



SNS COLLEGE OF ENGINEERING
Kurumbapalayam (Po), Coimbatore – 641 107

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING



19IT103 – COMPUTATIONAL THINKING AND PYTHON PROGRAMMING

❖ A readable, dynamic, pleasant, flexible, fast and powerful language

Recap:

- Simple strategies for developing algorithms:
 - Iteration
 - Recursion
- Iteration: A sequence that is executed repeatedly so long as a certain condition holds. A sequence of statements is executed until a specified condition is true is called iterations.
 - for loop
 - While loop

Recap:

- Simple strategies for developing algorithms:
 - Iteration
 - **Recursion**
- **Recursion: A function that calls itself is known as recursion.**
- Recursion is a process by which a function calls itself repeatedly until some specified condition has been satisfied.

1.8 Illustrative problems:

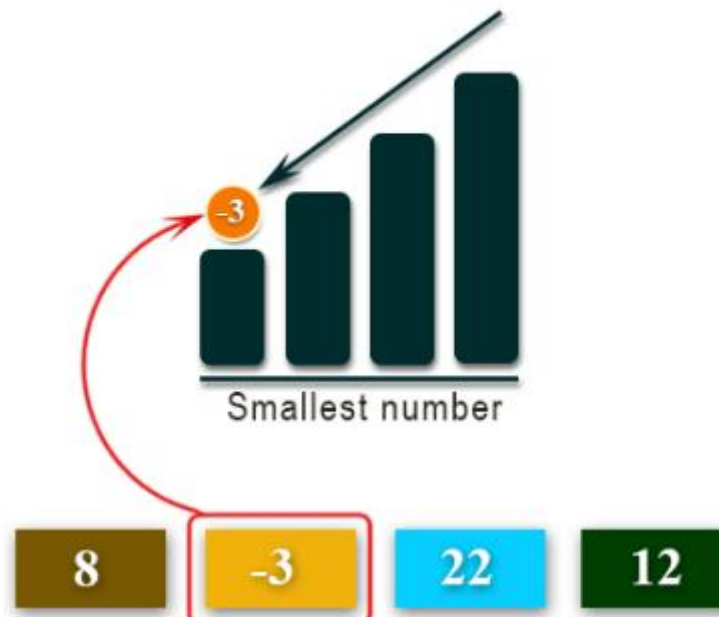
- Find a minimum in a list
- insert a card in a list of sorted cards

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1.8.1 Find a minimum in a list :

- To find the minimum element in the given list of elements.

Minimum Number In a List



1.8.1 Find a minimum in a list :

Problem Statement:

- The problem is to find the minimum element in the given list of elements.

Finding minimum in a list of elements can be achieved in different ways.

1.8.1 Find a minimum in a list :

Different ways to find minimum element in a list:

- One way is **to sort the list of elements in ascending order** and get the first element as minimum.
- **Another method** is to compare each element with other.
 - As an initial step, first element of the list is considered as **minimum element.**
 - And in each iteration, each element in the list is compared with the minimum.
 - If the element in the list is less than the minimum **then swap both elements** else compare with the next element in the list.
 - These steps are continued until the end of the list and finally print the minimum.

1.8.1 Find a minimum in a list :

Find minimum of two numbers:




```
#find minimum of two numbers
# a and b are parameters''

def find_min(a, b):
    if a < b:
        return a
    return b

print("Enter two values :")
a = int(input())
b = int(input())
print("Minimum number is ", find_min(a, b))
```


1.8.1 Find a minimum in a list :

Find minimum of two numbers:

main.py	  	Shell
<pre>1 def find_min(a,b): 2 if(a<b): 3 return a 4 return b 5 6 print("Enter two values:") 7 a=int(input()) 8 b=int(input()) 9 print("Minimum number is ",find_min(a,b)) 10</pre>		<pre>Enter two values: 5 88 Minimum number is 5 > </pre>

1.8.1 Find a minimum in a list :

Find minimum of three numbers:

```
#find minimum of three numbers

def find_min(a, b):
    if a < b:
        return a
    return b


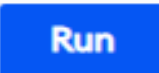
# a, b and c are parameters
def min_of_three(a, b, c):
    minVal = find_min(a, b)
    if c < minVal:
        return c
    return minVal

print("Enter three numbers: ")
a = int(input())
b = int(input())
c = int(input())

print("Minimum number is ", min_of_three(a, b, c))
```

1.8.1 Find a minimum in a list :

Find minimum of three numbers:

main.py	  	Shell
<pre>1 > def find_min(a,b): 2 > if(a<b): 3 > return a 4 > return b 5 6 > def min_of_three(a,b,c): 7 > minVal=find_min(a,b) 8 > if c<minVal: 9 > return c 10 > return minVal 11 12 > print("Enter three values:") 13 > a=int(input()) 14 > b=int(input()) 15 > c=int(input()) 16 > print("Minimum number is ",min_of_three(a,b,c)) 17</pre>		<pre>Enter three values: 77 3 56 Minimum number is 3 > </pre>

1.8.1 Find a minimum in a list :

Find minimum number in a list:

```
# find minimum of a list
def min_of_list(aList):
    if not aList:
        return None
    minVal = aList[0]
    for number in aList[1:]:
        if number < minVal:
            minVal = number
    return minVal

myList = []
limit = int(input("Enter the limit: "))
print("Enter the elements:\n")
for i in range(limit):
    element = int(input())
    myList.append(element)

print("Minimum of list is ", min_of_list(myList))
```

1.8.1 Find a minimum in a list :

Find minimum number in a list:

main.py	Shell
<pre>1 def min_of_list(aList): 2 if not aList: 3 return None 4 minVal = aList[0] 5 for number in aList[1:]: 6 if number < minVal: 7 minVal = number 8 return minVal 9 10 myList = [] 11 limit = int(input("Enter the limit: ")) 12 print("Enter the elements:\n") 13 for i in range(limit): 14 element = int(input()) 15 myList.append(element) 16 17 print("Minimum of list is ", min_of_list(myList)) 18</pre>	<pre>Enter the limit: 5 Enter the elements: -1 5 -2 6 8 Minimum of list is -2 ></pre>

A yellow speech bubble with a pointed tail at the bottom right, set against a solid blue background. The words "THANK YOU" are cut out of the bubble in a bold, sans-serif font, revealing the blue background behind them.

THANK YOU