Roll No: 20P-0165

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BS(CS) 2A

stairs_01.cpp > main()

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

void Stairs_Step_Counter(int N);

int main()
{
    int steps = 0;
    cout << "Enter How Many Stairs are:    ";
    cin >> steps;
    Stairs_Step_Counter(steps);
    return 0;
}

void Stairs_Step_Counter(int N)
{
    int arr[N];
    for (int i = 0; i < N; i++)
    {
        arr[i] = 1;
    }

    cout << "The Ways are" << endl;
    cout << "**********************************************" << endl;
    for (int i = 0; i < N; i++)
    {
        cout << arr[i] << "    ";
    }
    cout << endl;
    int n_arr[N - 1];
```

```
    cout << "The Ways are" << endl;
    cout << "*************************************************" << endl;
    for (int i = 0; i < N; i++)
    {
        cout << arr[i] << "    ";
    }
    cout << endl;
    int n_arr[N - 1];
    for (int i = 0; i < N - 1; i++)
    {
        for (int j = 0; j < N; j++)
        {
            if (j == i)
            {
                n_arr[j] = arr[i] + arr[j];
            }
            else
                n_arr[j] = arr[j];
        }
        for (int p = 0; p < N - 1; p++)
        {
            cout << n_arr[p] << "   ";
        }
        cout << endl;
    }

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

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/assignment_01$ cd "/home/namiirr/SEMESTERno2/
irr/SEMESTERno2/oop_lab/assignment_01/"stairs_01
Enter How Many Stairs are:    4
The Ways are
**************************************************

1    1    1    1
2    1    1
1    2    1
1    1    2
**************************************************

namiirr@hoonnete:~/SEMESTERno2/oop_lab/assignment_01$
```

subset_02.cpp > main()

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

void Make_Subset();

int main()
{
    Make_Subset();
    return 0;
}

void Make_Subset()
{
    int array[] = {3, 5, 2, -4, 8, 11};
    int resultArray[4];
    int Result[2][2];
    int userInput = 0;
    cout << "Enter the Number:  ";
    cin >> userInput;
    int counter = 0;
    int counterTwo = 0;
    int arraySize = sizeof(array) / sizeof(array[0]);
    for (int i = 0; i < arraySize; i++)
    {
        for (int j = i + 1; j < arraySize; j++)
        {
            if (array[i] + array[j] == userInput)
            {
                resultArray[counter] = array[i];
                counter += 1;
                resultArray[counter] = array[j];
                counter += 1;
                counterTwo += 1;
            }
        }
    }
```

```
25          for (int j = i + 1; j < arraySize; j++)
26          {
27              if (array[i] + array[j] == userInput)
28              {
29                  resultArray[counter] = array[i];
30                  counter += 1;
31                  resultArray[counter] = array[j];
32                  counter += 1;
33                  counterTwo += 1;
34              }
35          }
36      }
37      counter = 0;
38      for (int row = 0; row < counterTwo; row++)
39      {
40          for (int col = 0; col < counterTwo; col++)
41          {
42              Result[row][col] = resultArray[counter];
43              counter += 1;
44          }
45      }
46
47      cout << "The Subset of the Number is" << endl;
48      cout << "=====================================================================" << endl;
49      for (int row = 0; row < counterTwo; row++)
50      {
51          for (int col = 0; col < counterTwo; col++)
52          {
53              cout << Result[row][col] << "    ";
54          }
55          cout << endl;
56      }
57
58      cout << "=====================================================================" << endl;
59  }
60
61
```

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/assignment_01$ cd "/home/namiirr/SEME
irr/SEMESTERno2/oop_lab/assignment_01/"subset_02
Enter the Number:  7
The Subset of the Number is
==========================================================
5   2
-4   11
==========================================================
namiirr@hoonnete:~/SEMESTERno2/oop_lab/assignment_01$
```

inverse_03.cpp > Inverse_Matrix()

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

void Inverse_Matrix();

int main()
{
    Inverse_Matrix();
    return 0;
}

void Inverse_Matrix()
{
    float matrix[2][2] = {{0, 0}, {0, 0}};

    cout << "Enter the Values in the 2*2 Matrix" << endl;
    for (int row = 0; row < 2; row++)
    {
        for (int col = 0; col < 2; col++)
        {
            cin >> matrix[row][col];
        }
    }
    float inverseMatrix[2][2];
    int firstLoop = 0, secondLoop = 0,determinant = 0, temp = 0;
    double appender = 0.0;
    for (int row = 0; row < 1; row++)
    {
        for (int col = 1; col <= 1; col++)
        {
            firstLoop = matrix[row][row] * matrix[col][col];
            secondLoop = matrix[row][col] * matrix[col][row];
        }
    }
```

```
35
36      determinant = firstLoop - secondLoop;
37
38      for (int row = 0; row < 1; row++)
39      {
40          for (int col = 1; col <= 1; col++)
41          {
42              temp = matrix[row][row];
43              matrix[row][row] = matrix[col][col];
44              matrix[col][col] = temp;
45              matrix[row][col] = -1 * matrix[row][col];
46              matrix[col][row] = -1 * matrix[col][row];
47          }
48      }
49
50      for (int row = 0; row < 2; row++)
51      {
52          for (int col = 0; col < 2; col++)
53          {
54              appender = matrix[row][col] / determinant;
55              inverseMatrix[row][col] = appender;
56          }
57      }
58      cout << "The Inverse of the Matrix is" << endl;
59      cout << "*******************************************************" << endl;
60      for (int row = 0; row < 2; row++)
61      {
62          for (int col = 0; col < 2; col++)
63          {
64              cout << inverseMatrix[row][col] << "    ";
65          }
66          cout << endl;
67      }
68
69      cout << "*******************************************************" << endl;
70  }
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/assignment_01$ cd "/home/namiirr/SEMESTERno2/oop_
miirr/SEMESTERno2/oop_lab/assignment_01/"inverse_03
Enter the Values in the 2*2 Matrix
1 2 3 4
The Inverse of the Matrix is
**********************************************************
-2    1
1.5    -0.5
**********************************************************
namiirr@hoonnete:~/SEMESTERno2/oop_lab/assignment_01$
```

struct_code04.cpp > Search_Program()

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

void Search_Program();

int main()
{
    Search_Program();
    return 0;
}

void Search_Program()
{
    char remarks[50];
    string studentFirstNames[] = {"Jawad", "Qasim", "Ali", "Rustam", "Arbab", "Tayyab", "Esa"};
    string studentLastNames[] = {"Ahmed", "Fareed", "Asghar", "Ali", "Gujjar", "Changez", "Khan"};
    int studentAges[] = {19, 20, 20, 18, 21, 16, 25};
    int studentID[] = {1001, 1002, 1003, 1004, 1005, 1006, 1007};
    string favouriteSport[] = {"Cricket", "Football", "Badminton", "ValleyBall1", "Race", "LongJump", "FootBall"};
    string favouriteFood[] = {"Burger", "Pizza", "Meat", "Apple", "Mango", "Vegetables", "Tommato"};
    float CGPA[] = {3.1, 3.0, 3.5, 2.0, 3.9, 4.0, 3.2};
    char firstNameInput[30];
    string f_input, l_input, sport, food;
    int age, ID;
    float cgpa;
    int counter = 0;

    char whileCondition;
    cout << "Do You Want to search the Student or Not Press 'Y' for yes and 'N' for No: ";
    cin >> whileCondition;

    while (whileCondition == 'Y' || whileCondition == 'y')
    {

```

```
while (whileCondition == 'Y' || whileCondition == 'y')
{

    cout << "Press '1' for --->   fName" << endl;
    cout << "Press '2' for --->   lName" << endl;
    cout << "Press '3' for --->   Age" << endl;
    cout << "Press '4' for --->   ID" << endl;
    cout << "Press '5' for --->   Sport" << endl;
    cout << "Press '6' for --->   Food" << endl;
    cout << "Press '7' for --->   CGPA" << endl;

    cout << "What Do You want to search By:";
    int input = 0;
    cin >> input;


    if (input == 1)
    {
        cout << "ENter the First Name:  ";
        cin >> f_input;
        for (int i = 0; i < 7; i++)
        {
            if (studentFirstNames[i] == f_input)
            {
                cout << "=============================================================================" << endl;
                cout << "The Student has a Name:    " << studentFirstNames[i] + " " + studentLastNames[i] << endl;
                cout << "The Student has a Age:     " << studentAges[i] << endl;
                cout << "The Student has a Id:      " << studentID[i] << endl;
                cout << "The Student has a Favorite Sport  " << favouriteSport[i] << endl;
                cout << "The Student has a Favourite Fodd: " << favouriteFood[i] << endl;
                cout << "The Student has a CGPA          : " << CGPA[i] << endl;
                cout << "=============================================================================" << endl;
                break;
            }
            counter += 1;
        }
```

```
            counter += 1;
        }
        if (counter == 7)
            cout << "We Donot Have any Student With This Name:  " << f_input << endl;

        counter = 0;
    }

    if (input == 2)
    {
        cout << "Enter the Last Name:   ";
        cin >> l_input;
        for (int i = 0; i < 7; i++)
        {
            if (studentLastNames[i] == l_input)
            {
                cout << "================================================================" << endl;
                cout << "The Student has a Name: " << studentFirstNames[i] + " " + studentLastNames[i] << endl;
                cout << "The Student Has A Age: " << studentAges[i] << endl;
                cout << "The Student Has ID:    " << studentID[i] << endl;
                cout << "The Student has a Favourite Sport: " << favouriteSport[i] << endl;
                cout << "The Student has a Favourite Food:  " << favouriteFood[i] << endl;
                cout << "The Student has a CGPA:    " << CGPA[i] << endl;
                cout << "================================================================" << endl;
                break;
            }
            counter += 1;
        }
        if (counter == 7)
            cout << "Sorry! We donot have any Student with this Name: " << l_input << endl;
        counter = 0;
    }
```

```
if (input == 3)
{
    cout << "Enter the Age of the Student :";
    cin >> age;
    for (int i = 0; i < 7; i++)
    {
        if (studentAges[i] == age)
        {
            cout << "================================================================================" << endl;
            cout << "The Student has a Name:    " << studentFirstNames[i] + " " + studentLastNames[i] << endl;
            cout << "The Student Has A age:     " << studentAges[i] << endl;
            cout << "The Student Has A ID:      " << studentID[i] << endl;
            cout << "The Student Has A Favourite Sport: " << favouriteSport[i] << endl;
            cout << "The Student Has A Favorite Food    " << favouriteFood[i] << endl;
            cout << "The Student has a CGPA:    " << CGPA[i] << endl;
            cout << "================================================================================" << endl;
            break;
        }
        counter += 1;
    }
    if (counter == 7)
        cout << "Sorry! We Donot have any student With this age" << endl;
    counter = 0;
}

if (input == 4)
{
    cout << "Enter the ID of the Student:   ";
    cin >> ID;
```

```
        }
        if (counter == 7)
            cout << "Sorry! We Donot have any student With this age" << endl;
        counter = 0;
    }

    if (input == 4)
    {
        cout << "Enter the ID of the Student:   ";
        cin >> ID;

        for (int i = 0; i < 7; i++)
        {
            if (studentID[i] == ID)
            {
                cout << "================================================================================" << endl;
                cout << "The Student has a Name:    " << studentFirstNames[i] + " " + studentLastNames[i] << endl;
                cout << "The Student Has A age:     " << studentAges[i] << endl;
                cout << "The Student Has A ID:      " << studentID[i] << endl;
                cout << "The Student Has A Favourite Sport: " << favouriteSport[i] << endl;
                cout << "The Student Has A Favorite Food    " << favouriteFood[i] << endl;
                cout << "The Student has a CGPA:    " << CGPA[i] << endl;
                cout << "================================================================================" << endl;
                break;
            }
            counter += 1;
        }
        if (counter == 7)
            cout << "Sorry! We Donot have any student With this ID" << endl;
        counter = 0;
    }

    if (input == 5)
    {
        cout << "Enter the Favourite Sport of the Student: ";
        cin >> sport;
        for (int i = 0; i < 7; i++)
        {
```

```
if (input == 5)
{
    cout << "Enter the Favourite Sport of the Student: ";
    cin >> sport;
    for (int i = 0; i < 7; i++)
    {
        if (favouriteSport[i] == sport)
        {
            cout << "================================================================================" << endl;
            cout << "The Student has a Name:    " << studentFirstNames[i] + " " + studentLastNames[i] << endl;
            cout << "The Student Has A age:     " << studentAges[i] << endl;
            cout << "The Student Has A ID:      " << studentID[i] << endl;
            cout << "The Student Has A Favourite Sport: " << favouriteSport[i] << endl;
            cout << "The Student Has A Favorite Food    " << favouriteFood[i] << endl;
            cout << "The Student has a CGPA:    " << CGPA[i] << endl;
            cout << "================================================================================" << endl;
            break;
        }
        counter += 1;
    }
    if (counter == 7)
        cout << "Sorry! We Donot have any student With this Sport Lover" << endl;
    counter = 0;
}

if (input == 6)
{
    cout << "Enter the Favorite Food of the Student:    ";
    cin >> food;

    for (int i = 0; i < 7; i++)
    {
        if (favouriteFood[i] == food)
        {
            cout << "================================================================================" << endl;
            cout << "The Student has a Name:    " << studentFirstNames[i] + " " + studentLastNames[i] << endl;
            cout << "The Student Has A age:     " << studentAges[i] << endl;
```

```
            {
                cout << "================================================================================" << endl;
                cout << "The Student has a Name:    " << studentFirstNames[i] + " " + studentLastNames[i] << endl;
                cout << "The Student Has A age:     " << studentAges[i] << endl;
                cout << "The Student Has A ID:      " << studentID[i] << endl;
                cout << "The Student Has A Favourite Sport: " << favouriteSport[i] << endl;
                cout << "The Student Has A Favorite Food    " << favouriteFood[i] << endl;
                cout << "The Student has a CGPA:    " << CGPA[i] << endl;
                cout << "================================================================================" << endl;
                break;
            }
            counter += 1;
        }
        if (counter == 7)
            cout << "Sorry! We Donot have any student With this Food Lover" << endl;
        counter = 0;
    }

    if (input == 7)
    {
        cout << "Enter the CGPA of the Student: ";
        cin >> cgpa;

        for (int i = 0; i < 7; i++)
        {
            if (CGPA[i] == cgpa)
            {
                cout << "================================================================================" << endl;
                cout << "The Student has a Name:    " << studentFirstNames[i] + " " + studentLastNames[i] << endl;
                cout << "The Student Has A age:     " << studentAges[i] << endl;
                cout << "The Student Has A ID:      " << studentID[i] << endl;
                cout << "The Student Has A Favourite Sport: " << favouriteSport[i] << endl;
                cout << "The Student Has A Favorite Food    " << favouriteFood[i] << endl;
                cout << "The Student has a CGPA:    " << CGPA[i] << endl;
                cout << "================================================================================" << endl;
                break;
            }
```

```
        cin >> cgpa;

        for (int i = 0; i < 7; i++)
        {
            if (CGPA[i] == cgpa)
            {
                cout << "================================================================================" << endl;
                cout << "The Student has a Name:    " << studentFirstNames[i] + " " + studentLastNames[i] << endl;
                cout << "The Student Has A age:     " << studentAges[i] << endl;
                cout << "The Student Has A ID:      " << studentID[i] << endl;
                cout << "The Student Has A Favourite Sport: " << favouriteSport[i] << endl;
                cout << "The Student Has A Favorite Food    " << favouriteFood[i] << endl;
                cout << "The Student has a CGPA:    " << CGPA[i] << endl;
                cout << "================================================================================" << endl;
                break;
            }
            counter += 1;
        }
        if (counter == 7)
            cout << "Sorry! We Donot have any student With this CGPA" << endl;
        counter = 0;
    }
    cout << "Do You Want to search more Students or Not Press 'Y' for yes and 'N' for No:   Y";
    cin >> whileCondition;
    cin.ignore();

    cout << endl;

    if (whileCondition != 'Y' || whileCondition != 'y')
    {
        cout << "************************************************" << endl;
        cout << endl;
        cout << "Thanks for Coming Hope You Had Not faced Any Problem" << endl;
        cout << endl;
        cout << "************************************************" << endl;
    }

}
```

```
namiirr@hoonnete:~/SEMESTERno2/oop_lab/assignment_01$ cd "/home/namiirr/SEMESTERno2/oop_lab/assignment_01/" && g+
ome/namiirr/SEMESTERno2/oop_lab/assignment_01/"struct_code04
Do You Want to search the Student or Not Press 'Y' for yes and 'N' for No: Y
Press '1' for --->   fName
Press '2' for --->   lName
Press '3' for --->   Age
Press '4' for --->   ID
Press '5' for --->   Sport
Press '6' for --->   Food
Press '7' for --->   CGPA
What Do You want to search By:1
ENter the First Name:  Jawad
================================================================================
The Student has a Name:    Jawad Ahmed
The Student has a Age:     19
The Student has a Id:      1001
The Student has a Favorite Sport  Cricket
The Student has a Favourite Fodd: Burger
The Student has a CGPA          : 3.1
================================================================================
Do You Want to search more Students or Not Press 'Y' for yes and 'N' for No:   YN

**********************************************

Thanks for Coming Hope You Had Not faced Any Problem

**********************************************
namiirr@hoonnete:~/SEMESTERno2/oop_lab/assignment_01$
```

JAWAD AHMED

20P-0165

THANKS