

CSc 3320: Systems Programming

Spring 2021

Homework

4: Total points 100

Submission instructions:

1. Create a Google doc for each homework assignment submission. 2. Start your responses from page 2 of the document and copy these instructions on page 1.
3. Fill in your name, campus ID and panther # in the fields provided. If this information is missing in your document TWO POINTS WILL BE DEDUCTED per submission.
4. Keep this page 1 intact on all your submissions. If this *submissions instructions* page is missing in your submission TWO POINTS WILL BE DEDUCTED per submission.
5. Each homework will typically have 2-3 PARTS, where each PART focuses on specific topic(s).
6. Start your responses to each PART on a new page.
7. If you are being asked to write code copy the code into a separate txt file and submit that as well.
8. If you are being asked to test code or run specific commands or scripts, provide the evidence of your outputs through a screenshot and copy the same into the document.
9. Upon completion, download a .PDF version of the document and submit the same.

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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

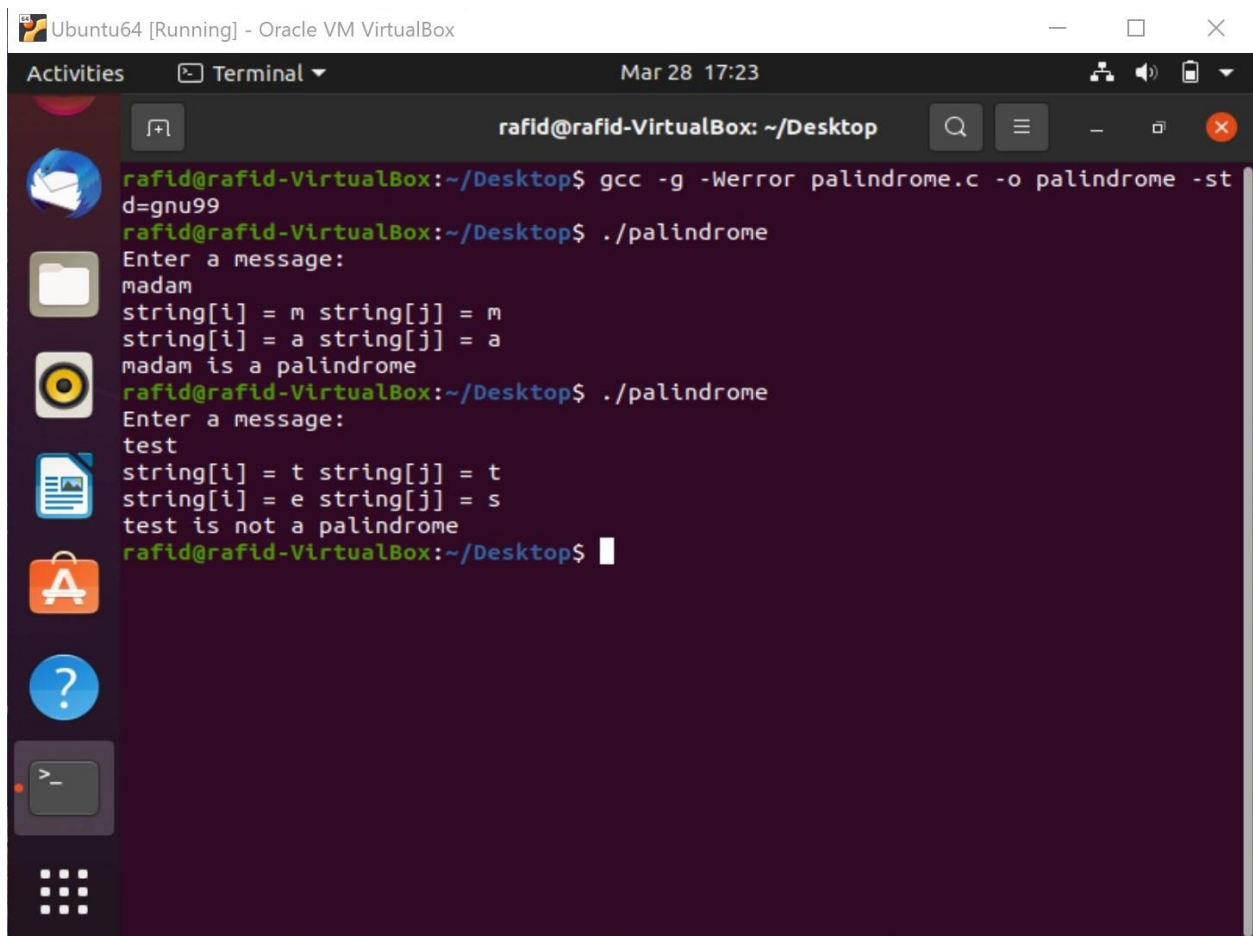
For Question 1 & 2:

```
[[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: rafld  
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

- 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).



```
Ubuntu64 [Running] - Oracle VM VirtualBox
Activities Terminal Mar 28 17:23
rafid@rafid-VirtualBox: ~/Desktop
rafid@rafid-VirtualBox:~/Desktop$ gcc -g -Werror palindrome.c -o palindrome -std=gnu99
rafid@rafid-VirtualBox:~/Desktop$ ./palindrome
Enter a message:
madam
string[i] = m string[j] = m
string[i] = a string[j] = a
madam is a palindrome
rafid@rafid-VirtualBox:~/Desktop$ ./palindrome
Enter a message:
test
string[i] = t string[j] = t
string[i] = e string[j] = s
test is not a palindrome
rafid@rafid-VirtualBox:~/Desktop$
```

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 ~]$ █
```