Srijana Poudel

Lottery Machine

This command line application has 7 lottery numbers and 3 bonus numbers. This program asks users for different random numbers for each input. First the regular numbers and then the bonus numbers. Input numbers are between 1 and 39. User can choose numbers independently or numbers could be computer generated. The application will sort the numbers from biggest to smallest. Programs will check each number. If seven lottery numbers and three bonus numbers are matched, the user will win 90 million. Likewise, if five lottery numbers and two bonus number matches, users will win 55 million. However, if less than 5 lottery numbers are matched, programme will say “Try again”.

Final assignment-lottery-machine.cpp

```
#include<iostream>
#include<algorithm>
#include<vector>
#include "LotteryNumbers.h"

using namespace std;

struct User {
	vector<int> lotteryNumbers;
	vector<int> bonusNumbers;
};

User getUserLotteryNumbers();

int main()
{
	// get different random numbers in every compilation
	//
	srand((unsigned int)time(NULL));

	User srijana;
	User aashis;

	cout << "Srijana's Lottery: " << endl;
	srijana = getUserLotteryNumbers();

	cout << "Aashis's Lottery: " << endl;
	aashis = getUserLotteryNumbers();

	cout << endl << endl;

	// Get 7 random numbers and assign it to lottoNumbers vector
	vector<int> lottoNumbers = generateRandomNumbers(7);

	cout << "\nComputer generated lottery numbers are : \n";
	for (int i = 0; i < 7; i++) {
		cout << lottoNumbers[i] << " ";
	}

	// Get 3 random numbers and assign it to bonusNumbers vector
	vector<int> bonusNumbers = generateRandomNumbers(3);

	cout << "\n Computer generated bonus numbers are : \n";
	for (int number : bonusNumbers) {
```

```
			cout << number << " ";
		}

		cout << endl;

		int matchedLotteryNumbersSrijana = compareLotteryNumbers(lottoNumbers,
srijana.lotteryNumbers);
		int matchedBonusNumbersSrijana = compareLotteryNumbers(bonusNumbers,
srijana.bonusNumbers);
		cout << "\nLottery result for Srijana is " << matchedLotteryNumbersSrijana << "
+ " << matchedBonusNumbersSrijana << endl;

		printLotteryResult(matchedLotteryNumbersSrijana, matchedBonusNumbersSrijana);

		int matchedLotteryNumbersAashis = compareLotteryNumbers(lottoNumbers,
aashis.lotteryNumbers);
		int matchedBonusNumbersAashis = compareLotteryNumbers(bonusNumbers,
aashis.bonusNumbers);
		cout << "\nLottery result for Aashis is " << matchedLotteryNumbersAashis << " +
" << matchedBonusNumbersAashis << endl;

		printLotteryResult(matchedLotteryNumbersAashis, matchedBonusNumbersAashis);

		return 0;
}


User getUserLotteryNumbers() {
		User user;
		cout << "Lottery numbers: ";
		vector<int> user1LotteryNumbers = getUserNumbers(7);
		cout << "Bonus numbers: ";
		vector<int> user1BonusNumbers = getUserNumbers(3);

		cout << "\nLottery numbers are: ";
		for (int number : user1LotteryNumbers) {
			cout << number << " ";
		}

		cout << "\nBonus numbers are: ";
		for (int number : user1BonusNumbers) {
			cout << number << " ";
		}

		cout << endl << endl;

		user.lotteryNumbers = user1LotteryNumbers;
		user.bonusNumbers = user1BonusNumbers;

		return user;
}
```

LotteryNumbers.h

```
std::vector<int> generateRandomNumbers(int n);
int compareLotteryNumbers(const std::vector<int> generatedLotteryNumbers, const
std::vector<int> userLotteryNumbers);
std::vector<int> getUserNumbers(int n);
void printLotteryResult(int matchedLotteryNumbers, int matchedBonusNumbers);
```

Srijana Poudel

LotteryNumbers.cpp

```
#include<iostream>
#include<algorithm>
#include<vector>
#include "LotteryNumbers.h"

using namespace std;

vector<int> generateRandomNumbers(int n) {
	cout << endl;
	vector<int> randomNumbers;
	int i = 0;
	while (i < n) {
	Randomnumber: int num = rand() % 39 + 1; // generates random number between 1-
39

		// check if num already exist in randomNumbers array
		if (find(begin(randomNumbers), end(randomNumbers), num) ==
end(randomNumbers)) {
			//if doesnot exist, add num to randomNumbers array
			randomNumbers.push_back(num);
		}
		else {
			//if num already exist in array, goto Randomnumber
			goto Randomnumber;
		}

		i++;
	}

	//sort randomNumbers in descending order
	sort(randomNumbers.begin(), randomNumbers.end(), greater<int>());

	return randomNumbers;
}


vector<int> getUserNumbers(int n) {
	vector<int> userNumbers;
	string generateAutomatically;
	cout << "\nType 'yes' if you want the numbers to be generated automatically. If
not press any key and enter: \n";
	cin >> generateAutomatically;

	if (generateAutomatically == "yes") {
		return generateRandomNumbers(n);
	}
	else {
		int input;
		cout << "\nPlease enter " << n << " unique numbers between 1 and 39:
\n";
		for (int k = 0; k < n; k++) {
		AskNumber: cin >> input;
			if (input > 39 || input < 1) {
				cout << "Number should be between 1 and 39. Please enter
another number: \n";
				goto AskNumber;
```

```
                        }

                        if (find(begin(userNumbers), end(userNumbers), input) ==
end(userNumbers)) {
                                // Push element to unserNumbers array
                                userNumbers.push_back(input);
                        }
                        else {
                                cout << input << " is duplicate. Please enter unique
number: \n";
                                goto AskNumber;
                        }
                }

                cout << endl;

                sort(userNumbers.begin(), userNumbers.end(), greater<int>());

                return userNumbers;
        }
}

int compareLotteryNumbers(const vector<int> generatedLotteryNumbers, const vector<int>
userLotteryNumbers) {
        // let 0 numbers are matched at first
        int matched = 0;

        for (int userNumber : userLotteryNumbers) {
                if (find(begin(generatedLotteryNumbers), end(generatedLotteryNumbers),
userNumber) != end(generatedLotteryNumbers)) {
                        // if userNumber exists in generatedLotteryNumbers, add 1 to
matched
                        matched++;
                }
        }

        return matched;
}


void printLotteryResult(int matchedLotteryNumbers, int matchedBonusNumbers) {
        string winningAmount;
        switch (matchedLotteryNumbers) {
        case 7:
                switch (matchedBonusNumbers) {
                case 3:
                        winningAmount = "90 Million";
                        break;
                case 2:
                        winningAmount = "80 Million";
                        break;
                case 1:
                        winningAmount = "50 Million";
                        break;
                default:
                        winningAmount = "40 Million";
                        break;
                }
                break;
        case 6:
                switch (matchedBonusNumbers) {
                case 3:
```

```
                        winningAmount = "75 Million";
                        break;
                case 2:
                        winningAmount = "65 Million";
                        break;
                case 1:
                        winningAmount = "45 Million";
                        break;
                default:
                        winningAmount = "35 Million";
                        break;
                }
                break;
        case 5:
                switch (matchedBonusNumbers) {
                case 3:
                        winningAmount = "55 Million";
                        break;
                case 2:
                        winningAmount = "41 Million";
                        break;
                case 1:
                        winningAmount = "21 Million";
                        break;
                default:
                        winningAmount = "11 Million";
                        break;
                }
                break;
        default:
                winningAmount = "0";
                break;
        }

        if (winningAmount != "0") {
                cout << "Congratulations!!! You won " << winningAmount << endl;
        }
        else {
                cout << "Oh no!! Please, try again."<< endl ;
        }
}
```