C++ Assignment

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Question:

Develop a guessing game.

Your program generates a random number between two limits specified by the user (to be keyed in). The user has to keep on guessing. If the guessed number is less than the generated number you have to give a message "The guess is lower than the generated number". If it is higher, the message should be "The guess is higher than the generated number". Once the user input matches the number, the game is over. You have to keep track of all the user input numbers and finally print out all those and the number of attempts the user took to come up with the actual number.

Additional requirements

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If the user keys in the same guess more than once, print out a warning message "You have already keyed in that guess" and don't consider it as an attempt.

You need to use the following features of C++

Class with private members and member function to generate the random number

Namespace (s) to include the functions you might want to write

Constructors as part of the class you write.

Use vector to keep track of the user inputs.

Include cstdlib and use the rand() function to generate the random number.

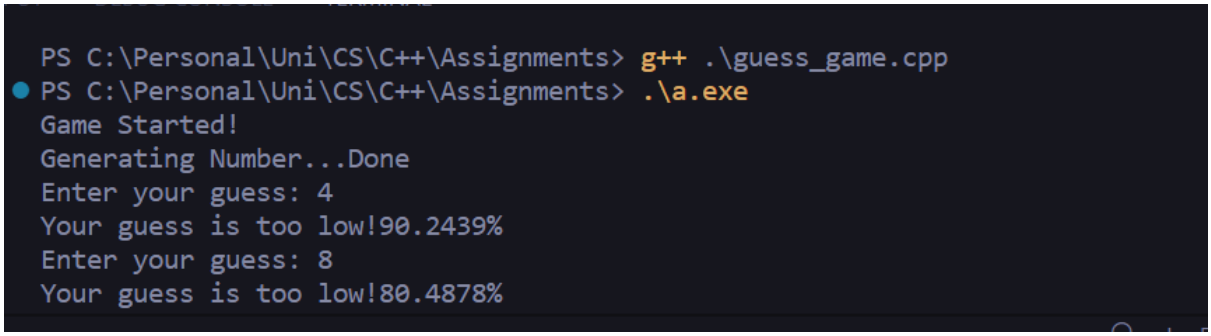
Code:

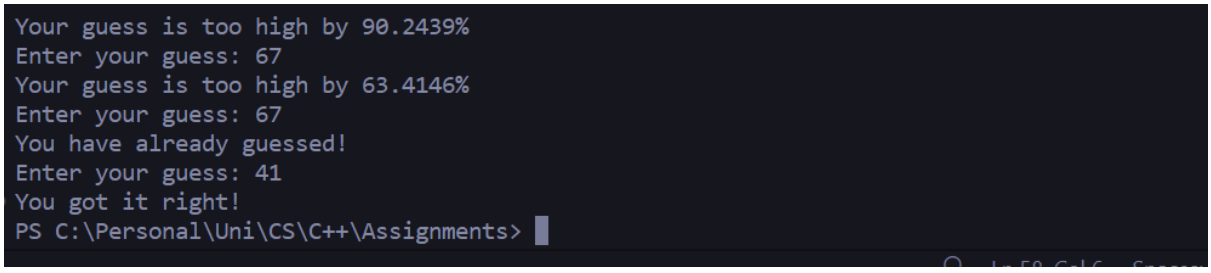
```
#include <iostream>
#include <cstdlib>
```

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



namespace ns
{
    vector<int> guess_list;
    int check_ans(int ans, int random_number){
        for(int num:guess_list){
            if (num == ans)
            {
                cout << "You have already guessed!" << endl;
                return -1;
            }

        }
        if (ans == random_number){
            cout << "You got it right!" << endl;
            return 0;
        }
        // if guess in guess list
        else if (ans > random_number){
            float factor = (float(ans) -
float(random_number))/float(random_number) * 100.0;
            cout << "Your guess is too high by " << factor << "%" <<
endl;
            guess_list.push_back(ans);
            return 1;
        }
        else if (ans < random_number){
            float factor = (float(random_number) -
float(ans))/float(random_number) * 100.0;
            cout << "Your guess is too low!" << factor << "%"  <<
endl;
            guess_list.push_back(ans);
            return 2;
        }
        else{
            cout << "Invalid input!" << endl;
            return 3;
        }
```

```
    }

} // namespace ns

class guess_game
{
private:
    int random_number;
public:
    guess_game(){
        cout << "Game Started!" << endl;
    };
    int get_ans(){
        cout << "Generating Number..." ;
        random_number = rand() % 100;
        cout << "Done" << endl;
        return random_number;
    }

};

int main(int argc, char const *argv[]){
    int number,guess;
    guess_game obj;
    number = obj.get_ans();

    while (true){
        cout << "Enter your guess: ";
        cin >> guess;
        if (ns::check_ans(guess,number) == 0){
            break;
        }
    }

    return 0;
}
```

Output:


PS C:\Personal\Uni\CS\C++\Assignments> g++ .\guess_game.cpp
PS C:\Personal\Uni\CS\C++\Assignments> .\a.exe
Game Started!
Generating Number...Done
Enter your guess: 4
Your guess is too low!90.2439%
Enter your guess: 8
Your guess is too low!80.4878%


Your guess is too high by 90.2439%
Enter your guess: 67
Your guess is too high by 63.4146%
Enter your guess: 67
You have already guessed!
Enter your guess: 41
You got it right!
PS C:\Personal\Uni\CS\C++\Assignments>