In [1]:
```
# 1
# Recall the “Building Block” strategy discussed in class. Using this strategy:
# a. Implement “insert” algorithm as building block (as a function).
# b. Implement “Insertion Sort” algorithm using “insert” as the building block.
# c. Test your program on randomly generated list of N integers. Take N as input

def insert(lst, k):
    while lst[k] < lst[k-1] and k > 0:
        lst[k], lst[k-1] = lst[k-1], lst[k]
        k = k - 1

def Insertion_sort(un_sorted_lst):
    for i in range(1, len(un_sorted_lst)):
        insert(un_sorted_lst, i)
    print(un_sorted_lst)

lst_1 = []     # here i am taking input elements of list from user
lst_length_input = int(input("Enter the number of how many digits you want too er
for i in range(lst_length_input):
    digits_input = int(input("Enter number that you want to enter in a list : "))
    lst_1.append(digits_input)

Insertion_sort(lst_1)
```

```
Enter the number of how many digits you want too enter in a list : 4
Enter number that you want to enter in a list : 2
Enter number that you want to enter in a list : 3
Enter number that you want to enter in a list : 1
Enter number that you want to enter in a list : 5
[1, 2, 3, 5]
```

In [3]:
```
#  2 (Selection Sorting)
# Recall the “Building Block” strategy discussed in class. Using this strategy:
# Implement “moveMin” algorithm as building block (as a function)
#  Implement “Selection Sort” algorithm using “moveMin” as the building block.# #

def move_min(S1,list):
    min_index = S1
    min_value = list[S1]
    for i in range(S1, len(list)):
        if list[i] < min_value:
            min_value = list[i]
            min_index = i
    list[min_index], list[S1] = list[S1], list[min_index]
    return list

def Selection_sort(list):
    for k in range(len(list)):
        move_min(k, list)
    print(list)

lst_2 = []     # here i am taking input elements of list from user
lst_length_input = int(input("Enter the number of how many digits you want too er
for i in range(lst_length_input):
    digits_input = int(input("Enter number that you want to enter in a list : "))
    lst_2.append(digits_input)

Selection_sort(lst_2)
```

```
Enter the number of how many digits you want too enter in a list : 3
Enter number that you want to enter in a list : 67
Enter number that you want to enter in a list : 34
Enter number that you want to enter in a list : 7
[7, 34, 67]
```

In [4]:
```
# 3
 # Write a Python program to get unique values from a list.
 # Sample Input: [10,15,20,10,30,35,20]
 # Expected Output: [10,15,20,30,35]

 # By 2 lists method :

def unique_values(list):
    unique_lst = []
    for i in list:
        if i not in unique_lst:
            unique_lst.append(i)


    return unique_lst


# 1 list method

def unique_values(list1):
    for i in list1:
        k=0
        for j in list1:
            if i == j:
                k += 1
                if k > 1:
                    list1.remove(i)
    return list1

lst = [10, 15,10, 20,20,35,40,20]
print(unique_values(lst))
```

```
[15, 10, 35, 40, 20]
```

In [5]:
```

# 4
# Write a Python program which takes two lists as input and then prints the comm
# Sample input:
# list1= [10,20,30,40,50]
# list2= [30,40,60,70]
# Expected Output= [30,40]

def common_values(list1,list2):
    common_list = []
    for i in list1:
        if i in list2:
            common_list.append(i)
    return common_list

list1 = [10,20,30,40,50]
list2 = [30,40,60,70]
print(common_values(list1,list2))
```

```
[30, 40]
```

In [6]:

```
# 5
# Write a Python program to print all sub-lists of a list.
# Sample Input: [1,2,3]
# Expected Output: [ [], [1], [1,2], [1,2,3] [2], [2,3],[3]]

def sublist(list):
    Sub_lists_list = []
    i =0
    while len(list) > 1:
        if i > len(list):
            list.pop(0)
            for j in range(1, len(list)):
                slic = list[0:j]
                Sub_lists_list.append(slic)
        slic = list[0:i]
        Sub_lists_list.append(slic)
        i += 1

    return Sub_lists_list

Sample_Input = [1,2,3,4,5]
print(sublist(Sample_Input))
```

```
[[], [1], [1, 2], [1, 2, 3], [1, 2, 3, 4], [1, 2, 3, 4, 5], [2], [2, 3], [2, 3,
4], [2, 3, 4, 5], [3], [3, 4], [3, 4, 5], [4], [4, 5], [5]]
```

In [7]:

```
# 6
# Write a Python program which takes a list as input and then changes the positic
# n
# th value with the (n+1)th in a list.
# Sample list: [10,20,30,40,50,60]
# Expected Output: [20, 10, 40, 30, 60, 50]

def change_position(list):
    if len(list) % 2 == 0:
        for i in range(0, len(list)-1, 2):
            list[i], list[i+1] = list[i+1], list[i]
    else:
        print("Enter the number of Even elements ")

    return list

list =  [10,20,30,40,50,60]
print(change_position(list))
```

```
[20, 10, 40, 30, 60, 50]
```

In [8]:

```
# 7
# Write a Python program which takes numbers as input and stores them in a list.
# converts the list into a single integer.
# Sample Input: [12,1,39]
# Expected Output: 12139

def lst_to_integer():
    numbers_list = []
    numbers_strength_input = int(input("Enter the number of Digits you want to er
    for i in range(0, numbers_strength_input):
        digits = int(input("Enter the digits you want to enter in the list : "))
        numbers_list.append(digits)
    print("Integer value of list is : ")
    for j in numbers_list:
        print(j, end="")

# function calling
lst_to_integer()
```

```
Enter the number of Digits you want to enter in the list : 5
Enter the digits you want to enter in the list : 2
Enter the digits you want to enter in the list : 32
Enter the digits you want to enter in the list : 432
Enter the digits you want to enter in the list : 65
Enter the digits you want to enter in the list : 454
Integer value of list is :
23243265454
```

In [ ]: