# CS112

# File Name: Assignment 1.

# The Purpose: Make A Game "Subtract a Square".

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#include<iostream>

#include<cmath>

#include<vector>

#include<string>

#include<array>

#include<cstring>

#include<algorithm>

#include<list>

#include<iterator>

using namespace std ;

int main()

{

  // Our Game..(\*\*Subtract The Square\*\*)

  // Now We Will Explain Our Game Rules..

  // \*Rules\* :

  // 1. The Number You Will Take Always Be An Integer.

  // 2. The Available choices Is Square Numbers That Less Than The Given Integer.

  // 3. The First Player Subtract First Square Number.

  // 4. The Second Player Move According To First Player Result.

  // 5. They Start From The End Results And So on... .

  // \*\*==========================================\*\*.

  // The Number That Will Be Given.

  short intnum;

  // The Operator (-).

  char op = '-';

  // The Number 1 And Number 2 That The Users Will Enter.

  short num1,num2;

  // Like A separator Among The 2 Players' Names.

  string v = "And";

  // 2 Players Names.

  string name1,name2;

  // We Ask Them To Enter Their Names.

  cout << " Enter The 2 Players Names : " ;

  cin >> name1 >> v >>  name2;

  // Now I Will Give Them The Number. It Should Be Integer.

  cout << " The Number Is : ";

  cin >> intnum;

  // This Is A Message To Inform Players To Enter A Numbers Less Than The Integer Number.

  cout << " \*/\* You Should Subtract A Square Number Less Than : " << intnum << endl;

  // A Loop To Ensure That The Numbers That Entered Until = 0.

  while(num1 - num2 != 0)

  {

    // Player 1 Will Play.

    cout << name1 << " : ";

    cin >> num1 >> op >> num2;   cout << num1 << '-' << num2 << " = " << num1 - num2 << "\n";

    // I Make A Condition To Ensure That Result Never will Be Negative.

    if(num2 > num1 || num1 > intnum)

    {

      cout << " You Shouldn't Enter A Number Greater Than The Given Integer Number.." << endl;

      // The System Will Ask Them To Enter Until They Enter A Number Less Than Number 1 Or Integer Number.

        while(num2 > num1 || num1 > intnum)

      {

        cout << name1 << " : ";

        cin >> num1 >> op >> num2;

      }

    }

    // Now We Should Ensure That Number 2 Is A Square number.

    if(fmod(sqrt(num2),1) != 0)

    {

      // The System Will Ask them To Enter Until They Enter A Square Number.

      while(fmod(sqrt(num2),1) != 0)

      {

        cout << "\*/\*Oops You Should Enter Only A Square Number \*/\*" << "\n";

        cout << name1 << " : ";

        cin >> num1 >> op >> num2; cout << num1 << " - " << num2 << " = " << num1 - num2 << endl;

      }

    }

    // At The End Of The Game The Player Who Construct 0 First He Is The Winner.

    if(num1 - num2 == 0)

    {

       cout << "\*\* " << name1 << " \*\*" << endl << " End The Game ";

       break;

    }

    // ============================================================== //

    // All What I Have Mention Above We Will Do The Same With Player 2.

    else

   {

    cout << name2 << " : ";

    cin >> num1 >> op >> num2; cout << num1 << '-' << num2 << " = " << num1 - num2 << "\n";

   }

   if(num2 > num1 || num1 > intnum)

    {

      cout << " You Shouldn't Enter A Number Greater Than The Given Integer Number.." << endl;

      while(num2 > num1 || num1 > intnum)

      {

        cout << name2 << " : ";

        cin >> num1 >> op >> num2;

      }

    }

     if(fmod(sqrt(num2),1) != 0)

    {

      while(fmod(sqrt(num2),1) != 0)

      {

        cout << "\*/\*Oops You Should Enter Only A Square Number \*/\*" << "\n";

        cout << name2 << " : ";

        cin >> num1 >> op >> num2;  cout << num1 << " - " << num2 << " = " << num1 - num2 << endl;

      }

    }

if(num1 - num2 == 0)

    {

      cout << "\*\* " << name2 << " Win " << " \*\*" << endl << " End The Game ";

      break;

    }

  }

  return 0;