



RIPHAH
INTERNATIONAL UNIVERSITY

Name = Muhammad Waleed Sattar

SAP-ID = 55700

Section = BS SE 3-2

Subject = Data Structures

Lab Task 03:

Question 1:

Code & Output:

```
Lab3.cpp Lab3_1.cpp Lab3_Arrays_pointers.cpp Lab3_2.cpp Lab3_Task1_waleed_sattar.cpp >
Lab3_Task1_waleed_sattar.cpp > main()
1 #include<iostream>
2 using namespace std;
3 int main(){
4     int i,a[10]={1,2,3,4,5,6,7,8,9,10};
5     for(i=0; i<10; i++)
6     {
7         cout<<a[i]<<endl;
8     }
9     return 0;
10 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS D:\DSA LAB> cd "d:\DSA LAB\" ; if ($?) { g++ Lab3_Task1_waleed_sattar.cpp -o Lab3_Task1_waleed_sattar
1
2
3
4
4
4
5
6
7
8
9
10
PS D:\DSA LAB>
```

Question 2:

Code & Output:

```
Lab3.cpp Lab3_1.cpp Lab3_Arrays_pointers.cpp Lab3_2.cpp Lab3_Task1_waleed_sattar.cpp Lab3_Task2_waleed_sattar.cpp X Lab3_ >
Lab3_Task2_waleed_sattar.cpp > main()
1 #include<iostream>
2 using namespace std;
3 int main(){
4     int searchvalue;
5     cout<<"Enter search value: "<<endl;
6     cin>>searchvalue;
7     bool found =false;
8     int numbers[10]={12,14,10,15,17,45,32,44,77,14};
9     for(int i=0; i<10; i++)
10    {
11        if(numbers[i]==searchvalue)
12        {
13            found=true;
14            cout<<"*** Search Found *** and it's index is "<<i+1<<endl;
15            break;
16        }
17    }
18    if(!found)
19    {
20        cout<<"*** Search not Found ***"<<endl;
21    }
22    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS D:\DSA LAB> cd "d:\DSA LAB\" ; if ($?) { g++ Lab3_Task2_waleed_sattar.cpp -o Lab3_Task2_waleed_sattar } ; if ($?) { .\Lab3_Task2_waleed_sattar }
Enter search value:
14
*** Search Found *** and it's index is 2
PS D:\DSA LAB>
```

Question 03:

Code & Output:

```
Lab3_Task3_waleed_sattar.cpp x Lab3_Task4_waleed_sattar.cpp Lab3_Task5_waleed_sattar.cpp Lab3_Task6_waleed_sattar.cpp Lab3_Task7_waleed_sattar.cpp
Lab3_Task3_waleed_sattar.cpp > main()
1  #include<iostream>
2  using namespace std;
3
4  int main()
5  {
6      int arr[10],n,pos,x;
7      cout<<"Enter size of array";
8      cin>>n;
9      cout<<"Enter array elements";
10     for(int i=0; i<n; i++){
11         cin>>arr[i];
12     }
13     cout<<"Enter the insertion Location ";
14     cin>>pos;
15     cout<<"Enter the value to insert";
16     cin>>x;
17
18     for(int i=n-1; i>=pos-1; i--){
19         arr[i+1]=arr[i];
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS D:\DSA LAB> cd "d:\DSA LAB\" ; if ($?) { g++ Lab3_Task3_waleed_sattar.cpp -o Lab3_Task3_waleed_sattar } ; if ($?) { .\Lab3_Task3_waleed_sattar }
Enter size of array4
Enter array elements1
2
3
4
Enter the insertion Location 2
Enter the value to insert8
18234
```

Question 04:

Code &Output:

```
Lab3_Task3_waleed_sattar.cpp Lab3_Task4_waleed_sattar.cpp x Lab3_Task5_waleed_sattar.cpp Lab3_Task6_waleed_sattar.cpp Lab3_Task7_waleed_sattar.cpp
Lab3_Task4_waleed_sattar.cpp > main()
1  #include<iostream>
2  using namespace std;
3
4  int main()
5  {
6      int arr[10],n,index,x;
7      cout<<"Enter size of array";
8      cin>>n;
9      cout<<"Enter array elements";
10     for(int i=0; i<n; i++){
11         cin>>arr[i];
12     }
13     cout<<"Enter the index you want to delete ";
14     cin>>index;
15
16     arr[index-1]=0;
17     n--;
18
19     for(int i=0; i<n-1; i++){
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS D:\DSA LAB> cd "d:\DSA LAB\" ; if ($?) { g++ Lab3_Task4_waleed_sattar.cpp -o Lab3_Task4_waleed_sattar } ; if ($?) { .\Lab3_Task4_waleed_sattar }
Enter size of array3
Enter array elements1
2
3
Enter the index you want to delete 2
103
PS D:\DSA LAB>
```

Question 05:

Code & Output:

```
Lab3_Task5_waleed_sattar.cpp > main()
1  #include<iostream>
2  using namespace std;
3  int main(){
4      int a[6];
5      cout<<"Enter 6 values"<<endl;
6      for(int i=0 ; i<6; i++)
7      {
8          cin>>a[i];
9      }
10     if(a[0]==a[5] && a[1]==a[4] && a[2] ==a[3])
11     {
12         cout<<"Entered numbers are palindrome"<<endl;
13     }
14     else
15     cout<<"Entered number is not palindrome"<<endl;
16
17     return 0;
18 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS D:\DSA LAB> cd "d:\DSA LAB\" ; if ($?) { g++ Lab3_Task5_waleed_sattar.cpp -o Lab3_Task5_waleed_sattar } ; if ($?) { .\Lab3_Task5_waleed_sattar
Enter 6 values
1
2
3
3
2
1
```

Question 06:

Code & Output:

```
Lab3_Task6_waleed_sattar.cpp > main()
12  int main() {
13      int sum = 0,
14      n;
15      for(int i = 0; i < n; i++) {
16          sum += a[i];
17      }
18
19      float avg = sum / n;
20      cout << "Average: " << avg << endl;
21
22      cout << "Factorials:" << endl;
23      for(int i = 0; i < n; i++) {
24          cout << "Factorial of " << a[i] << " is " << factorial(a[i]) << endl;
25      }
26
27      delete[] a;
28 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS D:\DSA LAB> cd "d:\DSA LAB\" ; if ($?) { g++ Lab3_Task6_waleed_sattar.cpp -o Lab3_Task6_waleed_sattar } ; if ($?) { .\Lab3_Task6_waleed_sattar
Enter the number of elements (1-20): 3
Enter 3 values (0-12):
1
2
3
Average: 2
Factorials:
Factorial of 1 is 1
Factorial of 2 is 2
Factorial of 3 is 6
PS D:\DSA LAB>
```

Question 07:

Code & Output:

```
Lab3_Task7_waleed_sattar.cpp X Lab3_Task4_waleed_sattar.cpp
Lab 03 > Lab3_Task7_waleed_sattar.cpp > main()
6 int main() {
22 }
23
24 // Taking input for key to search
25 cout << "Enter the key to search for: ";
26 cin >> key;
27
28 // Linear search
29 bool found = false;
30 for (int i = 0; i < size; ++i) {
31     if (array[i] == key) {
32         cout << "Key " << key << " found at position " << i+1 << "." << endl;
33         found = true;
34         break;
35     }
36 }
37 }
38 }
39 }
40 }
41 }
42 }
43 }
44 }
45 }
46 }
47 }
48 }
49 }
50 }
51 }
52 }
53 }
54 }
55 }
56 }
57 }
58 }
59 }
60 }
61 }
62 }
63 }
64 }
65 }
66 }
67 }
68 }
69 }
70 }
71 }
72 }
73 }
74 }
75 }
76 }
77 }
78 }
79 }
80 }
81 }
82 }
83 }
84 }
85 }
86 }
87 }
88 }
89 }
90 }
91 }
92 }
93 }
94 }
95 }
96 }
97 }
98 }
99 }
100 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS D:\DSA LAB> cd "d:\DSA LAB\Lab 03\" ; if (\$?) { g++ Lab3_Task7_waleed_sattar.cpp -o Lab3_Task7_waleed_sattar ; if (\$?) { .\Lab3_Task7_waleed_sattar }
Enter the size of the array: 3
Enter 3 integers:
1
2
3
Enter the key to search for: 2
Key 2 found at position 2.
PS D:\DSA LAB\Lab 03> }

Question 08:

Code & Output:

```
Lab3_Task7_waleed_sattar.cpp Lab3_Task4_waleed_sattar.cpp Lab3_Task5_waleed_sattar.cpp Lab3_Task6_waleed_sattar.cpp Lab3_Task8_waleed_sattar.cpp
Lab3_Task8_waleed_sattar.cpp > main()
2 using namespace std;
3 int main(){
4     int searchvalue;
5     cout<<"Enter search value: "<<endl;
6     cin>>searchvalue;
7     bool found=false;
8     int numbers[4][4]={12,14,10,15,17,45,32,44,77,14,45,32,47,86,65,97};
9     for(int i=0; i<4; i++)
10     {
11         for(int j=0; j<4; j++)
12         {
13             if(numbers[i][j]==searchvalue)
14             {
15                 found=true;
16                 cout<<"*** Search Found *** \nIt's ROW Index is: "<<i+1<<endl;
17                 cout<<"And it's column Index is: "<<j+1<<endl;
18             }
19         }
20     }
21 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS D:\DSA LAB> cd "d:\DSA LAB\" ; if (\$?) { g++ Lab3_Task8_waleed_sattar.cpp -o Lab3_Task8_waleed_sattar ; if (\$?) { .\Lab3_Task8_waleed_sattar }
Enter search value:
86
*** Search Found ***
It's ROW Index is: 4
And it's column Index is: 2
PS D:\DSA LAB> }

Question 09:

Code & Output:

```
Lab3_Task9_waleed_sattar.cpp  Lab3_Task5_waleed_sattar.cpp  Lab3_Task6_waleed_sattar.cpp  Lab3_Task8_waleed_sattar.cpp  Lab3_Task9_waleed_sattar.cpp x ▶

Lab3_Task9_waleed_sattar.cpp > main()
1  #include<iostream>
2  using namespace std;
3  int main(){
4      int a[4][4],i,j;
5      cout<<"Enter values for matrices"<<endl;
6      for(int i=0; i<4; i++)
7      {for(int j=0; j<4; j++)
8      {
9          cin>>a[i][j];
10     }
11     }
12     cout<<"Transpose is:";
13     for(int i=0; i<4; i++)
14     {for(int j=0; j<4; j++)
15     {
16         cout<<a[j][i]<<"  ";
17     }
18     }
19     }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Code + -

```
PS D:\DSA LAB> cd "d:\DSA LAB\" ; if ($?) { g++ Lab3_Task9_waleed_sattar.cpp -o Lab3_Task9_waleed_sattar } ; if ($?) { .\Lab3_Task9_waleed_sattar }
Enter values for matrices
1
2
3
4
5
6
7
8
9
```

```
PS D:\DSA LAB> cd "d:\DSA LAB\" ; if ($?) { g++ Lab3_Task9_waleed_sattar.cpp -o Lab3_Task9_waleed_sattar } ; if ($?) { .\Lab3_Task9_waleed_sattar }
Enter values for matrices
1
2
3
4
5
6
7
8
9
10
11
22
3
4
5
3
Transpose is:1 5 9 3
2 6 10 4
3 7 11 5
4 8 22 3
PS D:\DSA LAB>
```