



RIPHAH

INTERNATIONAL UNIVERSITY

Name = Waleed Sattar

SAP-ID = 55700

Section = BS SE 3-2

LAB-14:

Task-1(Ascending Order):

Output:

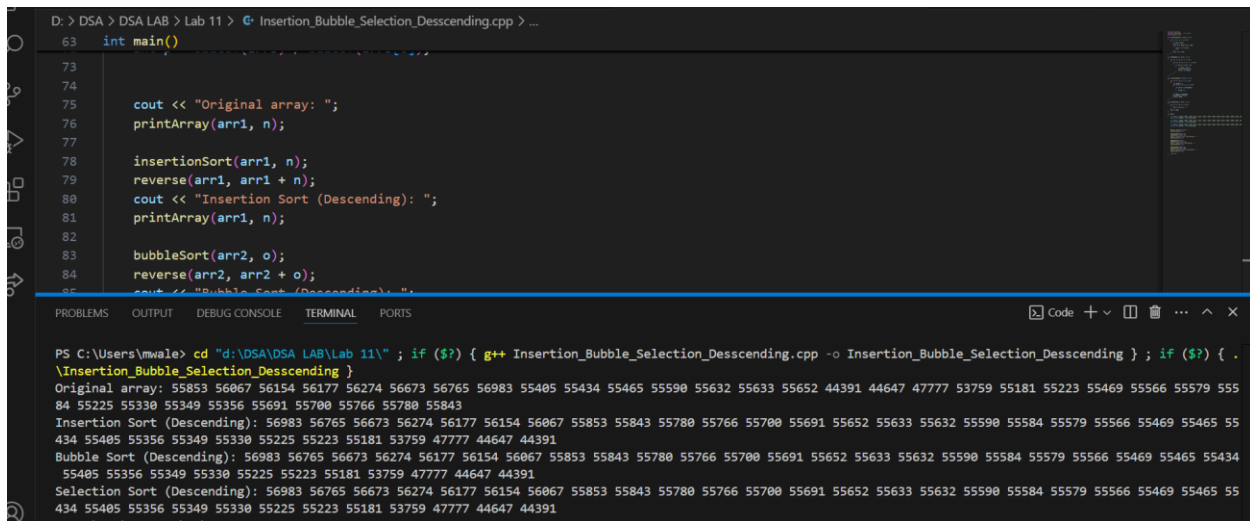
```
D: > DSA > DSA LAB > Lab 11 > Insertion_Bubble_Selection_Ascending.cpp > main()
62  int main()
70      int arr3[] = { 55405, 55434, 55465, 55590, 55632, 55633, 55652,44391, 44647, 47777, 53759, 55181, 55223,55469, 55566, 55579, 55584, 552
71      int p = sizeof(arr3) / sizeof(arr3[0]);
72
73
74
75      cout << "Original array: ";
76      printArray(arr1, n);
77
78      insertionSort(arr1, n);
79      cout << "Array sorted with Insertion Sort(Ascending): ";
80      printArray(arr1, n);
81
82      bubbleSort(arr2, n);
83
84      selectionSort(arr3, n);
85
86      return 0;
87  }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\mwale> cd "d:\DSA\DSA LAB\Lab 11"; if ($?) { g++ Insertion_Bubble_Selection_Ascending.cpp -o Insertion_Bubble_Selection_Ascending }; if ($?) { .\I
nsertion_Bubble_Selection_Ascending }
Original array: 55405 55434 55465 55590 55632 55633 55652 44391 44647 47777 53759 55181 55223 55469 55566 55579 55584 55225 55330 55349 55356 55691 55700 55766 557
80 55843 55853 56067 56154 56177 56274 56673 56765 56983
Array sorted with Insertion Sort(Ascending): 44391 44647 47777 53759 55181 55223 55225 55330 55349 55356 55405 55434 55465 55469 55566 55579 55584 55590 55632 556
33 55652 55691 55700 55766 55780 55843 55853 56067 56154 56177 56274 56673 56765 56983
Array sorted with Bubble Sort(Ascending): 44391 44647 47777 53759 55181 55223 55225 55330 55349 55356 55405 55434 55465 55469 55566 55579 55584 55590 55632 556
52 55691 55700 55766 55780 55843 55853 56067 56154 56177 56274 56673 56765 56983
Array sorted with Selection Sort(Ascending): 44391 44647 47777 53759 55181 55223 55225 55330 55349 55356 55405 55434 55465 55469 55566 55579 55584 55590 55632 556
33 55652 55691 55700 55766 55780 55843 55853 56067 56154 56177 56274 56673 56765 56983
PS D:\DSA\DSA LAB\Lab 11>
```

Task-2(Descending Order):

Output:



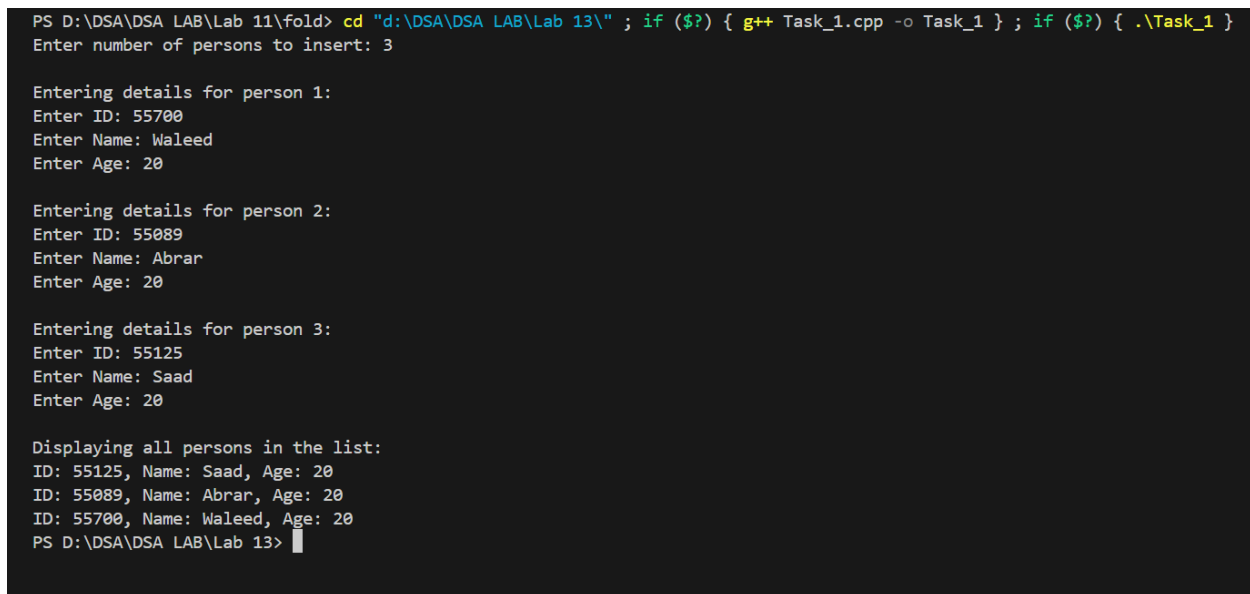
```
D:\> DSA > DSA LAB > Lab 11 > G: Insertion_Bubble_Selection_Desscending.cpp > ...
63 int main()
73
74
75     cout << "Original array: ";
76     printArray(arr1, n);
77
78     insertionSort(arr1, n);
79     reverse(arr1, arr1 + n);
80     cout << "Insertion Sort (Descending): ";
81     printArray(arr1, n);
82
83     bubbleSort(arr2, o);
84     reverse(arr2, arr2 + o);
85     cout << "Bubble Sort (Descending): ";
86     printArray(arr2, o);
87
88     selectionSort(arr3, n);
89     reverse(arr3, arr3 + n);
90     cout << "Selection Sort (Descending): ";
91     printArray(arr3, n);
92
93     return 0;
94 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\mwale> cd "d:\DSA\DSA LAB\Lab 11\" ; if ($?) { g++ Insertion_Bubble_Selection_Desscending.cpp -o Insertion_Bubble_Selection_Desscending } ; if ($?) { .\Insertion_Bubble_Selection_Desscending }
Original array: 55853 56067 56154 56177 56274 56673 56765 56983 55405 55434 55465 55590 55632 55633 55652 44391 44647 47777 53759 55181 55223 55469 55566 55579 55584 55225 55330 55349 55356 55691 55700 55766 55780 55843
Insertion Sort (Descending): 56983 56765 56673 56274 56177 56154 56067 55853 55843 55780 55766 55700 55691 55652 55633 55632 55590 55584 55579 55566 55469 55465 55434 55405 55356 55349 55330 55225 55223 55181 53759 47777 44647 44391
Bubble Sort (Descending): 56983 56765 56673 56274 56177 56154 56067 55853 55843 55780 55766 55700 55691 55652 55633 55632 55590 55584 55579 55566 55469 55465 55434 55405 55356 55349 55330 55225 55223 55181 53759 47777 44647 44391
Selection Sort (Descending): 56983 56765 56673 56274 56177 56154 56067 55853 55843 55780 55766 55700 55691 55652 55633 55632 55590 55584 55579 55566 55469 55465 55434 55405 55356 55349 55330 55225 55223 55181 53759 47777 44647 44391
```

Linear Linked List Tasks:

Task 1(insert at head):



```
PS D:\DSA\DSA LAB\Lab 11\fold> cd "d:\DSA\DSA LAB\Lab 13\" ; if ($?) { g++ Task_1.cpp -o Task_1 } ; if ($?) { .\Task_1 }
Enter number of persons to insert: 3

Entering details for person 1:
Enter ID: 55700
Enter Name: Waleed
Enter Age: 20

Entering details for person 2:
Enter ID: 55089
Enter Name: Abrar
Enter Age: 20

Entering details for person 3:
Enter ID: 55125
Enter Name: Saad
Enter Age: 20

Displaying all persons in the list:
ID: 55125, Name: Saad, Age: 20
ID: 55089, Name: Abrar, Age: 20
ID: 55700, Name: Waleed, Age: 20
PS D:\DSA\DSA LAB\Lab 13> |
```

Task 2(Insert at Tail):

```
PS D:\DSA\DSA LAB\Lab 11\fold> cd "d:\DSA\DSA LAB\Lab 13\" ; if ($?) { g++ Task_2.cpp -o Task_2 } ; if ($?) { .\Task_2 }
Enter number of persons to insert: 3

Entering details for person 1:
Enter ID: 5500
Enter Name: waleed
Enter Age: 20

Entering details for person 2:
Enter ID: 76521
Enter Name: abrar
Enter Age: 21

Entering details for person 3:
Enter ID: 64312
Enter Name: saad
Enter Age: 19

Displaying all persons in the list:
ID: 5500, Name: waleed, Age: 20
ID: 76521, Name: abrar, Age: 21
ID: 64312, Name: saad, Age: 19
PS D:\DSA\DSA LAB\Lab 13> █
```

Task 3(Insert at Head & Tail):

```
Entering details for person 1:
Enter ID: 55700
Enter Name: waleed
Enter Age: 20
Choose insertion type:
1. Insert at Head
2. Insert at Tail
1

Entering details for person 2:
Enter ID: 22525
Enter Name: abrar
Enter Age: 19
Choose insertion type:
1. Insert at Head
2. Insert at Tail
2

Entering details for person 3:
Enter ID: 19872
Enter Name: saad
Enter Age: 19
Choose insertion type:
1. Insert at Head
2. Insert at Tail
1

Displaying all persons in the list:
ID: 19872, Name: saad, Age: 19
ID: 55700, Name: waleed, Age: 20
ID: 22525, Name: abrar, Age: 19
PS D:\DSA\DSA LAB\Lab 11\fold> █
```