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//CSCI 241-01 Assignment
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#include <iostream>
#include<string>
#include<cmath>
using namespace std;
//global variables
int sumeven = 0;
int sumodd = 0;
//function to Double every second digit from right to left.
int sumOfDoubleEvenPlace(int i, long long int input_i) {
       string input = to_string(input_i);
       //base of function
       if (i == 16) {
              return 0;
       }

       else {
              //change the string to int
              int num = int(input[i]) - 48;
              //If double of a digit results in a two-digit number, add up the two digits
to get a single digit number.
              if (num >= 5) {
                     //Now add all single-digit to global variable sumeven
                     sumeven += (num * 2) - 9;
              }
              //If double of a digit results one-digit number doubel it.
              else {
                     //Now add all single-digit to global variable sumeven
                     sumeven += (num * 2);
              }
              i += 2;
              //call it's self to add the next  second digit from right to left
              sumOfDoubleEvenPlace(i, input_i);
       }
}
//function to Add all digits in the odd places from right to left in the card number.
int sumOfOddPlace(int i, long long int input_i) {
       string input = to_string(input_i);
       //base of function
       if (i == 17) {

              return 0;
       }
       else {
              //change the string to int
              int num = int(input[i]) - 48;
              //Now add all single-digit to global variable sumeodd
              sumodd=sumodd+ num;
              i += 2;
              //call it's self to add the next  second digit from right to left
              sumOfOddPlace(i, input_i);
       }
}
//function to Return the first k number of digits from the number.
```

```
int getPrefix(long long int number, int k) {
        //change the input to string for processing
        string input = to_string(number);
        //variabel to save the item of the string at i'th index
        string Prefix = "";
        //If the number of digits in number is less than k, return number
        if (input.size() < k) {
                return number;
        }
        //else Return the first k number of digits from the number.
        else {
                //add the first k digets to a string
                for (int i = 0; i < k&&i < 16; i++) {
                        Prefix += input[0];
                }
                //variavels for processing
                long double input_ = 0;
                long int input_2 = 0;
                //loop to change the first k items in the string prefix to intiger
                for (int i = 0; i < k; i++) {
                        int mul;
                        if (i >= 1) {
                                mul = 10;
                        }
                        else
                                mul = 1;
                        input_ = int(input[i]) - 48;
                        cout << input_ << endl;
                        input_2 *= mul;
                        //add the prefix to a variable
                        input_2 += input_;



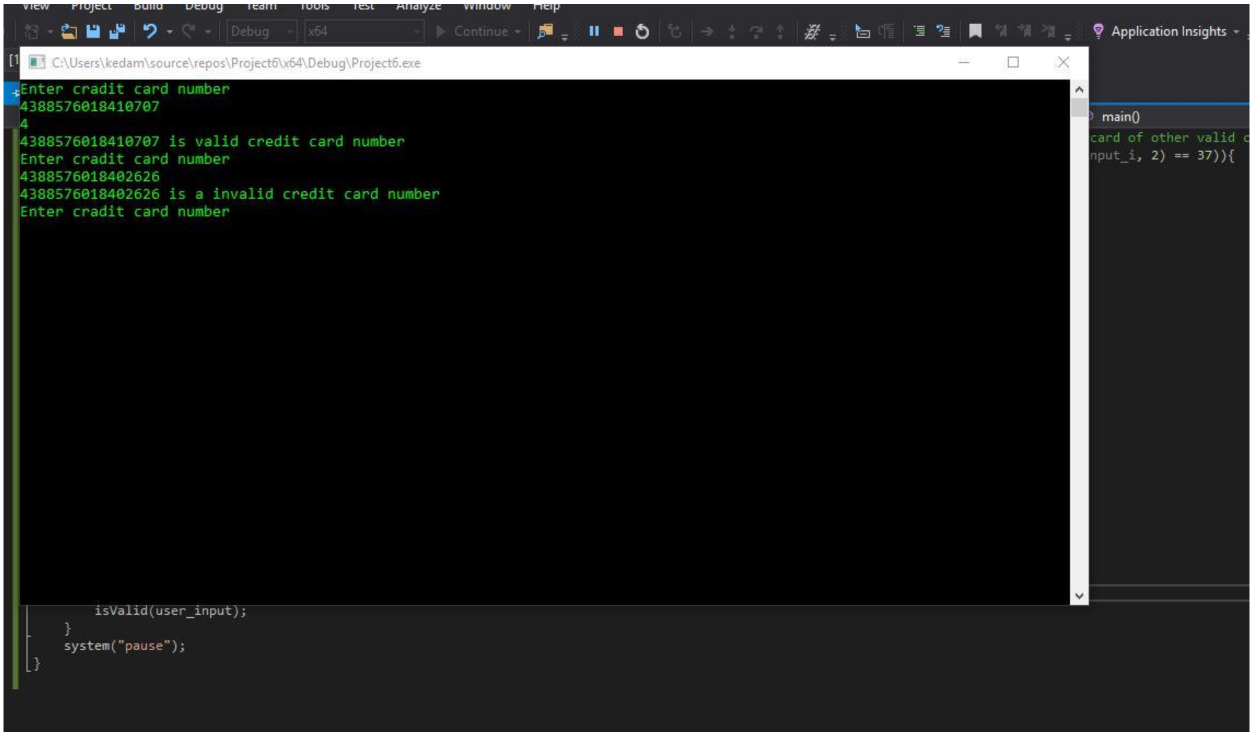
                }
                //return the prefix
                return input_2;
        }

}
//function input a long int and chakes if the sum of the odd place and the even place
from left to right mod 10 is 0
bool isValid(long long int input_i) {
        //change the int to string for processing purpuses
        string input = to_string(input_i);
        //if the card numbers ofcradit card digets is 16 check if the card is valid
        if (input.size() == 16) {
                //set the global variables to 0;
                sumeven = 0;
                sumodd = 0;
                //call the sumOfOddPlace function to add the the items in the odd place the
1 is to show it to start counting by two from the second item in the array
                sumOfOddPlace(1, input_i);
                //call the sumOfDoubleEvenPlace function to add the the items in the odd
place the 1 is to show it to start counting by two from the second item in the array
                sumOfDoubleEvenPlace(0, input_i);
```

```
            //if the sum of the sum of Odd Place digits and sum Of Double Even Place
mod 10 is 0 and if the first prefix is one of visa mastercard of other valid card prefix
print the card is valid
            if ((sumeven + sumodd) % 10 == 0&&(getPrefix(input_i,1)==4||
getPrefix(input_i, 1) == 5|| getPrefix(input_i, 1) == 6|| getPrefix(input_i, 2) == 37)){
                cout << input << " is valid credit card number" << endl;
            }
            //else print the card is invalid
            else {
                cout<< input << " is a invalid credit card number" << endl;
            }
            //return true or false
            return (sumeven + sumodd) % 10 == 0;
        }
        //if the card does not have 16 digits print the input is invalid
        else {
            cout << "input card does not have 16 digets" << endl;
            return false;
        }

}

void main() {
        long long int user_input;
        while (true) {
            //ask the the user for the cradit card number
            cout << "Enter cradit card number" << endl;
            //input the card number
            cin >> user_input;
            //cheak if the cradit card number is valid
            isValid(user_input);
        }
        system("pause");
}
```



C:\Users\kedam\source\repos\Project6\x64\Debug\Project6.exe

```
Enter cradit card number
4388576018410707
4
4388576018410707 is valid credit card number
Enter cradit card number
4388576018402626
4388576018402626 is a invalid credit card number
Enter cradit card number
```

```
card of other valid c
nput_i, 2) == 37)){
```

```
        isValid(user_input);
    }
    system("pause");
}
```