

**Aim:**

To draw flowchart and write algorithm, program to exchange two values using third variable.

**Algorithm:**

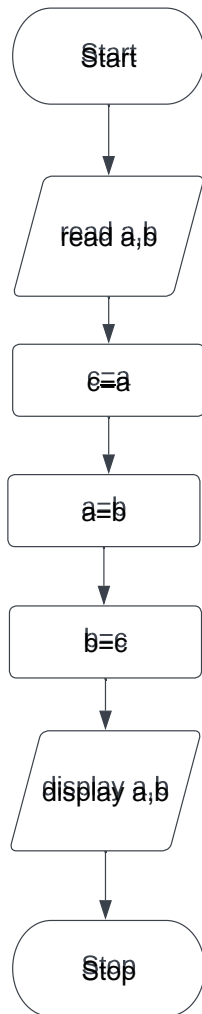
- Step 1**        : Start
- Step 2**        : read values of a and b
- Step 3**        : assign c=a
- Step 4**        : assign a=b
- Step 5**        : assign b=c
- Step 6**        : display a, b
- Step 7**        : Stop

**Program:**

```
In [8]: 1 a=int(input('First value : '))
        2 b=int(input('Second value : '))
        3 c=a      # using third variable
        4 a=b
        5 b=c
        6 print(f'The exchanged values are a={a} and b={b}')
```

```
First value : 2
Second value : 3
The exchanged values are a=3 and b=2
```

**Flowchart:**



**Result:**

The python program is executed and output is verified successfully.

**Aim:**

To draw flowchart and write algorithm, program to exchange two values using comma operator.

**Algorithm:**

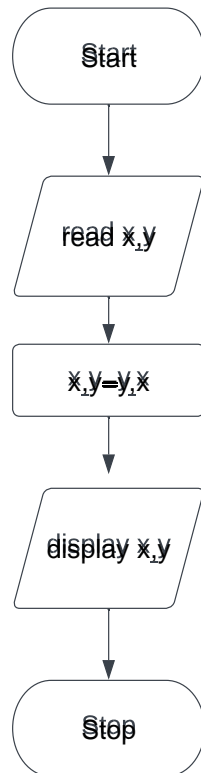
- Step 1**            : Start
- Step 2**            : read values of x, y
- Step 3**            : assign x, y=y, x
- Step 4**            : display x, y
- Step 5**            : Stop

**Program:**

```
In [9]: 1 x=int(input('First value : '))
        2 y=int(input('Second value : '))
        3 x,y=y,x      # using comma operator
        4 print(f'The exchanged values are a={x} and b={y}')
```

```
First value : 2
Second value : 3
The exchanged values are a=3 and b=2
```

**Flowchart:**



**Result:**

The python program is executed and output is verified successfully.

**Aim:**

To draw flowchart and write algorithm, program to exchange two values using arithmetic operator.

**Algorithm:**

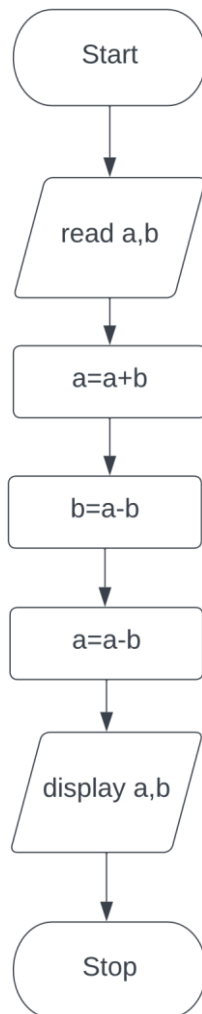
- Step 1**        : Start
- Step 2**        : read values of a, b
- Step 3**        : compute  $a = a + b$
- Step 4**        : compute  $b = a - b$
- Step 5**        : compute  $a = a - b$
- Step 6**        : display a, b
- Step 7**        : Stop

**Program:**

```
In [11]: 1 a=int(input('First value : '))
          2 b=int(input('Second value : '))
          3 a=a+b
          4 b=a-b      # using arithmetic operator
          5 a=a-b
          6 print(f'The exchanged values are a={a} and b={b}')
```

```
First value : 10
Second value : 15
The exchanged values are a=15 and b=10
```

**Flowchart:**



**Result:**

The python program is executed and output is verified successfully.

**Aim:**

To draw flowchart and write algorithm, program to exchange two values using XOR operator.

**Algorithm:**

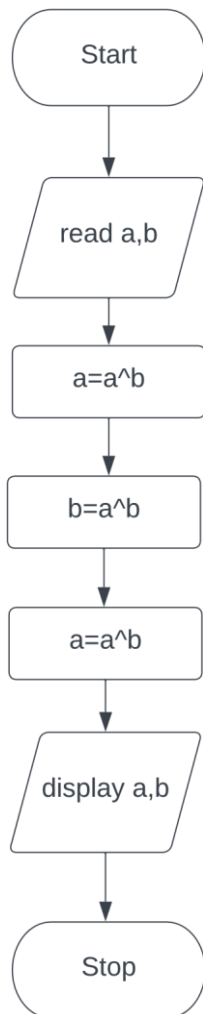
- Step 1 : Start
- Step 2 : read values of a, b
- Step 3 : compute  $a = a \oplus b$
- Step 4 : compute  $b = a \oplus b$
- Step 5 : compute  $a = a \oplus b$
- Step 6 : display a, b
- Step 7 : Stop

**Program:**

```
In [12]: 1 a=int(input('First value : '))
          2 b=int(input('Second value : '))
          3 a=a^b
          4 b=a^b      # using XOR operator
          5 a=a^b
          6 print(f'The exchanged values are a={a} and b={b}')
```

```
First value : 2
Second value : 3
The exchanged values are a=3 and b=2
```

**Flowchart:**



**Result:**

The python program is executed and output is verified successfully.



**Aim:**

To draw flowchart and write algorithm, program to circulating the list of values using in-build functions in python.

**Algorithm:**

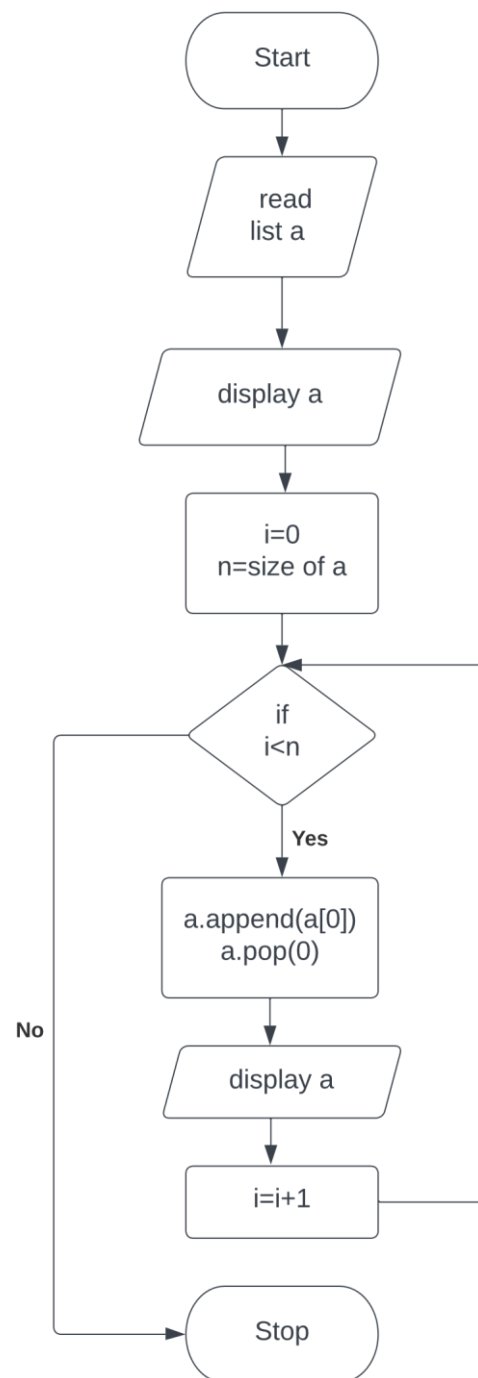
- Step 1** : Start
- Step 2** : read list a
- Step 3** : display a
- Step 4** : assign i=0, n=size of a
- Step 5** : Check if i<n
- Step 5.1** : If Yes, then a.append(a[0]), a.pop(0), i=i+1
- Step 5.2** : display a and go to step 5
- Step 5.3** : If No, then go to step 6
- Step 6** : Stop

**Program:**

```
In [15]: 1 a=input('Enter values : ').split(',')
          2 print(f'The original list is {a}', '\n', 'Circulating the list')
          3 for i in range(len(a)):
          4     a.append(a[0])
          5     a.pop(0)      # using Build_in function
          6     print(a)
```

```
Enter values : 1,2,3,4,5
The original list is ['1', '2', '3', '4', '5']
Circulating the list
['2', '3', '4', '5', '1']
['3', '4', '5', '1', '2']
['4', '5', '1', '2', '3']
['5', '1', '2', '3', '4']
['1', '2', '3', '4', '5']
```

**Flowchart:**



**Result:**

The python program is executed and output is verified successfully.

**Aim:**

To draw flowchart and write algorithm, program to circulating the list of values using slicing operator.

Algorithm:

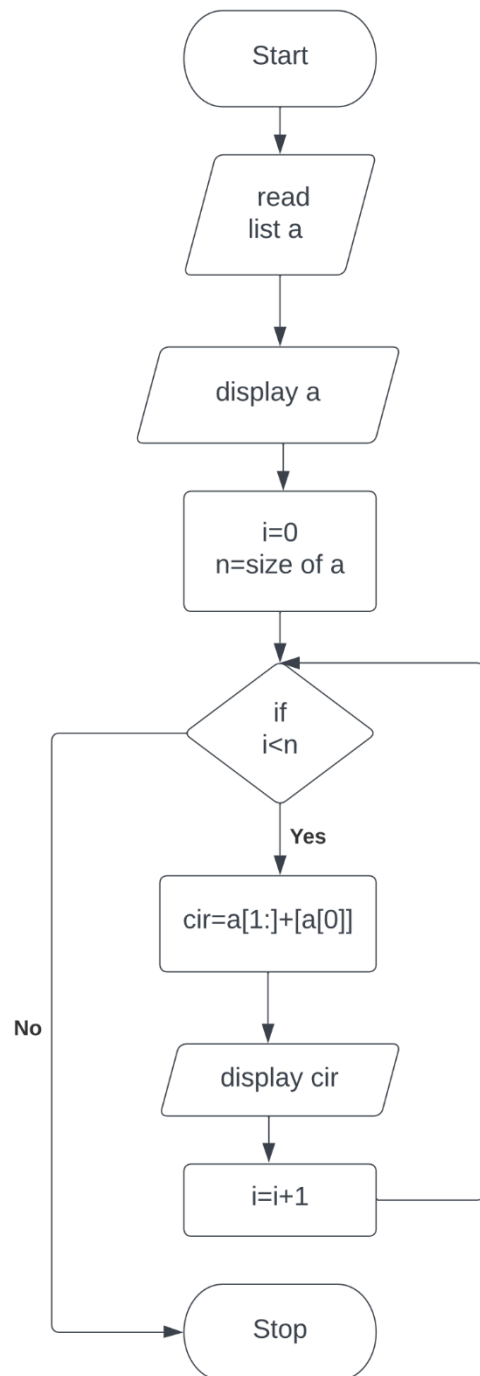
- Step 1** : Start
- Step 2** : read list a
- Step 3** : display a
- Step 4** : assign i=0, n=size of a
- Step 5** : Check if i < n
- Step 5.1** : If Yes , then compute cir=a[1:]+[a[0]], i=i+1
- Step 5.2** : display cir and go to step 5
- Step 5.3** : If No, then go to step 6
- Step 6** : Stop

**Program:**

```
In [17]: 1 a=input('Enter values : ').split(',')
          2 print(f'The origianl list is {a}','\n','Circulating the list')
          3 for i in range(len(a)):
          4     cir=a[1:]+[a[0]]      # using slicing operator
          5     print(cir)
```

```
Enter values : 1,2,3,4,5
The origianl list is ['1', '2', '3', '4', '5']
Circulating the list
['2', '3', '4', '5', '1']
['2', '3', '4', '5', '1']
['2', '3', '4', '5', '1']
['2', '3', '4', '5', '1']
['2', '3', '4', '5', '1']
```

## Flowchart



## Result:

The python program is executed and output is verified successfully.

**Aim:**

To draw flowchart and write algorithm, program to calculate the distance between two points.

**Algorithm:**

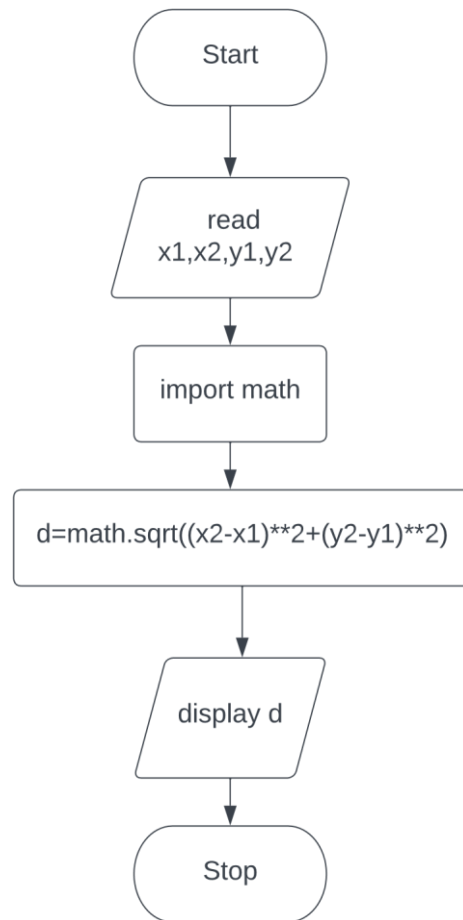
- Step 1 : Start
- Step 2 : read values of x1,x2, y1, y2
- Step 3 : import math
- Step 4 : compute  $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
- Step 5 : display d
- Step 6 : Stop

**Program:**

```
In [21]: 1 # Calculate the distance between two points
          2 import math
          3 x1=int(input('Enter x1 : '))
          4 x2=int(input('Enter x2 : '))
          5 y1=int(input('Enter y1 : '))
          6 y2=int(input('Enter y2 : '))
          7 d=math.sqrt((x2-x1)**2+(y2-y1)**2)
          8 print(f'The distance between two points is {d}')
```

```
Enter x1 : 3
Enter x2 : 7
Enter y1 : 2
Enter y2 : 8
The distance between two points is 7.211102550927978
```

**Flowchart:**



**Result:**

The python program is executed and output is verified successfully.