In [1]:

```
#selection sort

def selection_sort(arr):
    for i in range(len(arr)):
        min_index=i
        for j in range(i+1,len(arr)):
            if arr[j]<arr[min_index]:
                min_index=j
        arr[i],arr[min_index]=arr[min_index],arr[i]
    return arr
list1=[]
n=int(input("number of elements in the list:"))
for i in range(n):
    list1.append(int(input("Arr[%d]:"%(i))))
print("sorted array is:"+str(selection_sort(list1)))
```

```
number of elements in the list:5
Arr[0]:9
Arr[1]:3
Arr[2]:6
Arr[3]:2
Arr[4]:7
sorted array is:[2, 3, 6, 7, 9]
```

In [2]:

```
# insertion sort
def insertion_sort(arr):
    for i in range(1,len(arr)):
        j=i
        while j>0 and arr[j-1]>arr[j]:
            arr[j-1],arr[j]=arr[j],arr[j-1]
            j-=1
unsorted_array=[5,4,3,2,1]
print("unsorted array:",unsorted_array)
insertion_sort(unsorted_array)
print("sorted array:",unsorted_array)
```

```
unsorted array: [5, 4, 3, 2, 1]
sorted array: [1, 2, 3, 4, 5]
```

In [3]:

```
# Merge sort

def merge_sort(arr):
    if len(arr)>1:
        left_arr=arr[:len(arr)//2]
        right_arr=arr[len(arr)//2:]
        merge_sort(left_arr)
        merge_sort(right_arr)

        i=0
        j=0
        k=0
        while i<len(left_arr)and j<len(right_arr):
            if left_arr[i]<right_arr[j]:
                arr[k]=left_arr[i]
                i+=1
            else:
                arr[k]=right_arr[j]
                j+=1
            k+=1
        while i<len(left_arr):
            arr[k]=left_arr[i]
            i+=1
            k+=1
        while j<len(right_arr):
            arr[k]=right_arr[j]
            j+=1
            k+=1
unsorted_array=[74,54,80,20,10]
print("unsorted array:",unsorted_array)
merge_sort(unsorted_array)
print("sorted_array:",unsorted_array)
```

```
unsorted array: [74, 54, 80, 20, 10]
sorted_array: [10, 20, 54, 74, 80]
```

In [4]:

```
# Prime numbers

def is_prime(num):
    if num <2:
        return True
    for i in range(2,num):
        if(num%i)==0:
            return False
    else:
        return True

def print_primes(limit):
    for num in range(1, limit + 1):
        if is_prime(num):
            print(num, end=" ")

limit = int(input("enter a limit: "))
print("Prime numbers are up to",(limit), "are:")
print_primes(limit)
```

```
enter a limit: 50
Prime numbers are up to 50 are:
1 2 3 5 7 11 13 17 19 23 29 31 37 41 43 47
```

In [ ]:

```

```