CSc 3320: Systems Programming
Spring 2021
Homework
4: Total points 100

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ALL PROGRAMS MUST BE COMMENTED. YOUR SOLUTION WILL NOT BE ACCEPTED IF THERE ARE NO COMMENTS IN YOUR SCRIPT. Also note that the comments MUST be useful and not be random.

PART 1: 40pts
Must incorporate use of Functions and Pointers

1. Write a C program `checkPasswd.c` to check if the length of a given password string is 10 characters or not. If not, deduct 5 points per missing character. If the total deduction is greater than 30 points, print out the deduction and message "The password is unsafe! Please reset."; otherwise, print out "The password is safe."

2. Similar to above question, update the C program `checkPasswd.c` to check if a password is safe or by not by checking only the evaluation criteria below. It will still print out the final score, and "safe" or "unsafe" when deduction is more than 30 points.
   ● Missing lowercase -20 points ● Lack of capital letters -20 points
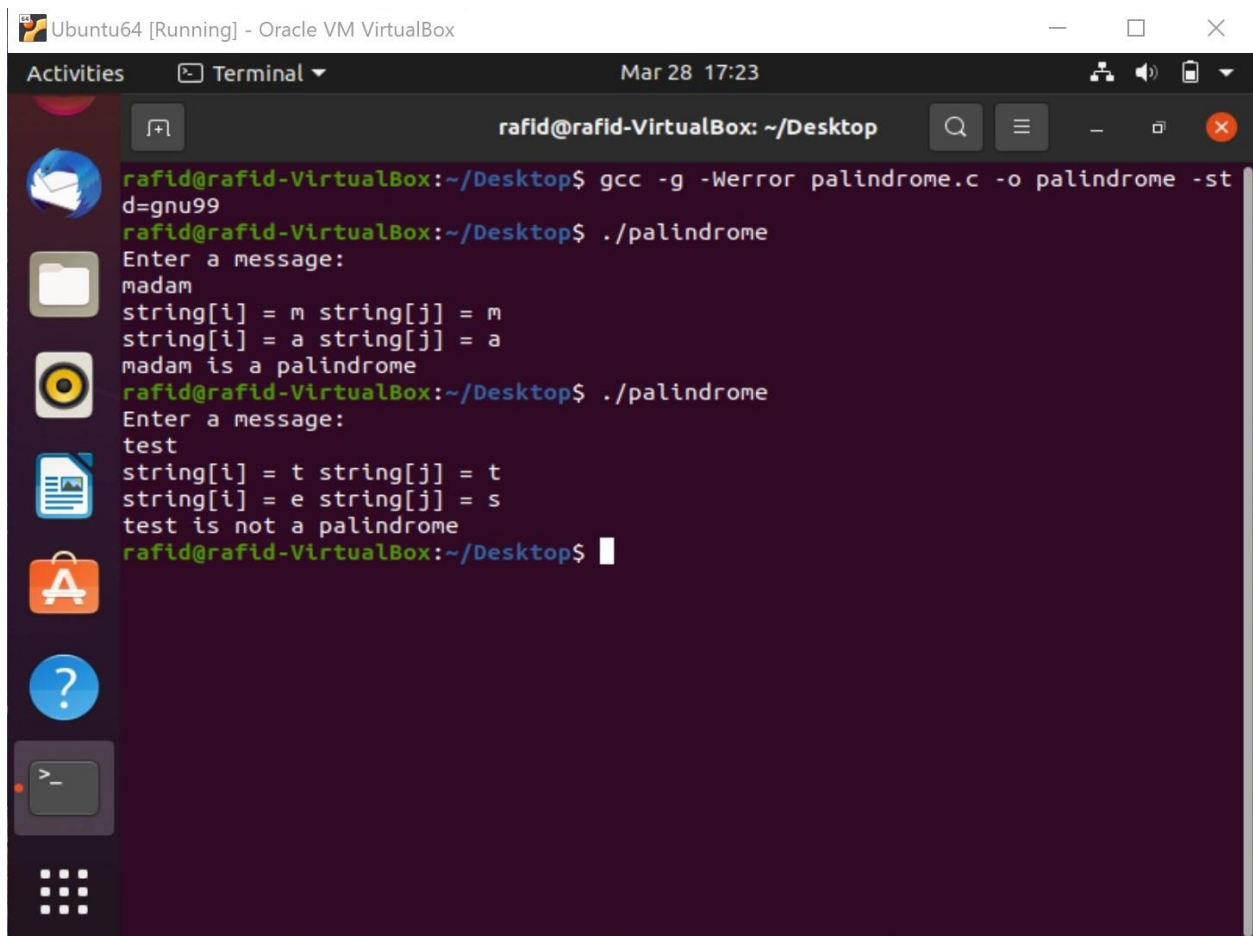   ● Missing numbers -20 points ● More than 2 consecutive characters (e.g. 123 or abc) -20 points

For Question 1 & 2:

```
[[rshaon1@gsuad.gsu.edu@snowball ~]$
[[rshaon1@gsuad.gsu.edu@snowball ~]$ gcc -g -Werror checkPasswd.c -o checkPasswd -std=c99
[[rshaon1@gsuad.gsu.edu@snowball ~]$ ./checkPasswd
[Enter a password: raf1d
 Total deductions: 45
 This password is unsafe! Please reset.
[[rshaon1@gsuad.gsu.edu@snowball ~]$ ./checkPasswd
[Enter a password: rafid
 Total deductions: 65
 This password is unsafe! Please reset.
[[rshaon1@gsuad.gsu.edu@snowball ~]$ ./checkPasswd
[Enter a password: 002Rafid*$
 This password is safe.
 [rshaon1@gsuad.gsu.edu@snowball ~]$ █
```

Part II : 40pts
Must incorporate the use of Functions and Pointer arrays

3. Write a program that reads a message (can be characters, numeric or alphanumeric) and checks whether it is a palindrome (the characters in the message are the same when read from left-to-right or right-to-left).

4. Write a program that will swap two variables without the use of any
   third variable. Utilize this program to write a program that reads two
   sentences that contain alphanumeric characters and the program
   must swap all the numerics in sentence1 with alphabet characters
   from sentence 2 and vice-versa. Keep the lengths of the sentences
   as identical.

```
[[rshaon1@gsuad.gsu.edu@snowball ~]$ gcc -g -Werror swap.c -o swap -std=gnu99
[[rshaon1@gsuad.gsu.edu@snowball ~]$ ./swap
 Enter one sentence:
[Rafid is boring?
 Enter another sentence of equal length:
[Rafid is smart!
 Sentence 1 after: Rafid is boring?
 Sentence 2 after: Rafid is smart!
 Sentences are not of equal length. Cannot swap.
 Sentence 1 after: Rafid is boring?
 Sentence 2 after: Rafid is smart!
[[rshaon1@gsuad.gsu.edu@snowball ~]$ ./swap
 Enter one sentence:
[Rafid... *sigh*
 Enter another sentence of equal length:
[Huh?
 Sentence 1 after: Rafid... *sigh*
 Sentence 2 after: Huh?
 Sentences are not of equal length. Cannot swap.
 Sentence 1 after: Rafid... *sigh*
 Sentence 2 after: Huh?
[rshaon1@gsuad.gsu.edu@snowball ~]$ █
```

Part III : 20pts
Must incorporate Functions, Pointers or PointerArrays, and Structures or Unions

5. Write a program that asks the user to enter an international dialing code and then looks it up in the country_codes array (see Sec 16.3 in C textbook). If it finds the code, the program should display the name of the corresponding country; if not, the program should print an error message. For demonstration purposes have at least 20 countries in your list.

(Programming Project 1 on pg412 in C textbook)

```
[[rshaon1@gsuad.gsu.edu@snowball ~]$ gcc -g -Werror countrycode.c -o countrycode -std=c99
[[rshaon1@gsuad.gsu.edu@snowball ~]$ ./countrycode
 Enter a country code from the following list:
 Argentina 54
 Bangladesh 880
 Brazil 55
 Burma (Myanmar) 95
 China 86
 Colombia 57
 Congo, Dem. Rep. of 243
 Egypt 20
 Ethiopia 251
 France 33
 Germany 49
 India 91
 Indonesia 62
 Iran 98
 Italy 39
 Japan 81
 Mexico 52
 Nigeria 234
 Pakistan 92
 Phillippines 63
 Poland 48
 Russia 7
 South Africa 27
 South Korea 82
 Spain 34
 Sudan 249
 Thailand 66
 Turkey 90
 Ukraine 380
 United Kingdom 44
 United States 1
 Vietnam 84

[84
 You have selected Vietnam with code #84
```

```
[[rshaon1@gsuad.gsu.edu@snowball ~]$ ./countrycode
Enter a country code from the following list:
Argentina 54
Bangladesh 880
Brazil 55
Burma (Myanmar) 95
China 86
Colombia 57
Congo, Dem. Rep. of 243
Egypt 20
Ethiopia 251
France 33
Germany 49
India 91
Indonesia 62
Iran 98
Italy 39
Japan 81
Mexico 52
Nigeria 234
Pakistan 92
Phillippines 63
Poland 48
Russia 7
South Africa 27
South Korea 82
Spain 34
Sudan 249
Thailand 66
Turkey 90
Ukraine 380
United Kingdom 44
United States 1
Vietnam 84

[234
You have selected Nigeria with code #234
```

```
[[rshaon1@gsuad.gsu.edu@snowball ~]$ ./countrycode
Enter a country code from the following list:
Argentina 54
Bangladesh 880
Brazil 55
Burma (Myanmar) 95
China 86
Colombia 57
Congo, Dem. Rep. of 243
Egypt 20
Ethiopia 251
France 33
Germany 49
India 91
Indonesia 62
Iran 98
Italy 39
Japan 81
Mexico 52
Nigeria 234
Pakistan 92
Phillippines 63
Poland 48
Russia 7
South Africa 27
South Korea 82
Spain 34
Sudan 249
Thailand 66
Turkey 90
Ukraine 380
United Kingdom 44
United States 1
Vietnam 84

[2345
Could not find country with code #2345
[rshaon1@gsuad.gsu.edu@snowball ~]$ █
```