Name: Jawad Ahmed

Roll No: 20P-0165

1.cpp > main()

```cpp
#include <iostream>
using namespace std;

void Copy_Array(int arr[],int arraySize)
{
    int copyArray[arraySize];
    for (int i = 0; i < arraySize; i++)
    {
        copyArray[i] = arr[i];
    }

    cout << "The Array elments after Copied" << endl;
    cout << "{";
    for (int i = 0; i < arraySize; i++)
    {
        cout << copyArray[i] << "  ";
    }
    cout << "}" << endl;
}


int main()
{
    int arr[] = {1, 2, 3, 4, 5, 6};
    int arraySize = 0, countSize = 0;
    for (int i = 0; i < 6; i++)
    {
        countSize += sizeof(arr[i]);
    }
    arraySize = countSize / sizeof(arr[0]);
    Copy_Array(arr, arraySize);
    return 0;
}
```

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTERno2/oop_lab/3rd_assignment/
2/oop_lab/3rd_assignment/"1
The Array elments after Copied
{1  2  3  4  5  6  }
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

2.cpp > main()

```cpp
#include <iostream>
using namespace std;

void Duplicate_Items(int arr[],int arraySize);

int main()
{
    int arr[] = {1, 2, 2, 5, 5, 1};
    int arraySize = sizeof(arr) / sizeof(arr[0]);
    Duplicate_Items(arr, arraySize);
    return 0;
}

void Duplicate_Items(int arr[],int arraySize)
{
    int counter = 0;
    int numberCounter = 0;
    for (int i = 0; i < arraySize; i++)
    {
        for (int j = i + 1; j < arraySize; j++)
        {
            if (arr[i] == arr[j])
                counter += 1;
        }
        if (counter > 0)
        {
            numberCounter += 1;
        }
        counter = 0;
    }
    cout << "The Duplicate Items are = " << numberCounter << endl;
}
```

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namii
2/oop_lab/3rd_assignment/"2
The Duplicate Items are = 3
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

```cpp
#include <iostream>
using namespace std;

void Unique_Elements(int arr[],int arraySize);

int main()
{
    int arr[] = {1, 2, 3, 4, 1, 5, 2};
    int arraySize = sizeof(arr) / sizeof(arr[0]);
    Unique_Elements(arr, arraySize);
    return 0;
}

void Unique_Elements(int arr[],int arraySize)
{
    cout << "The Orignal Array is ---->   ";
    cout << "  {";
    for (int i = 0; i < arraySize; i++)
    {
        cout << arr[i] << " ";
    }
    cout <<   "}" << endl;
    int counter = 0;
    cout << "The Unique Elements of the array are ---> ";
    cout << "   {";
    for (int i = 0; i < arraySize; i++)
    {
        for (int j = 0; j < arraySize; j++)
        {
            if (i != j)
            {
                if (arr[i] == arr[j])
                    counter += 1;
            }
        }
        if (counter == 0)
            cout << arr[i] << "  ";
        counter = 0;
    }
    cout <<   "}" << endl;
}
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/
/home/namiirr/SEMESTERno2/oop_lab/3rd_assignment/"3
The Orignal Array is ---->     {1 2 3 4 1 5 2 }
The Unique Elements of the array are --->    {3  4  5  }
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

4.cpp > Array_Merging(int [], int [], int)

```cpp
#include <iostream>
using namespace std;

void Array_Merging(int arrOne[], int arrTwo[], int arraySize);

int main()
{
    int arrOne[] = {4, 5, 6, 7};
    int arrTwo[] = {10, 20, 14, 18};
    int arraySize = sizeof(arrOne) / sizeof(arrOne[0]);
    Array_Merging(arrOne, arrTwo, arraySize);
    return 0;
}

void Array_Merging(int arrOne[], int arrTwo[], int arraySize)
{
    int a = 0, w = 0;
    int mrg_aray_Size = arraySize + arraySize;
    int mergeArray[mrg_aray_Size];
    for (int i = 0; i < arraySize; i++)
    {
        mergeArray[i] = arrOne[i];
        if (i == (arraySize - 1))
        {
            for (int innerLoop = arraySize; innerLoop < mrg_aray_Size; innerLoop++)
            {
                mergeArray[innerLoop] = arrTwo[a];
                a += 1;
            }
        }
    }
```

```
            {
                mergeArray[innerLoop] = arrTwo[a];
                a += 1;
            }
        }
    }
    int g = 0, check = 0, index = 0, j = 0;
    for (int i = 0; i < mrg_aray_Size; i++)
    {
        g = mergeArray[i];
        for (int  j = i; j < mrg_aray_Size; j++)
        {
            if (g < mergeArray[j])
            {
                g = mergeArray[j];
                check = j;
            }

        }
        mergeArray[check] = mergeArray[index];
        mergeArray[index] = g;
        index += 1;
    }
    cout << "The array After emerging and making in descending order    ----> ";
    cout << "{";
    for (int result = 0; result < mrg_aray_Size; result++)
    {
        cout << mergeArray[result] << " ";

    }
    cout <<  "}" << endl;
}
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE 2: Code

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTERno2/oop_lab/3rd_assignm
/home/namiirr/SEMESTERno2/oop_lab/3rd_assignment/"4
The array After emerging and making in descending order    ----> {20 18 14 10 7 6 5 4 }
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

5.cpp > main()

```cpp
#include <iostream>
using namespace std;

int main()
{
    int arr[] = {1, 1, 2, 2, 3, 3};
    int arraySize = sizeof(arr) / sizeof(arr[0]);
    int counter = 0;
    for (int i = 0; i < arraySize; i++)
    {
        for(int j = 0; j < arraySize; j++)
        {
            if (arr[i] == arr[j])
                counter += 1;
        }
        cout << "The Number  = " << arr[i] << "is repeated " << counter << "   Times" << endl;
        counter = 0;
    }
}
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

2: Code

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTERno2/oop_lab/3rd_assignment/" && g++
/home/namiirr/SEMESTERno2/oop_lab/3rd_assignment/"5
The Number  = 1is repeated 2   Times
The Number  = 1is repeated 2   Times
The Number  = 2is repeated 2   Times
The Number  = 2is repeated 2   Times
The Number  = 3is repeated 2   Times
The Number  = 3is repeated 2   Times
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

6.cpp > main()

```cpp
#include <iostream>
using namespace std;
int Largest_Number(int arr[], int arraySize);
int Smallest_Number(int arr[], int arraySize);
void Display_Array(int arr[], int arraySize);

int main()
{
    int arr[] = {1, 3, 5, 7, 9, 0};
    int arraySize = sizeof(arr) / sizeof(arr[0]);
    cout << "The Given Array is  ----->     ";
    Display_Array(arr, arraySize);
    int largestNumber = Largest_Number(arr, arraySize);
    int smallestNumber = Smallest_Number(arr, arraySize);
    cout << "The Largest Number in the Array is = " << largestNumber << endl;
    cout << "The Smallest Number in the Array is = " << smallestNumber << endl;
    return 0;
}

void Display_Array(int arr[], int arraySize)
{
    cout << "{";
    for (int i = 0; i < arraySize; i++)
    {
        cout << arr[i] << " ";
    }
    cout << "}" << endl;
}
```

```
30  int Largest_Number(int arr[], int arraySize)
31  {
32      int largestNumber = arr[0];
33      for (int i = 0; i < arraySize; i++)
34      {
35          if (largestNumber < arr[i])
36              largestNumber = arr[i];
37      }
38      return largestNumber;
39  }
40
41  int Smallest_Number(int arr[], int arraySize)
42  {
43      int smallestNumber = arr[0];
44      for (int i = 0; i < arraySize; i++)
45      {
46          if (smallestNumber > arr[i])
47              smallestNumber = arr[i];
48      }
49      return smallestNumber;
50  }
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTERno2/oop_lab/3rd_a
2/oop_lab/3rd_assignment/"6
The Given Array is  ----->     {1 3 5 7 9 0 }
The Largest Number in the Array is = 9
The Smallest Number in the Array is = 0
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

7.cpp > Even_Odd(int [], int)

```cpp
#include <iostream>
using namespace std;
void Even_Odd(int arr[],int arraySize);
void Display_Array(int arr[], int arraySize);

int main()
{
    int arr[] = {1, 2, 3, 4, 5, 6, 7, 8};
    int arraySize = sizeof(arr) / sizeof(arr[0]);
    Display_Array(arr, arraySize);
    Even_Odd(arr, arraySize);
    return 0;
}

void Display_Array(int arr[], int arraySize)
{
    cout << "The Given Array is ----->";
    cout << "   {";
    for (int i = 0; i < arraySize; i++)
    {
        cout << arr[i] << " ";
    }
    cout << "}" << endl;
}
```

```
26  void Even_Odd(int arr[], int arraySize)
27  {
28      int evenCounter = 0, oddCounter = 0;
29      for (int i = 0; i < arraySize; i++)
30      {
31          if (arr[i] % 2 == 0)
32              evenCounter += 1;
33          else
34              oddCounter += 1;
35      }
36      int evenArray[evenCounter];
37      int oddArray[oddCounter];
38      int e = 0, o = 0;
39      for (int i = 0; i < arraySize; i++)
40      {
41          if (arr[i] % 2 == 0)
42          {
43              evenArray[e] = arr[i];
44              e += 1;
45          }
46          else
47          {
48              oddArray[o] = arr[i];
49              o += 1;
50          }
51      }
52      cout << "The Even Array is ----->";
53      cout << "   {";
54      for (int i = 0; i < evenCounter; i++)
55      {
56          cout << evenArray[i] << " ";
57      }
58      cout << "}" << endl;
59
60      cout << "The Odd Array is ----->";
61      cout << "   {";
```

```
39      for (int i = 0; i < arraySize; i++)
40      {
41          if (arr[i] % 2 == 0)
42          {
43              evenArray[e] = arr[i];
44              e += 1;
45          }
46          else
47          {
48              oddArray[o] = arr[i];
49              o += 1;
50          }
51      }
52      cout << "The Even Array is ----->";
53      cout << "   {";
54      for (int i = 0; i < evenCounter; i++)
55      {
56          cout << evenArray[i] << " ";
57      }
58      cout << "}" << endl;
59
60      cout << "The Odd Array is ----->";
61      cout << "   {";
62      for (int i = 0; i < oddCounter; i++)
63      {
64          cout << oddArray[i] << " ";
65      }
66      cout << "}" << endl;
67  }
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEME
2/oop_lab/3rd_assignment/"7
The Given Array is ----->   {1 2 3 4 5 6 7 8 }
The Even Array is ----->   {2 4 6 8 }
The Odd Array is ----->   {1 3 5 7 }
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

8.cpp > Ascending_Array(int [], int)

```cpp
#include <iostream>
using namespace std;
void Ascending_Array(int arr[],int arraySize);
void Display_Array(int arr[], int arraySize);

int main()
{
    int arr[] = {8, 5, 1, 2, 3, 7, 10};  // Ascending Smallest to greatest
    int arraySize = sizeof(arr) / sizeof(arr[0]);
    Display_Array(arr, arraySize);
    Ascending_Array(arr, arraySize);
    return 0;
}
void Display_Array(int arr[], int arraySize)
{
    cout << "The Given Array is  ----->";
    cout << "   {";
    for (int i = 0; i < arraySize; i++)
    {
        cout << arr[i] << " ";
    }
    cout << "}" << endl;
}

void Ascending_Array(int arr[], int arraySize)
{
    int check = 0, index = 0, indexx = 0;
    for (int i = 0; i < arraySize; i++)
    {
        int smallestNumber = arr[i];
        for (int j = i; j < arraySize; j++)
        {
            if (smallestNumber >= arr[j])
            {
                smallestNumber = arr[j];
                check = j;
            }
```

```
25  void Ascending_Array(int arr[], int arraySize)
26  {
27      int check = 0, index = 0, indexx = 0;
28      for (int i = 0; i < arraySize; i++)
29      {
30          int smallestNumber = arr[i];
31          for (int j = i; j < arraySize; j++)
32          {
33              if (smallestNumber >= arr[j])
34              {
35                  smallestNumber = arr[j];
36                  check = j;
37              }
38          }
39          indexx = arr[index];
40          arr[index] = smallestNumber;
41          arr[check] = indexx;
42          check = 0;
43          index += 1;
44      }
45      cout << "The array is Ascending order  ---->";
46      cout << "   {";
47      for (int i = 0; i < arraySize; i++)
48      {
49          cout << arr[i] << " ";
50      }
51      cout << "}" << endl;
52  }
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTERno2/oop_lab/3r
2/oop_lab/3rd_assignment/"8
The Given Array is  ----->   {8 5 1 2 3 7 10 }
The array is Ascending order  ---->   {1 2 3 5 7 8 10 }
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

9.cpp > main()

```cpp
#include <iostream>
using namespace std;
void Delete_Array(int arr[], int arraySize);
void Display_Array(int arr[], int arraySize);

int main()
{
    int arr[] = {1, 2, 3, 4, 5, 6, 7, 8};
    int arraySize = sizeof(arr) / sizeof(arr[0]);
    Display_Array(arr, arraySize);
    Delete_Array(arr, arraySize);
    return 0;
}

void Display_Array(int arr[], int arraySize)
{
    cout << "The Orignal Array is ----->";
    cout << "   {";
    for (int i = 0; i < arraySize; i++)
    {
        cout << arr[i] << " ";
    }
    cout << "}" << endl;
}

void Delete_Array(int arr[], int arraySize)
{
    int deleteIndex = 0;
    cout << "Enter the Index you want to delete = ";
    cin >> deleteIndex;
    int index = deleteIndex - 1;
    for (int i = (deleteIndex - 1); i < arraySize; i++)
    {
        arr[i] = arr[index + 1];
        index += 1;
    }
```

```
26  void Delete_Array(int arr[], int arraySize)
27  {
28      int deleteIndex = 0;
29      cout << "Enter the Index you want to delete = ";
30      cin >> deleteIndex;
31      int index = deleteIndex - 1;
32      for (int i = (deleteIndex - 1); i < arraySize; i++)
33      {
34          arr[i] = arr[index + 1];
35          index += 1;
36      }
37      cout << "The array After deleteing the index no " << deleteIndex << "------>";
38      cout << "   {";
39      for (int i = 0; i < (arraySize - 1); i++)
40      {
41          cout << arr[i] <<" " ;
42      }
43      cout << "}" << endl;
44  }
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTERno2/oop_
2/oop_lab/3rd_assignment/"9
The Orignal Array is ----->   {1 2 3 4 5 6 7 8 }
Enter the Index you want to delete = 4
The array After deleteing the index no 4------>   {1 2 3 5 6 7 8 }
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

10.cpp > main()

```cpp
#include <iostream>
using namespace std;
void Second_Smallest(int arr[], int arraySize);
void Display_Array(int arr[], int arraySize);

int main()
{
    int arr[] = {10, 5, 2, 4, 0, 3, 7, 1};
    int arraySize = sizeof(arr) / sizeof(arr[0]);
    Display_Array(arr, arraySize);
    Second_Smallest(arr, arraySize);
    return 0;
}

void Display_Array(int arr[],int arraySize)
{
    cout << "The Given Arrays is ------>";
    cout << "   {";
    for (int i = 0; i < arraySize; i++)
    {
        cout << arr[i] << " ";
    }
    cout << "}" << endl;
}

void Second_Smallest(int arr[], int arraySize)
{
    int smallestNumber = 0, check = 0, index = 0;
    for (int i = 0; i < 2; i++)
    {
        smallestNumber = arr[i];
        for (int j = i; j < arraySize; j++)
        {
            if (smallestNumber >= arr[j])
            {
                smallestNumber = arr[j];
                check = j;
            }
```

```
26  void Second_Smallest(int arr[], int arraySize)
27  {
28      int smallestNumber = 0, check = 0, index = 0;
29      for (int i = 0; i < 2; i++)
30      {
31          smallestNumber = arr[i];
32          for (int j = i; j < arraySize; j++)
33          {
34              if (smallestNumber >= arr[j])
35              {
36                  smallestNumber = arr[j];
37                  check = j;
38              }
39          }
40          index = arr[0];
41          arr[0] = smallestNumber;
42          arr[check] = index;
43      }
44      cout << "The Second Smallest Number = " << smallestNumber << endl;
45  }
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTERno2/oop_lab/3r
no2/oop_lab/3rd_assignment/"10
The Given Arrays is ------>   {10 5 2 4 0 3 7 1 }
The Second Smallest Number = 1
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

11.cpp > main()

```cpp
#include <iostream>
using namespace std;

void Matrix_Adder(int firstMatrix[2][2],int secondMatrix[2][2]);

int main()
{
    int firstMatrix[2][2];
    int secondMatrix[2][2];
    cout << "Enter the Value in 2X2 Matrix In First Matrix" << endl;
    for (int row = 0; row < 2; row++)
    {
        for (int column = 0; column < 2; column++)
        {
            cin >> firstMatrix[row][column];
        }
    }
    cout << "Enter the Values in the Second Matrix 2X2 " << endl;
    for (int row = 0; row < 2; row++)
    {
        for (int column = 0; column < 2; column++)
        {
            cin >> secondMatrix[row][column];
        }
        cout << endl;
    }

    cout << "You Enter the Value in first Matrix are " << endl;
    for (int row = 0; row < 2; row++)
    {
        for (int column = 0; column < 2; column++)
        {
            cout << firstMatrix[row][column] << "    ";
        }
        cout << endl;
    }
```

```
35          cout << endl;
36      }
37
38      cout << "You Enter the values in the second matrix are = " << endl;
39      for (int row = 0; row < 2; row++)
40      {
41          for (int column = 0; column < 2; column++)
42          {
43              cout << secondMatrix[row][column] << "   ";
44          }
45          cout << endl;
46      }
47      Matrix_Adder(firstMatrix, secondMatrix);
48
49      return 0;
50  }
51
52  void Matrix_Adder(int firstMatrix[2][2],int secondMatrix[2][2])
53  {
54      cout << "The Sum of the Given Matrix is " << endl;
55      cout << "============" << endl;
56      for (int row = 0; row < 2; row++)
57      {
58          for (int column = 0; column < 2; column++)
59          {
60              cout << firstMatrix[row][column] + secondMatrix[row][column] << "    ";
61          }
62          cout << endl;
63      }
64      cout << "==========" << endl;
65  }
```

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEME
no2/oop_lab/3rd_assignment/"11
Enter the Value in 2X2 Matrix In First Matrix
2 2 2 2
Enter the Values in the Second Matrix 2X2
2 2 2 2


You Enter the Value in first Matrix are
2   2
2   2
You Enter the values in the second matrix are =
2  2
2  2
The Sum of the Given Matrix is
===========
4   4
4   4
==========
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

```cpp
#include <iostream>
using namespace std;

void Multiply_Matrix(int firstMatrix[2][2],int secondMatrix[2][2]);

int main()
{
    int firstMatrix[2][2];
    int secondMatrix[2][2];
    cout << "Enter the Value in 2X2 Matrix In First Matrix" << endl;
    for (int row = 0; row < 2; row++)
    {
        for (int column = 0; column < 2; column++)
        {
            cin >> firstMatrix[row][column];
        }
    }
    cout << "Enter the Values in the Second Matrix 2X2 " << endl;
    for (int row = 0; row < 2; row++)
    {
        for (int column = 0; column < 2; column++)
        {
            cin >> secondMatrix[row][column];
        }
        cout << endl;
    }

    cout << "You Enter the Value in first Matrix are " << endl;
    for (int row = 0; row < 2; row++)
    {
        for (int column = 0; column < 2; column++)
        {
            cout << firstMatrix[row][column] << "    ";
        }
        cout << endl;
    }

```

```
38      cout << "You Enter the values in the second matrix are = " << endl;
39      for (int row = 0; row < 2; row++)
40      {
41          for (int column = 0; column < 2; column++)
42          {
43              cout << secondMatrix[row][column] << "   ";
44          }
45          cout << endl;
46      }
47      Multiply_Matrix(firstMatrix, secondMatrix);
48      return 0;
49  }
50
51  void Multiply_Matrix(int firstMatrix[2][2],int secondMatrix[2][2])
52  {
53      cout << "The Result is" << endl;
54      cout << "===============" << endl;
55      for (int row = 0; row < 2; row++)
56      {
57          for (int col = 0; col < 2; col++)
58          {
59              cout << firstMatrix[row][col] * secondMatrix[row][col] << "     ";
60          }
61          cout << endl;
62      }
63
64      cout << "================" << endl;
65  }
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTERno2/oop_lab/3rd_
no2/oop_lab/3rd_assignment/"12
Enter the Value in 2X2 Matrix In First Matrix
16 13 14 12
Enter the Values in the Second Matrix 2X2
45 87 65 32


You Enter the Value in first Matrix are
16   13
14   12
You Enter the values in the second matrix are =
45  87
65  32
The Result is
===============
720     1131
910     384
================
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

14.cpp > main()

```cpp
#include <iostream>
using namespace std;
int SUM(int *n1,int *n2);

int main()
{
    int numberOne = 0;
    int numberTwo = 0;
    cout << "Enter the Number ONe = ";
    cin >> numberOne;
    cout << "Enter the Number Two = ";
    cin >> numberTwo;
    int *n1 = &numberOne;
    int *n2 = &numberTwo;
    int result = SUM(n1, n2);
    cout << result << endl;
}

int SUM(int *n1, int *n2)
{
    return *n1 + *n2;
}

```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTERno2/oop_
no2/oop_lab/3rd_assignment/"14
Enter the Number ONe = 4
Enter the Number Two = 5
9
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

15.cpp > SUM(int *, int *)

```cpp
#include <iostream>
using namespace std;
int SUM(int *n1,int *n2);

int main()
{
    int numberOne = 5;
    int numberTwo = 4;
    int *n1 = &numberOne;
    int *n2 = &numberTwo;
    int result = SUM(n1, n2);
    cout << result << endl;
}

int SUM(int *n1, int *n2)
{
    return *n1 + *n2;
}

```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SE
no2/oop_lab/3rd_assignment/"15
9
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

16.cpp > ...

```cpp
#include <iostream>
using namespace std;
int Greater_Number(int *n1,int *n2);

int main()
{
    int numberOne = 0;
    int numberTwo = 0;
    cout << "Enter the Number one = ";
    cin >> numberOne;
    cout << "Enter the Number Two = ";
    cin >> numberTwo;
    int *p = &numberOne;
    int *p2 = &numberTwo;
    cout << "The Greater Number is = " <<  Greater_Number(p, p2) << endl;
    return 0;
}

int Greater_Number(int *n1, int *n2)
{
    if (*n1 > *n2)
        return *n1;
    else
        return *n2;
}
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTERno2/oop_la
no2/oop_lab/3rd_assignment/"16
Enter the Number one = 4
Enter the Number Two = 8
The Greater Number is = 8
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

17.cpp > main()

```cpp
#include <iostream>
using namespace std;
void Factorial_Number(int *number);

int main()
{
    int number = 0;
    cout << "Enter the Number = ";
    cin >> number;
    int *p = &number;
    Factorial_Number(p);
    return 0;
}

void Factorial_Number(int *number)
{
    int factorial = 1;
    int *p2 = &factorial;
    for (int i = 1; i <= *number; i++)
    {
        *p2 *= i;
    }
    cout <<"The address of the result in memory is = " << p2 << "  and the factorial is  = " << factorial  << endl;
}
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE 2: Code

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTERno2/oop_lab/3rd_assignment/" && g++ 17.cpp -o 17 && "
no2/oop_lab/3rd_assignment/"17
Enter the Number = 4
The address of the result in memory is = 0x7ffd54e4f778  and the factorial is  = 24
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

18.cpp > main()

```cpp
#include <iostream>
#include <string>
using namespace std;
void String(string s, int *size, char arr[]);

int main()
{
    string s;
    cout << "Enter the String : ";
    cin >> s;
    int size = s.length();
    int *p = &size;
    char arr[] = {'a', 'e', 'i', 'o', 'u', 'A', 'E', 'I', 'O', 'U'};
    String(s, p, arr);
    return 0;
}

void String(string s, int *size, char arr[])
{
    int v_c = 0, c_c = 0, c = 0;
    for (int i = 0; i < *size; i++)
    {
        for (int j = 0; j < 10; j++)
        {
            if (s[i] != ' ')
            {
                if (s[i] == arr[j])
                    v_c += 1;
                else
                    c += 1;
            }
        }
        if (c == 10)
            c_c += 1;
        c = 0;
    }
```

```
21      for (int i = 0; i < size; i++)
22      {
23          for (int j = 0; j < 10; j++)
24          {
25              if (s[i] != ' ')
26              {
27                  if (s[i] == arr[j])
28                      v_c += 1;
29                  else
30                      c += 1;
31              }
32          }
33          if (c == 10)
34              c_c += 1;
35          c = 0;
36      }
37
38      cout << "The Vowels in the string are = " << v_c << endl;
39      cout << "The Consonent in the string are= " << c_c << endl;
40  }
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTERno2/oop_l
no2/oop_lab/3rd_assignment/"18
Enter the String : Hello
The Vowels in the string are = 2
The Consonent in the string are= 3
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

19.cpp > main()

```cpp
#include <iostream>
using namespace std;
void Ascending_Array(int arr[], int *arrayAddress);
void Display_Array(int arr[], int *arrayAddress);

int main()
{
    int arr[] = {2, 4, 20, 10, 15};
    int *array = arr;
    int arraySize = sizeof(arr) / sizeof(arr[0]);
    int *arrayAddress = &arraySize;
    Display_Array(arr, arrayAddress);
    Ascending_Array(arr, arrayAddress);
    return 0;
}

void Display_Array(int arr[], int *arrayAddress)
{
    cout << "The Given Array is ------>";
    cout << "   {";
    for (int i = 0; i < *arrayAddress; i++)
    {
        cout << arr[i] << " ";
    }
    cout << "}" << endl;
}

void Ascending_Array(int arr[], int *arrayAddress)
{
    int check = 0, index = 0, indexx = 0;
    for (int i = 0; i < *arrayAddress; i++)
    {
        int smallestNumber = arr[i];
        for (int j = i; j < *arrayAddress; j++)
        {
            if (smallestNumber >= arr[j])
            {
                smallestNumber = arr[j];
                check = i;
```

```
31      for (int i = 0; i < *arrayAddress; i++)
32      {
33          int smallestNumber = arr[i];
34          for (int j = i; j < *arrayAddress; j++)
35          {
36              if (smallestNumber >= arr[j])
37              {
38                  smallestNumber = arr[j];
39                  check = j;
40              }
41          }
42          indexx = arr[index];
43          arr[index] = smallestNumber;
44          arr[check] = indexx;
45          check = 0;
46          index += 1;
47      }
48      cout << "The array is Ascending order  ---->";
49      cout << "   {";
50      for (int i = 0; i < *arrayAddress; i++)
51      {
52          cout << arr[i] << " ";
53      }
54      cout << "}" << endl;
55  }
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTERno2/oop_la
no2/oop_lab/3rd_assignment/"19
The Given Array is ------>   {2 4 20 10 15 }
The array is Ascending order  ---->   {2 4 10 15 20 }
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

20.cpp > main()

```cpp
#include <iostream>
using namespace std;
int * Return_Pointer();

int main()
{
    int *ptr = Return_Pointer();
    cout << *ptr << endl;
    cout << "The address is = " << ptr << endl;
    return 0;
}

int * Return_Pointer()
{
    int n1 = 45;
    int *address = &n1;
    return address;
}
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTERn
no2/oop_lab/3rd_assignment/"20
45
The address is = 0x7ffc0ed0c80c
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

21.cpp > Reverse_Array(string *, int)

```cpp
#include <iostream>
#include <string>
using namespace std;

void Reverse_Array(string *s, int len);


int main()
{
    string s;
    cout << "Enter ant string :";
    cin >> s;
    int len = s.length();
    Reverse_Array(&s, len);
    return 0;
}

void Reverse_Array(string *s, int len)
{
    string a = *s;
    for (int i = -len; i <= 0; i++)
    {
        cout << a[abs(i)] << endl;
    }
}
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTERno
no2/oop_lab/3rd_assignment/"21
Enter ant string :HelloWorld

d
l
r
o
W
o
l
l
e
H
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

23.cpp > main()

```cpp
#include <iostream>
using namespace std;
int Size_String(string s);

int main()
{
    char s[20];
    cout << "Enter the string :";
    cin >> s;
    int result = Size_String(s);
    cout << "The Given String has a Size = " << result << endl;
    return 0;
}

int Size_String(string s)
{
    int counter = 0, i = 0;
    while (s[i] != '\0')
    {
        i += 1;
        counter += 1;
    }
    return counter;
}
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTERno2/oop_lab/3r
no2/oop_lab/3rd_assignment/"23
Enter the string :Hello
The Given String has a Size = 5
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

for you?)

```cpp
#include <iostream>
using namespace std;

void Character_Check(string s, int l);

int main()
{
    string s;
    cout << "Enter any string : ";
    cin >> s;
    int l = s.length();
    Character_Check(s, l);
    return 0;
}

void Character_Check(string s, int l)
{
    int alphabets = 0, digits = 0, s_c = 0;
    for (int i = 0; i < l; i++)
    {
        if (s[i] >= 65 && s[i] <= 90 || s[i] >= 97 && s[i] <= 122)
            alphabets += 1;
        if (s[i] >= 48 && s[i] <= 57)
            digits += 1;
        if ((s[i] >= 0 && s[i] <= 47) || (s[i] >= 58 && s[i] <= 64) || (s[i] >= 91 && s[i] <= 96) || (s[i] >= 123 && s[i] <= 127))
            s_c += 1;
    }
    cout << "The Alphabets in the Given String are = " << alphabets << endl;
    cout << "The Digits in the Given String are = "  << digits << endl;
    cout << "The special characters in the Given string are = " << s_c << endl;
}
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTE
no2/oop_lab/3rd_assignment/"24
Enter any string : Hello123&*
The Alphabets in the Given String are = 5
The Digits in the Given String are = 3
The special characters in the Given string are = 2
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

25.cpp > Counter(string, int)

```cpp
#include <iostream>
using namespace std;

void Counter(string s,int size);
int main()
{
    string s;
    cout << "Enter the String : ";
    cin >> s;
    int size = s.length();
    Counter(s, size);
    return 0;
}

void Counter(string s, int size)
{
    int vowel = 0, consonent = 0, c_c = 0;
    char arr[] = {'a', 'e', 'i', 'o', 'u', 'A', 'E', 'I', 'O', 'U'};
    int sizeArray = sizeof(arr) / sizeof(arr[0]);
    for (int i = 0; i < size; i++)
    {
        for (int j = 0; j < sizeArray; j++)
        {
            if (s[i] == arr[j])
                vowel += 1;
            else
                consonent += 1;
        }
        if (consonent == 10)
            c_c += 1;
        consonent = 0;
    }
    cout << "The Vowels in the string are = "<< vowel << endl;
    cout << "The Consonent in the string are = " << c_c << endl;

}
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTER
no2/oop_lab/3rd_assignment/"25
Enter the String : Hello
The Vowels in the string are = 2
The Consonent in the string are = 3
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

26.cpp > Check(char)

```cpp
#include <iostream>
using namespace std;

void Check(char input);
int main()
{
    char input;
    cout << "Enter any character : ";
    cin >> input;
    Check(input);
    return 0;
}

void Check(char input)
{
    char s_arr[] = {'a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j', 'k', 'l', 'm', 'n', 'o', 'p', 'q', 'r', 's', 't', 'u', 'v', 'w', 'x', 'y', 'z'};
    char c_arr[] = {'A', 'B', 'C', 'D', 'E', 'F', 'G', 'H', 'I', 'J', 'K', 'L', 'M', 'N', 'O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z'};
    for (int i = 0; i < 1; i++)
    {
        for (int j = 0; j < 26; j++)
        {
            if (s_arr[j] == input)
            {
                cout << "Its a small letter" << endl;
                break;
            }
            if (c_arr[j] == input)
            {
                cout << "It's a capital Letter" << endl;
            }
        }
    }
}
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTERno2/oop_l
no2/oop_lab/3rd_assignment/"26
Enter any character : a
Its a small letter
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$ cd "/home/namiirr/SEMESTERno2/oop_l
no2/oop_lab/3rd_assignment/"26
Enter any character : B
It's a capital Letter
namiirr@hoonnete:~/SEMESTERno2/oop_lab/3rd_assignment$
```

Name: Jawad Ahmed

Roll No: 20P-0165