# Question 1

# Perform Bubble sort using function in python.

In [16]:
```
# Python program for implementation of Bubble Sort

def bubbleSort(arr):
        n = len(arr)

        # Traverse through all array elements
        for i in range(n-1):
        # range(n) also work but outer loop will repeat one time more than needed.

                # Last i elements are already in place
                for j in range(0, n-i-1):

                        # traverse the array from 0 to n-i-1
                        # Swap if the element found is greater
                        # than the next element
                        if arr[j] > arr[j+1] :
                                arr[j], arr[j+1] = arr[j+1], arr[j]

# Driver code to test above
arr = [64, 34, 25, 12, 22, 11, 90]

bubbleSort(arr)

print ("Sorted array is:")
for i in range(len(arr)):
        print ("%d" %arr[i]),
```

```
Sorted array is:
11
12
22
25
34
64
90
```

# Question 2

# Perform Selection sort using function in python.

In [17]:
```
# Python program for implementation of Selection
# Sort
import sys
A = [64, 25, 12, 22, 11]

# Traverse through all array elements
for i in range(len(A)):

        # Find the minimum element in remaining
        # unsorted array
        min_idx = i
        for j in range(i+1, len(A)):
                if A[min_idx] > A[j]:
                        min_idx = j
```

```
        # Swap the found minimum element with
        # the first element
        A[i], A[min_idx] = A[min_idx], A[i]

# Driver code to test above
print ("Sorted array")
for i in range(len(A)):
        print("%d" %A[i]),
```

```
Sorted array
11
12
22
25
64
```

# Question 3

# Perform Insertion sort using function in python.

In [18]:
```
# Python program for implementation of Insertion Sort

# Function to do insertion sort
def insertionSort(arr):

        # Traverse through 1 to len(arr)
        for i in range(1, len(arr)):

                key = arr[i]

                # Move elements of arr[0..i-1], that are
                # greater than key, to one position ahead
                # of their current position
                j = i-1
                while j >=0 and key < arr[j] :
                                arr[j+1] = arr[j]
                                j -= 1
                arr[j+1] = key


# Driver code to test above
arr = [12, 11, 13, 5, 6]
insertionSort(arr)
print ("Sorted array is:")
for i in range(len(arr)):
        print ("%d" %arr[i])

# This code is contributed by Mohit Kumra
```

```
Sorted array is:
5
6
11
12
13
```

In [ ]:
```

```