: stop

Program 2:

```
amt=int(input("Enter withdrawn amount : "))
hund=amt//100
fif=(amt-hund*100)//50
ten=(amt-((hund*100)+(fif*50)))//10
print("Number of 100 currency=",hund)
print("Number of 50 currency=",fif)
print("Number of 10 currency=",ten)
```

Output 2:

Enter withdrawn amount : 672

Number of 100 currency= 6

Number of 50 currency= 1

Number of 10 currency= 2

3. Write a program to find the largest and smallest number from a list.

Algorithm 3:

Step 1: Start
Step 2: input n numbers to a list as numlist[]
Step 3: big=numlist[0] and i=0
Step 4:repeat the following step 5,6,7 & 8 while i<n
Step 5:if numist[i]>big then
Step 6: big=numlist[i]
Step 7:end of if
Step 8: i=i+1
Step 9: print “largest is “ big
Step 10: i=0
Step 4:repeat the following step 5,6,7 & 8 while i<n
Step 5:if numist[i]>big then
Step 6: big=numlist[i]
Step 7:end of if
Step 8: i=i+1
Step 9: print “largest is “ big
Step 4: stop

Program 3:

```
numlist=[]
n=int(input("Enter number of elements to be insert:\n"))
for i in range(n):
   ele=int(input("Enter element"))
   numlist.append(ele)
print(numlist)
big=numlist[0]
for data in numlist :
   if data > big :
      big = data
print("largest element in the list is",big)
small=numlist[0]
for data in numlist :
    if data < small :
        big = data
print("smallest element in the list is",small)
```

Output 3:

```
Enter number of elements to be insert:
5
Enter element 27
Enter element 56
Enter element 43
Enter element 55
Enter element 33
[27, 56, 43, 55, 33]
largest element in the list is 56
smallest element in the list is 27
```

4. **A library charges a fine for every book returned late. For first 5 days the fine is 50 paisa, for 6-10 daysfine is one rupee and above 10 days fine is 5 rupees. If you return the book after 30 days your membership will be cancelled. Write a program to accept the number of days the member is late to return the book and display the fine or the appropriate message**

Algorithm 4:

Step 1: Start
Step 2: input a number to n
Step 3: if n>=1 and n<=5 then
Print "Fine=50 Paisa"
else if n>=6 and n<=10
print "Fine= 1 Rupee"
else if n>=11 and n<=30
print "Fine= 5 Rupees"
else if n>30
print "Membership Cancelled"
else
print "Invalid Input"
end of if
Step 4: stop

Program 4:

```
n=int(input("Enter number of days"));
if n>=1 and n<=5:
    print("Fine=50 Paisa")
elif n>=6 and n<=10:
    print("Fine= 1 Rupee")
elif n>=11 and n<=30:
   print("Fine= 5 Rupees")
elif n>30:
   print("Membership Cancelled")
else:
   print( "Invalid Input")
```

Output 4:

Enter number of days 18

Fine= 5 Rupees

5. **Write a program to print even numbers in a range.**

Algorithm 5:

Step 1: Start
Step 2: input a number to n
Step 3: i=2
Step 4:Repeat the following steps 5 and 6 while i<=n
Step 5: print i
Step 6: i=i+1
Step 7: stop

Program 5:

```
n=int(input("Enter the limit"));
for i in range(2,n+1,2) :
   print(i,end =" ")
```

Output 5:

Enter the limit 50
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50

6. Write a program to print first n Fibonacci numbers.

Algorithm 6:

Step 1: Start
Step 2: input a number to n
Step 3: n1=0,n2=1 and i=2
Step 4: print n1 and n2
Step 5:Repeat the following steps 5 to 9 while i<n
Step 6: n3=n1+n2
Step 7: n1=n2
Step 8: n2=n3
Step 5: print n3
Step 9: i= i+1
Step 5: print i
Step 6: i=i+1
Step 7: Stop

Program 6:

```
n=int(input("Enter number of terms in the series "))
n1=0
n2=1
if(n<=0):
    print("Please enter a positive number")
else:
    print("Fibonacci Series:",n1,n2,end=" ")
    for i in range(2, n):
        n3 = n1 + n2
        n1 = n2
        n2 = n3
       print(n3, end=" ")
```

Output 6:

Enter number of terms in the series? 20
Fibonacci Series: 0 1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987 1597 2584 4181

7. Write function to compute GCD and LCM of two numbers.

Algorithm 7:

Step 1: Start
Step 2: input two numbers to x and y
Step 3: i=2
Step 4: Repeat the following steps 5 and 6 while i<x and i<=y
Step 5: if x mod i=0 and y mod i=0 then
Hcf=i
End of if
Step 6: i=i+1
Step 8: Lcm=(x * y)/hcf
Step 9: print Hcf and Lcm
Step 10: stop

Program 7:

```
x=int(input("Enter a two numbers "))
y=int(input())
i=1
while i<=x and i<=y :
    if(x % i == 0 and y % i == 0) :
        hcf=i
    i+=1;
lcm=(x*y)//hcf
print("HCF=",hcf)
print("LCM=",lcm)
```

Output 7:

Enter a two numbers 12

16

HCF= 4

LCM= 48

8. **Write a program to count the number of uppercase, lowercase, numerals and special characters in a string**

Algorithm 8:

Step 1: Start
Step 2: input a string to x
Step 3 : up=0,lo=0,sp=0
Step 4:repeat the step 5 for i in x
Step 5: if i is upper then
  up=up+1
 else if i is lower then
  lo=lo+1
 else if i is numeric then
  nu=nu+1
 else
 sp=sp+1
 end of if
Step 6:print "no.of uppercase letters are " up
Step 7: print "no.of lowrcase letters are" ,lo
Step 8: print "no.of numeric digits are",nu
Step 9 :print "no.of special characters are",sp
Step 10: Stop

Program 8:

```
x=input("enter a string")
print(x)
up=lo=nu=sp=0
for i in x :
   if i.isupper() :
       up=up+1
  elif i.islower() :
       lo=lo+1
  elif i.isnumeric() :
       nu=nu+1
  else :
      sp=sp+1
print("no.of uppercase letters are",up)
print("no.of lowrcase letters are",lo)
print("no.of numeric digits  are",nu)
print("no.of special characters  are",sp)
```

Output 8:

enter a string Sachin Tendulkar

Sachin Tendulkar

no.of uppercase letters are 2

no.of lowrcase letters are 13

no.of numeric digits are 0

no.of special characters are 2

9. **sWrite a program to calculate overtime pay of 10 employees. Overtime is paid at the rate of Rs.12.00 per hour for every hour worked above 40 hours. Assume that employee do not work for fractional part of an hour**

Algorithm 9:

Step 1: Start

Step 2:n=1

Step 3: Repeat the steps 5 & 6 while n<=10

Step 4: input a number to hrs

Step 5: if hrs>40 then

bonus=(hrs-40)X12

print "Bonus of employee=",bonus

else:

print "Employee not done overtime work"

end of if

Step 6 : n=n+1

Step 7: Stop

Program 9:

```
n=1
while n<=10:
    hrs=int(input("Enter working hours of each employee one by one:"))
    if hrs>40:
      bonus=(hrs-40)*12
      print("Bonus of employee=",bonus," Rupees")
    else:
      print("Employee not done overtime work")
    n=n+1
```

Output 9:

```
Enter working hours of each employee one by one:12
Employee not done overtime work
Enter working hours of each employee one by one:16
Employee not done overtime work
Enter working hours of each employee one by one:50
Bonus of employee= 120  Rupees
Enter working hours of each employee one by one:60
Bonus of employee= 240  Rupees
Enter working hours of each employee one by one:34
Employee not done overtime work
Enter working hours of each employee one by one:72
Bonus of employee= 384  Rupees
Enter working hours of each employee one by one:45
Bonus of employee= 60  Rupees
Enter working hours of each employee one by one:90
Bonus of employee= 600  Rupees
Enter working hours of each employee one by one:109
Bonus of employee= 828  Rupees
Enter working hours of each employee one by one:23
Employee not done overtime work
```

10. Write a program to check whether a string is palindrome or not.

Algorithm 10:

Step 1 : Start

Step 2: L=length(a)

Step 3:Input a name to string

Step 4: if string =reverse(string) then

Print " the string is palindrome"

Else

Print " the string is not palindrome"

End of if

Step 5: Stop

Program 10:

```
def  isPalindrome(string):
     if(string == string[::-1]):
          return "The string is a palindrome."
     else:
          return"The string is not a palindrome."
string = input("Enter a string:  ")
print(isPalindrome(string))
```

Output 10:

```
Enter a string:  malayalam
The string is a palindrome.
```

11. Write a function reverse to reverse a list without using the reverse function.

Algorithm 11:

Reverse function ref(a)

Step 1: L=length(a)

Step 2: repeat the steps for i to L/2

Step 3: n = a[i]

Step 4:a[i] = a[L - i - 1]

Step 5: a[L - i - 1] = n

Step 6: print a

Calling method

Step 1: start

Step 2: create a list a=[1,2,3,4,5]

Step 3: call ref(a)

Step 7: Stop

Program 11:

```
def  ref(a):
  L = len(a)
  for i in range(int(L / 2)):
     n = a[i]
     a[i] = a[L - i - 1]
     a[L - i - 1] = n
  print(a)
a = [1, 2, 3, 4, 5]
ref(a)
```

Output 11:
[5, 4, 3, 2, 1]

12. Write a program to delete a number from a list of numbers stored in a sequence. Display the numbers before and after deletion

Algorithm 12:

Step 1: Start

Step 2:create and enter data in a list called numlist[]

Step 3: input a number to be deleted to ele

Step 4: print " the original ist is " numlist

Step 5 : if ele in numlist then

numlist.remove(ele)

print " the list after creation" numlist

else

print " the entered element is not exist in the list"

Step 6: Stop

Program 12:

```
numlist=[]
n=int(input("Enter number of elements "))
for i in range(n):
    ele=int(input("Enter the element"))
    numlist.append(ele)
ele=int(input("enter the number to be deleted"))
print("The original list is:",numlist)
if ele in numlist :
    numlist.remove(ele)
    print("The list after deletion is:",numlist)
else :
   print("the entered element is not exist in the list")
```

Output 12:

```
Enter number of elements 5
Enter the element23
Enter the element43
Enter the element54
Enter the element12
Enter the element45
enter the number to be deleted12
The original list is: [23, 43, 54, 12, 45]
The list after deletion is: [23, 43, 54, 45]
```