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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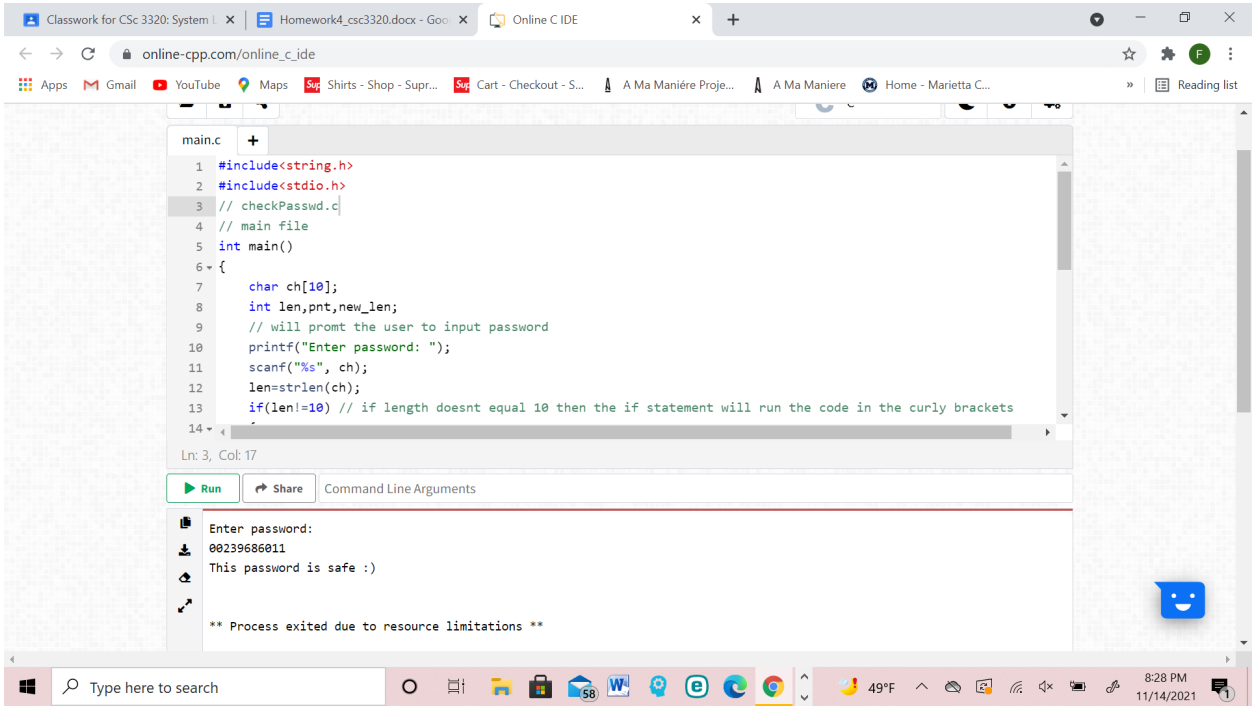
Campus ID: fmusa1

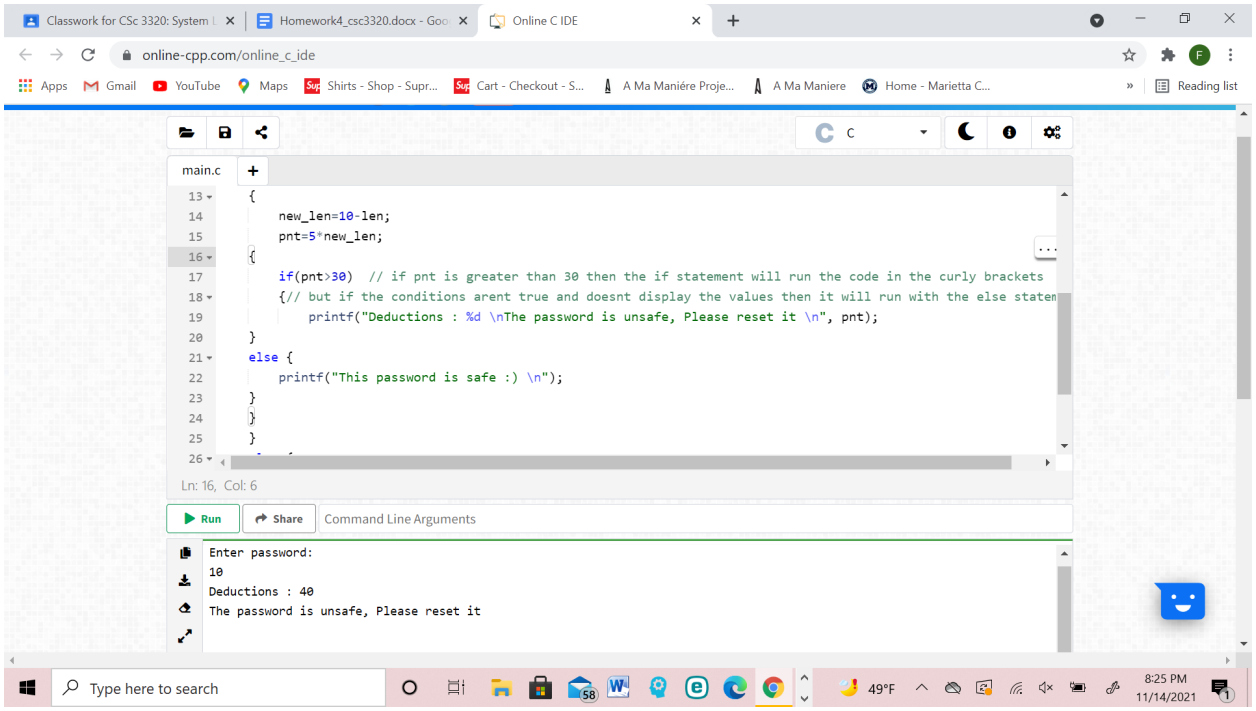
Panther #:002-39-6860

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."

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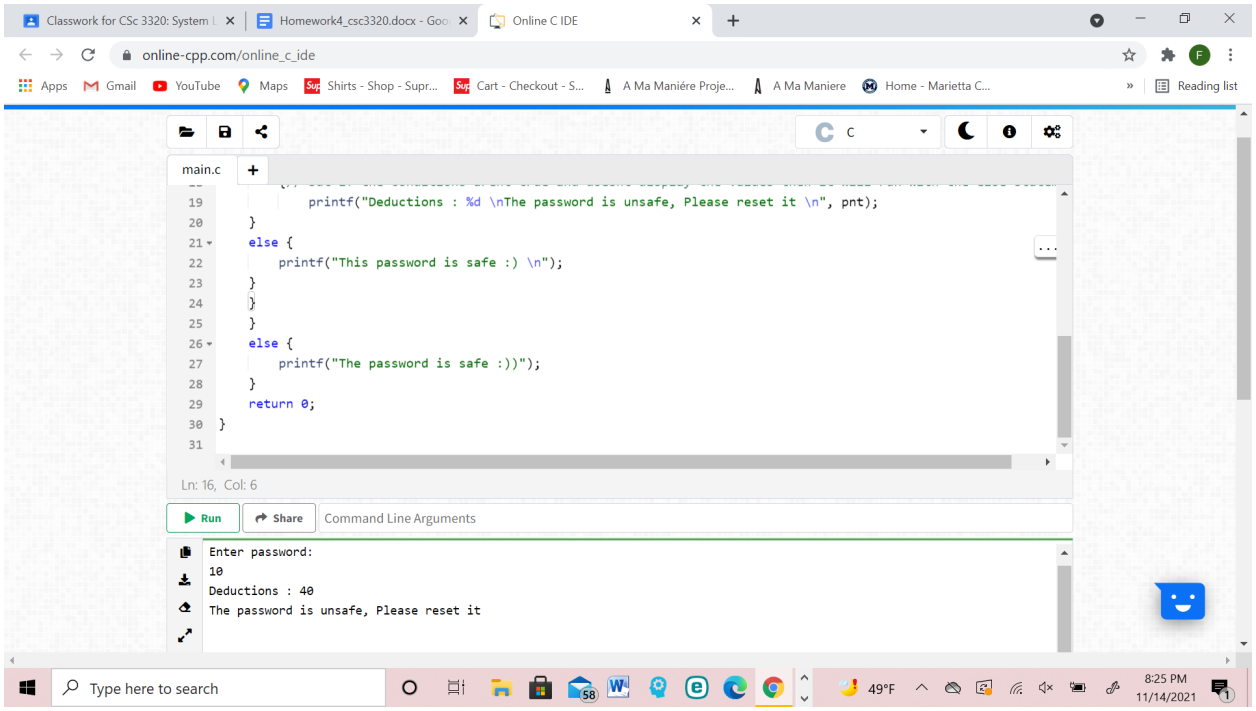
Reading list
C
main.c
{
new_len=10-len;
pnt=5*new_len;
{
if(pnt>30) // if pnt is greater than 30 then the if statement will run the code in the curly brackets
{// but if the conditions arent true and doesnt display the values then it will run with the else staten
printf("Deductions : %d \nThe password is unsafe, Please reset it \n", pnt);
}
else {
printf("This password is safe :) \n");
}
}
}
Ln: 16, Col: 6
Run
Share
Command Line Arguments
Enter password:
10
Deductions : 40
The password is unsafe, Please reset it
Type here to search
49°F
8:25 PM
11/14/2021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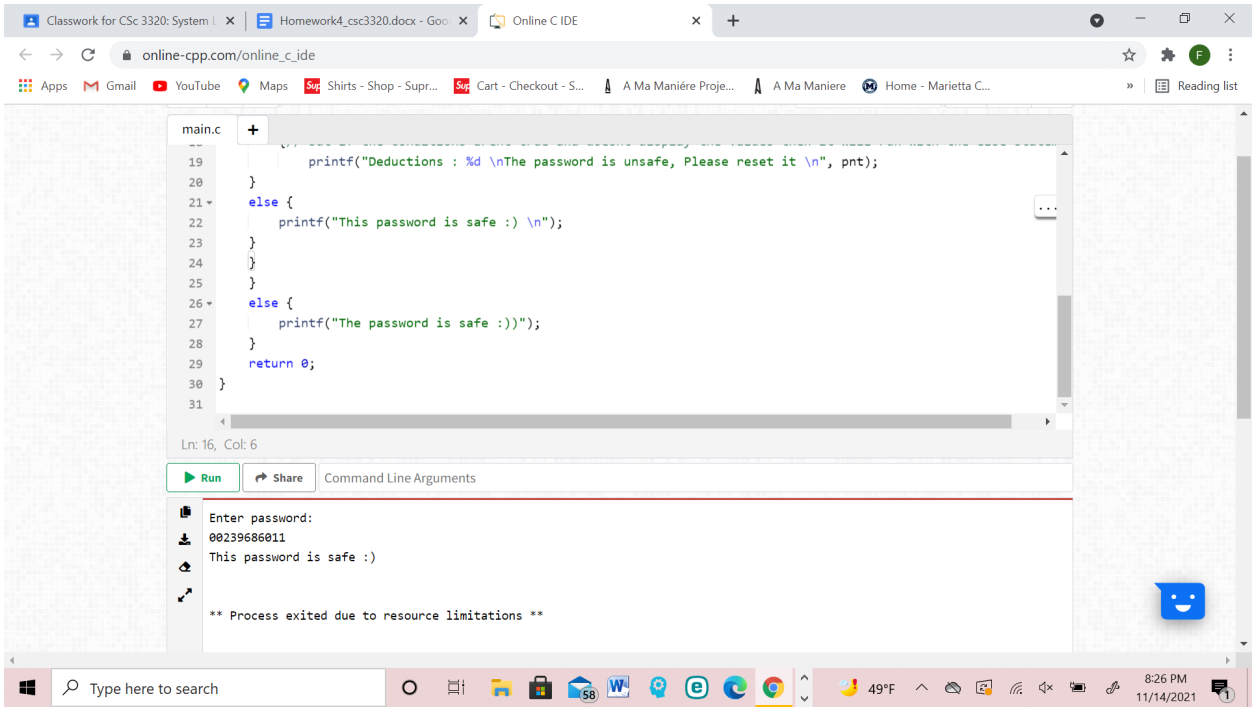
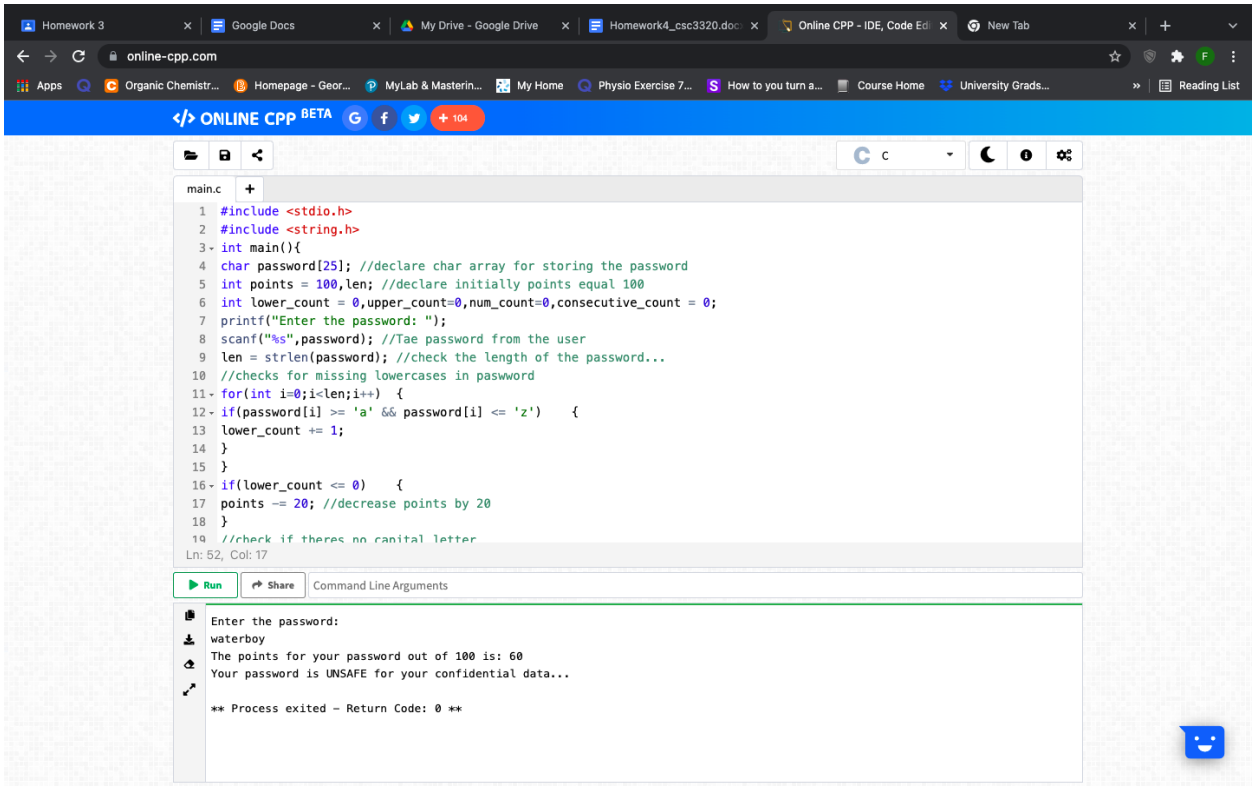
Home - Marietta C...
Reading list
C
main.c
printf("Deductions : %d \nThe password is unsafe, Please reset it \n", pnt);
}
else {
printf("This password is safe :) \n");
}
}
}
else {
printf("The password is safe :))");
}
return 0;
}
Ln: 16, Col: 6
Run
Share
Command Line Arguments
Enter password:
10
Deductions : 40
The password is unsafe, Please reset it
Type here to search
49°F
8:25 PM
11/14/2021



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 lower case -20 points
- Lack of capital letters -20 points
- Missing numbers -20 points
- More than 2 consecutive characters (e.g. 123 or abc) -20 points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Reading List
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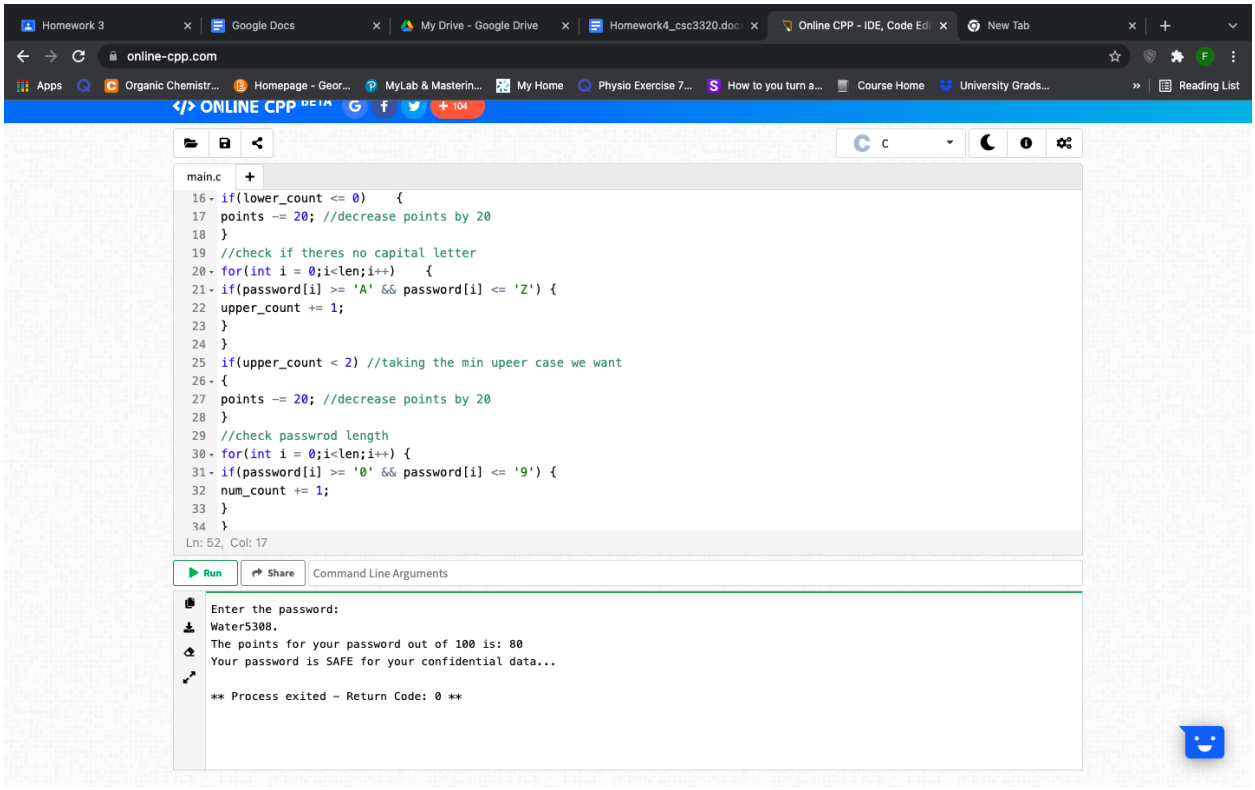
+ 104
C
main.c
#include <stdio.h>
#include <string.h>
int main(){
char password[25]; //declare char array for storing the password
int points = 100,len; //declare initially points equal 100
int lower_count = 0,upper_count=0,num_count=0,consecutive_count = 0;
printf("Enter the password: ");
scanf("%s",password); //Tae password from the user
len = strlen(password); //check the length of the password...
//checks for missing lowercases in paswword
for(int i=0;i<len;i++) {
if(password[i] >= 'a' && password[i] <= 'z') {
lower_count += 1;
}
}
if(lower_count <= 0) {
points -= 20; //decrease points by 20
}
//check if theres no capital letter
Ln: 52, Col: 17
Run
Share
Command Line Arguments
Enter the password:
waterboy
The points for your password out of 100 is: 60
Your password is UNSAFE for your confidential data...
** Process exited - Return Code: 0 **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Reading List
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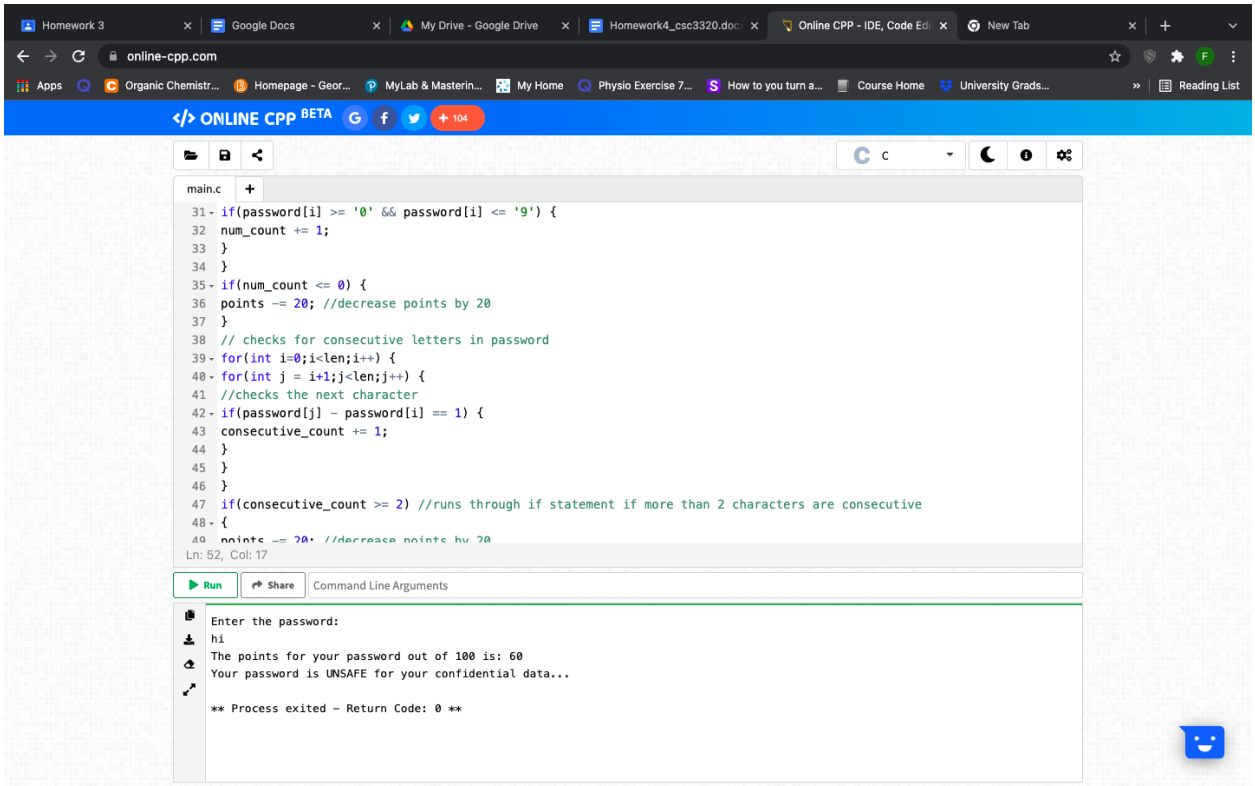
C
main.c
16 if(lower_count <= 0) {
17 points -= 20; //decrease points by 20
18 }
19 //check if theres no capital letter
20 for(int i = 0;i<len;i++) {
21 if(password[i] >= 'A' && password[i] <= 'Z') {
22 upper_count += 1;
23 }
24 }
25 if(upper_count < 2) //taking the min upeer case we want
26 {
27 points -= 20; //decrease points by 20
28 }
29 //check passwrod length
30 for(int i = 0;i<len;i++) {
31 if(password[i] >= '0' && password[i] <= '9') {
32 num_count += 1;
33 }
34 }
Ln: 52, Col: 17
Run
Share
Command Line Arguments
Enter the password:
Water5308.
The points for your password out of 100 is: 80
Your password is SAFE for your confidential data...
** Process exited - Return Code: 0 **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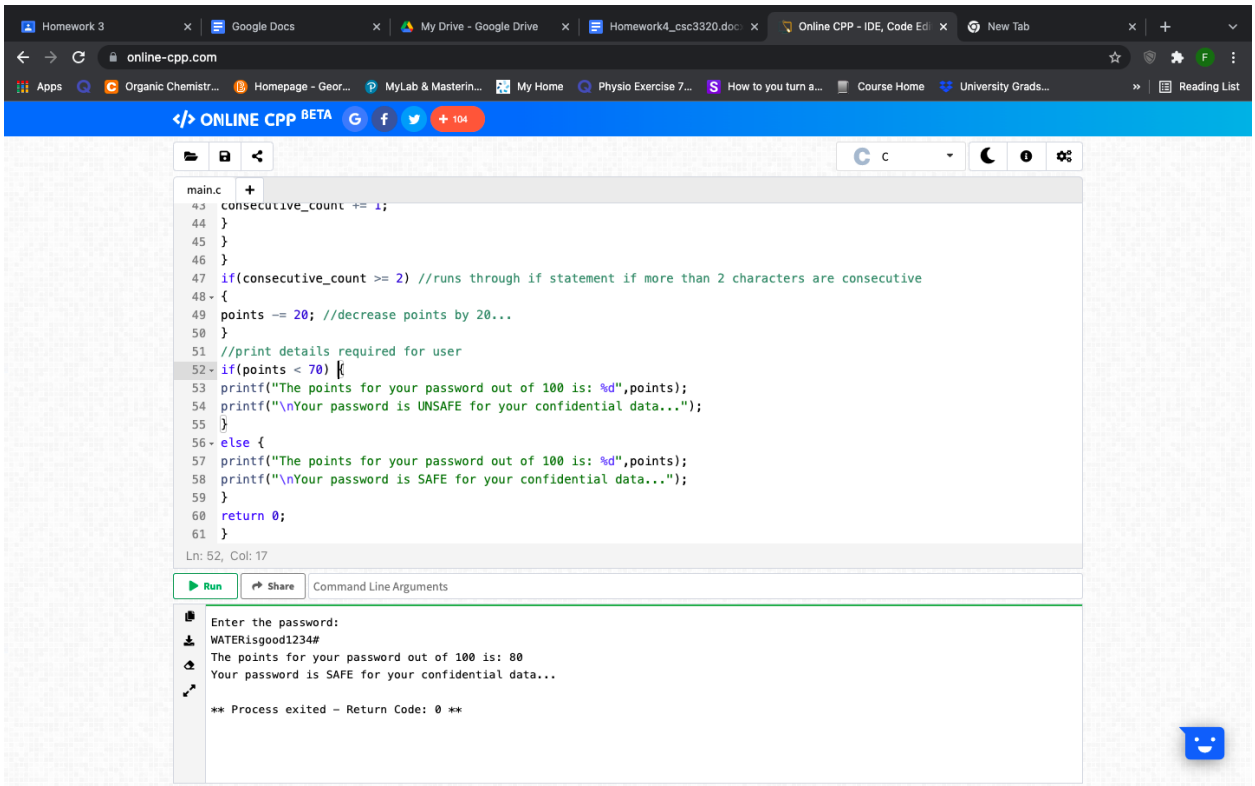
104
C
main.c
if(password[i] >= '0' && password[i] <= '9') {
num_count += 1;
}
}
if(num_count <= 0) {
points -= 20; //decrease points by 20
}
// checks for consecutive letters in password
for(int i=0;i<len;i++) {
for(int j = i+1;j<len;j++) {
//checks the next character
if(password[j] - password[i] == 1) {
consecutive_count += 1;
}
}
}
if(consecutive_count >= 2) //runs through if statement if more than 2 characters are consecutive
{
Ln: 52, Col: 17
Run
Share
Command Line Arguments
Enter the password:
hi
The points for your password out of 100 is: 60
Your password is UNSAFE for your confidential data...
** Process exited - Return Code: 0 **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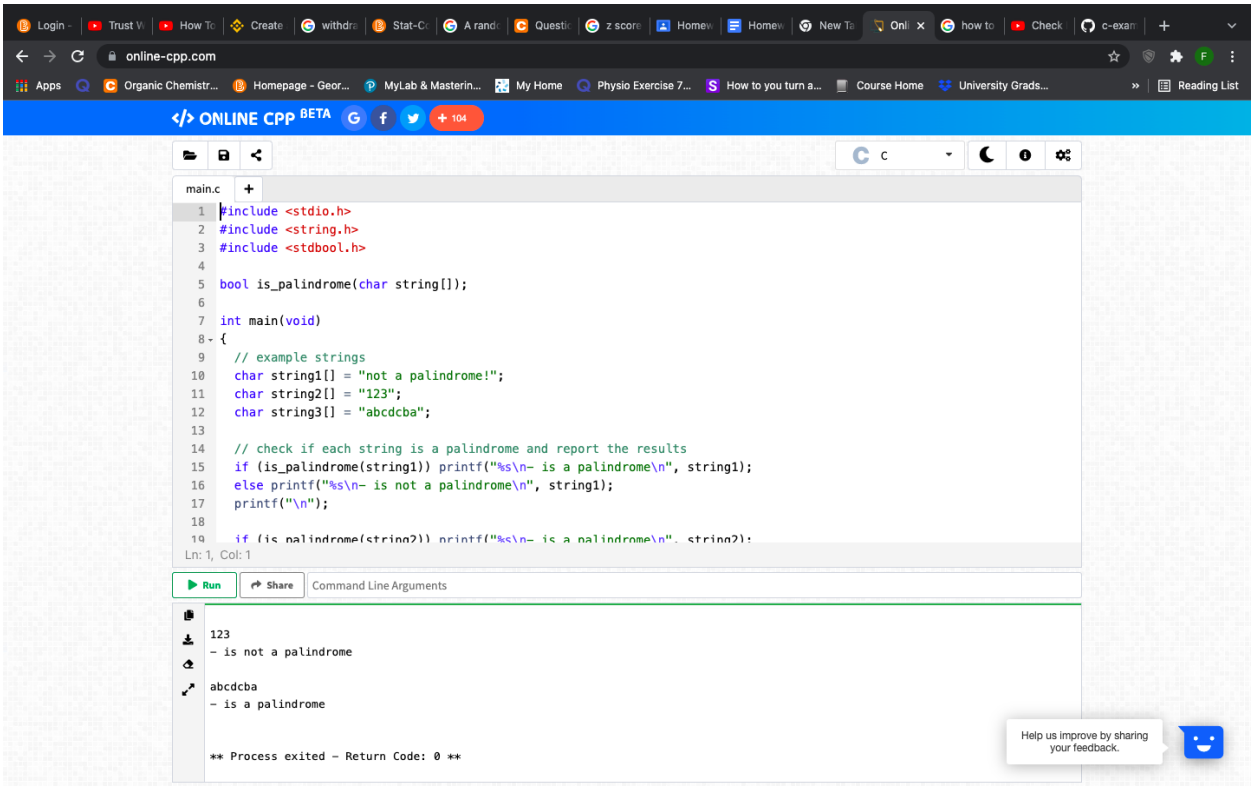
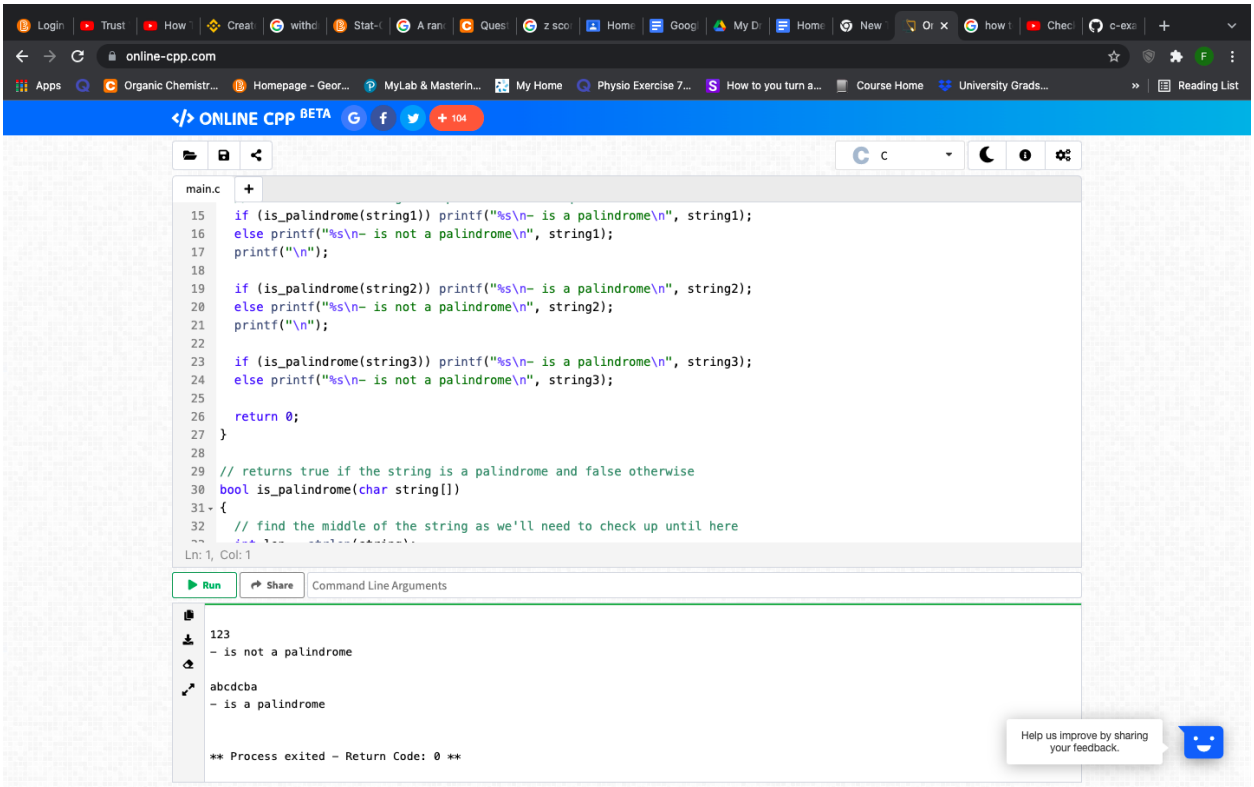
104
C
main.c
consecutive_count += 1;
}
}
}
if(consecutive_count >= 2) //runs through if statement if more than 2 characters are consecutive
{
points -= 20; //decrease points by 20...
}
//print details required for user
if(points < 70) {
printf("The points for your password out of 100 is: %d",points);
printf("\nYour password is UNSAFE for your confidential data...");
}
else {
printf("The points for your password out of 100 is: %d",points);
printf("\nYour password is SAFE for your confidential data...");
}
return 0;
}
Ln: 52, Col: 17
Run
Share
Command Line Arguments
Enter the password:
WATERisgood1234#
The points for your password out of 100 is: 80
Your password is SAFE for your confidential data...
** Process exited - Return Code: 0 **

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).

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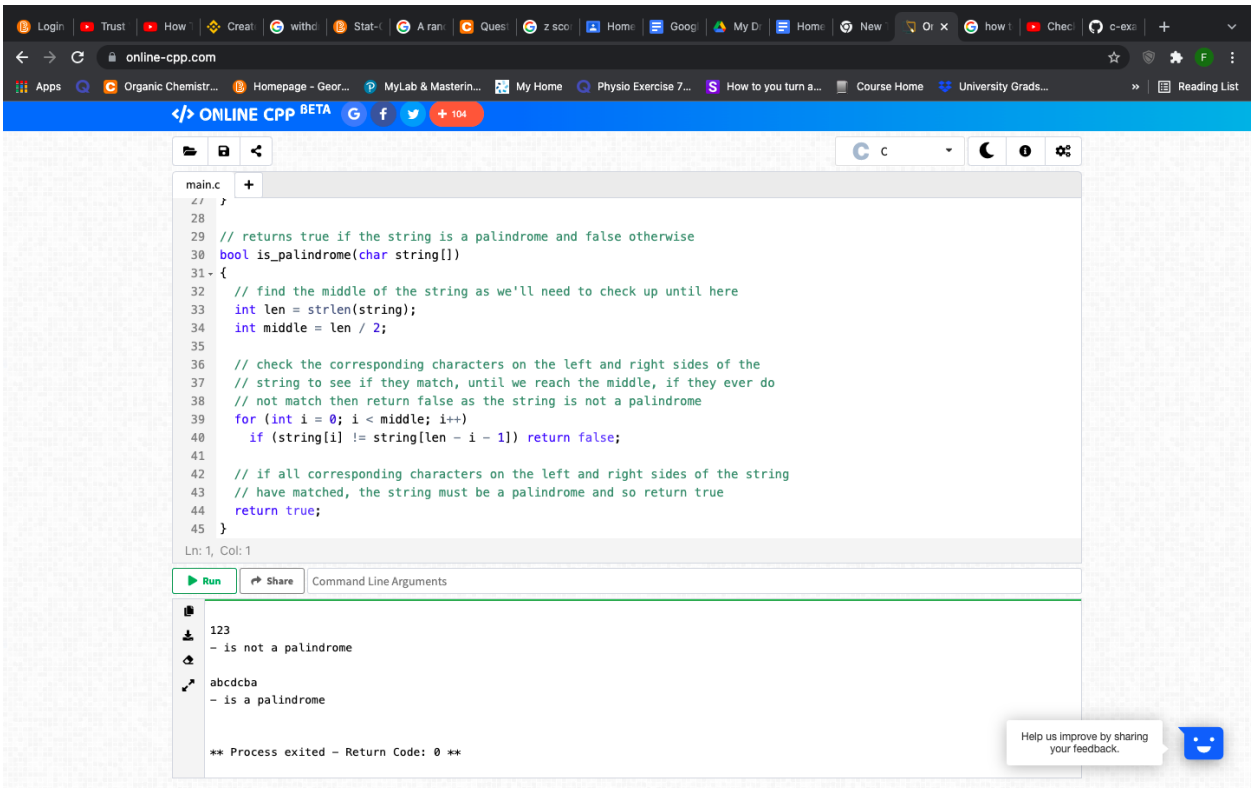
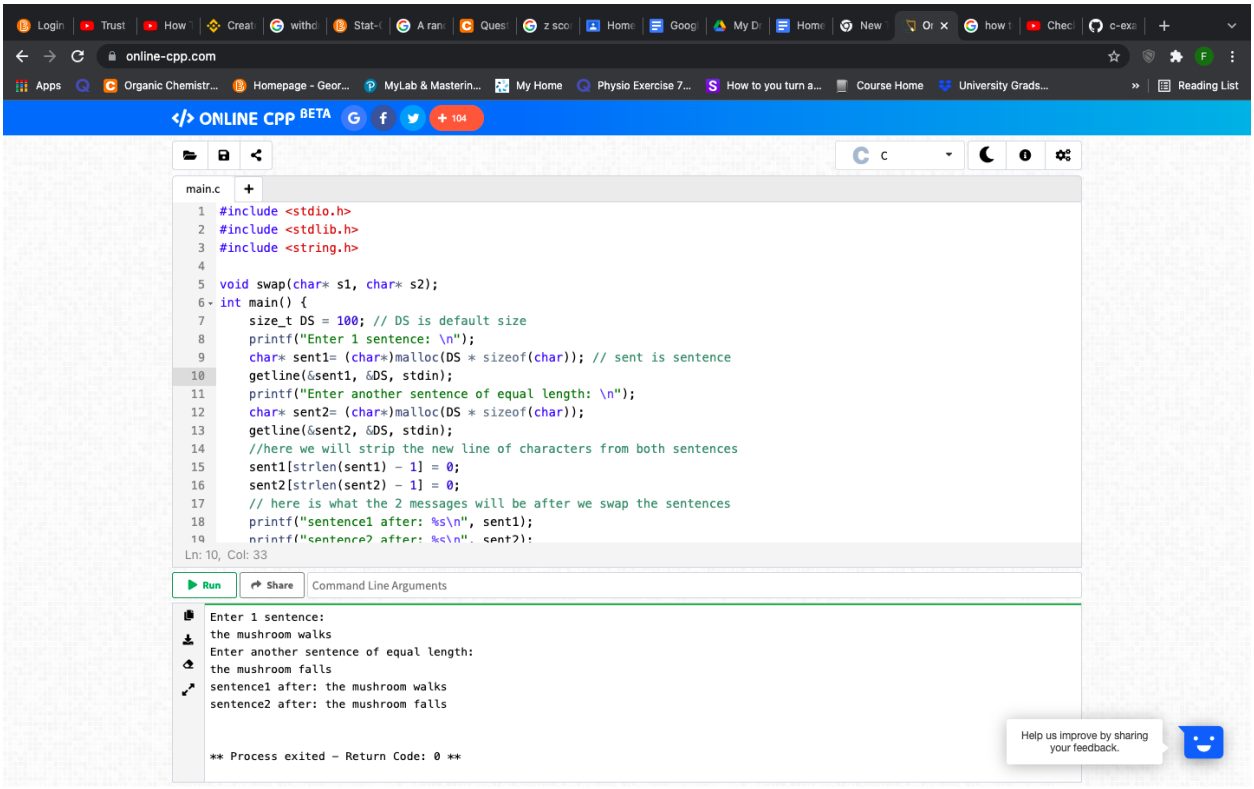
C
main.c
if (is_palindrome(string1)) printf("%s\n- is a palindrome\n", string1);
else printf("%s\n- is not a palindrome\n", string1);
printf("\n");
if (is_palindrome(string2)) printf("%s\n- is a palindrome\n", string2);
else printf("%s\n- is not a palindrome\n", string2);
printf("\n");
if (is_palindrome(string3)) printf("%s\n- is a palindrome\n", string3);
else printf("%s\n- is not a palindrome\n", string3);
return 0;
}
// returns true if the string is a palindrome and false otherwise
bool is_palindrome(char string[])
{
// find the middle of the string as we'll need to check up until here
Ln: 1, Col: 1
Run
Share
Command Line Arguments
123
- is not a palindrome
abcdcba
- is a palindrome
** Process exited - Return Code: 0 **
Help us improve by sharing your feedback.



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.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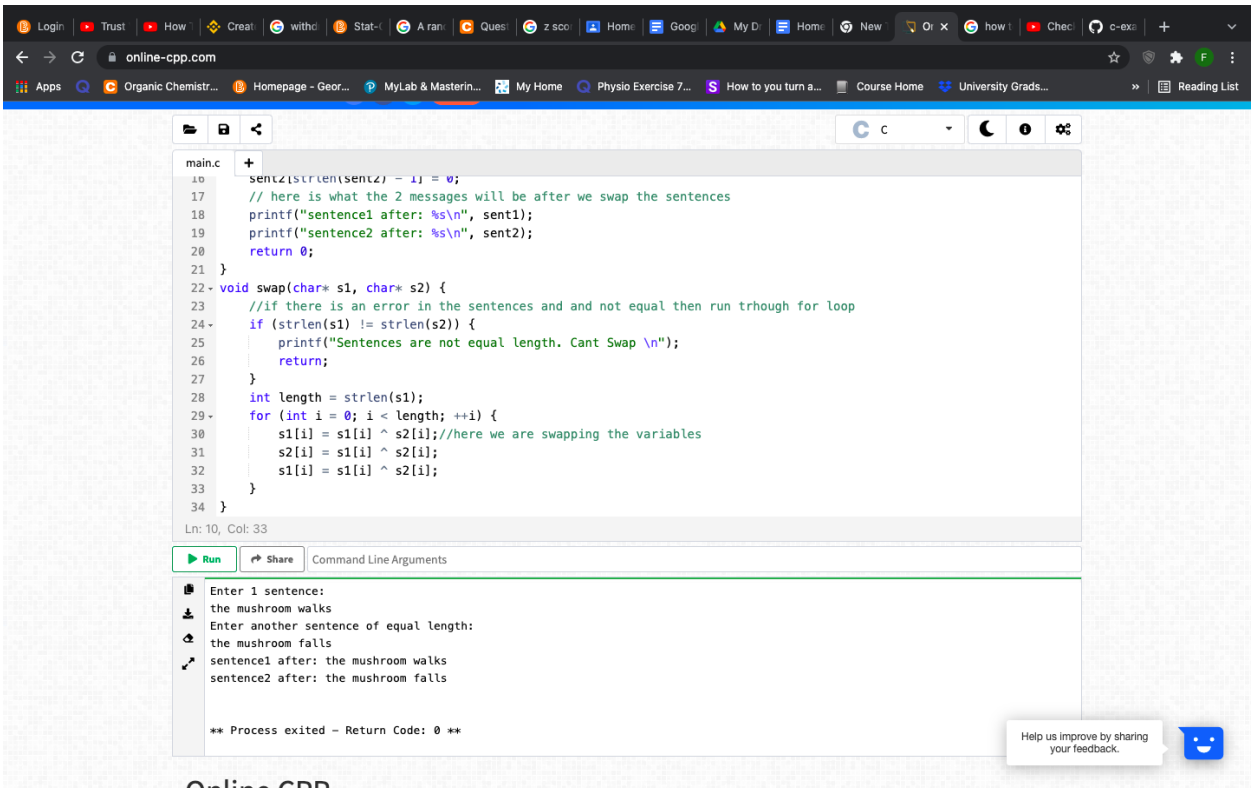
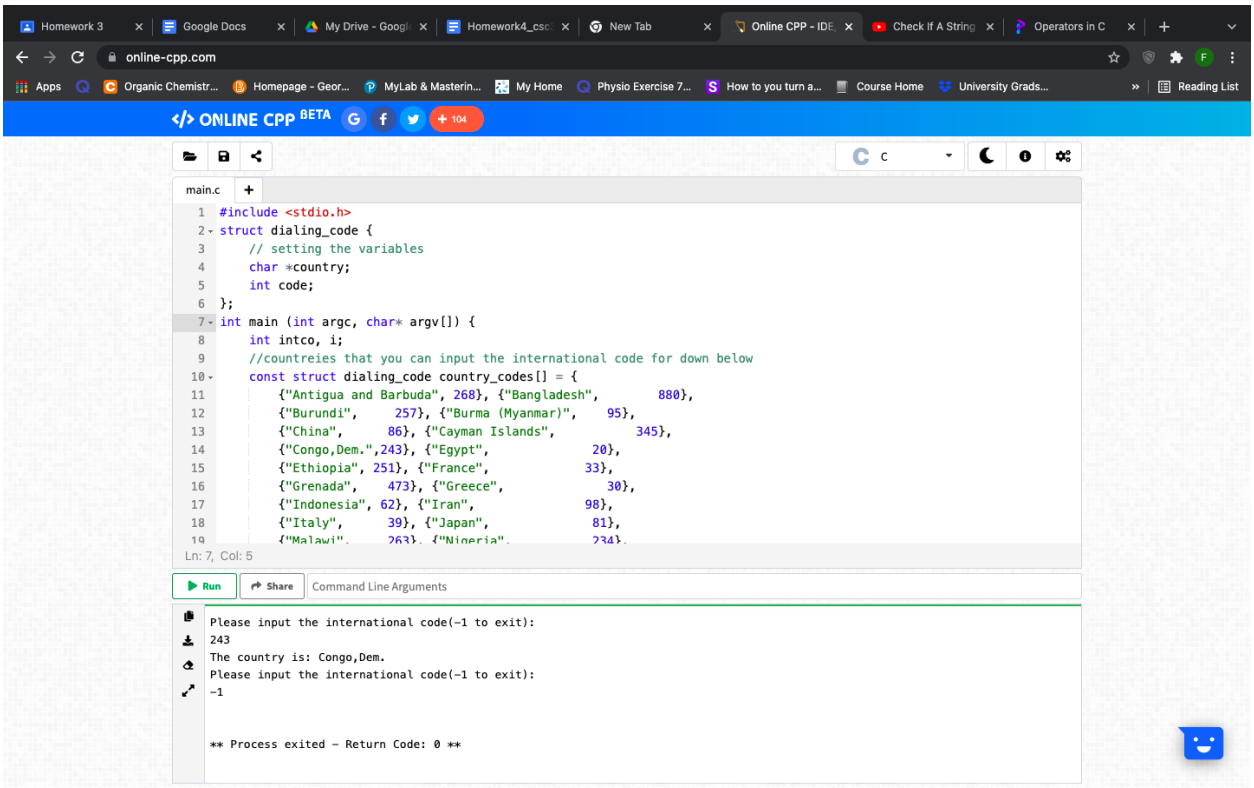
main.c
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
void swap(char* s1, char* s2);
int main() {
size_t DS = 100; // DS is default size
printf("Enter 1 sentence: \n");
char* sent1= (char*)malloc(DS * sizeof(char)); // sent is sentence
getline(&sent1, &DS, stdin);
printf("Enter another sentence of equal length: \n");
char* sent2= (char*)malloc(DS * sizeof(char));
getline(&sent2, &DS, stdin);
//here we will strip the new line of characters from both sentences
sent1[strlen(sent1) - 1] = 0;
sent2[strlen(sent2) - 1] = 0;
// here is what the 2 messages will be after we swap the sentences
printf("sentence1 after: %s\n", sent1);
Ln: 10, Col: 33
Run
Share
Command Line Arguments
Enter 1 sentence:
the mushroom walks
Enter another sentence of equal length:
the mushroom falls
sentence1 after: the mushroom walks
sentence2 after: the mushroom falls
** Process exited - Return Code: 0 **
Help us improve by sharing your feedback.

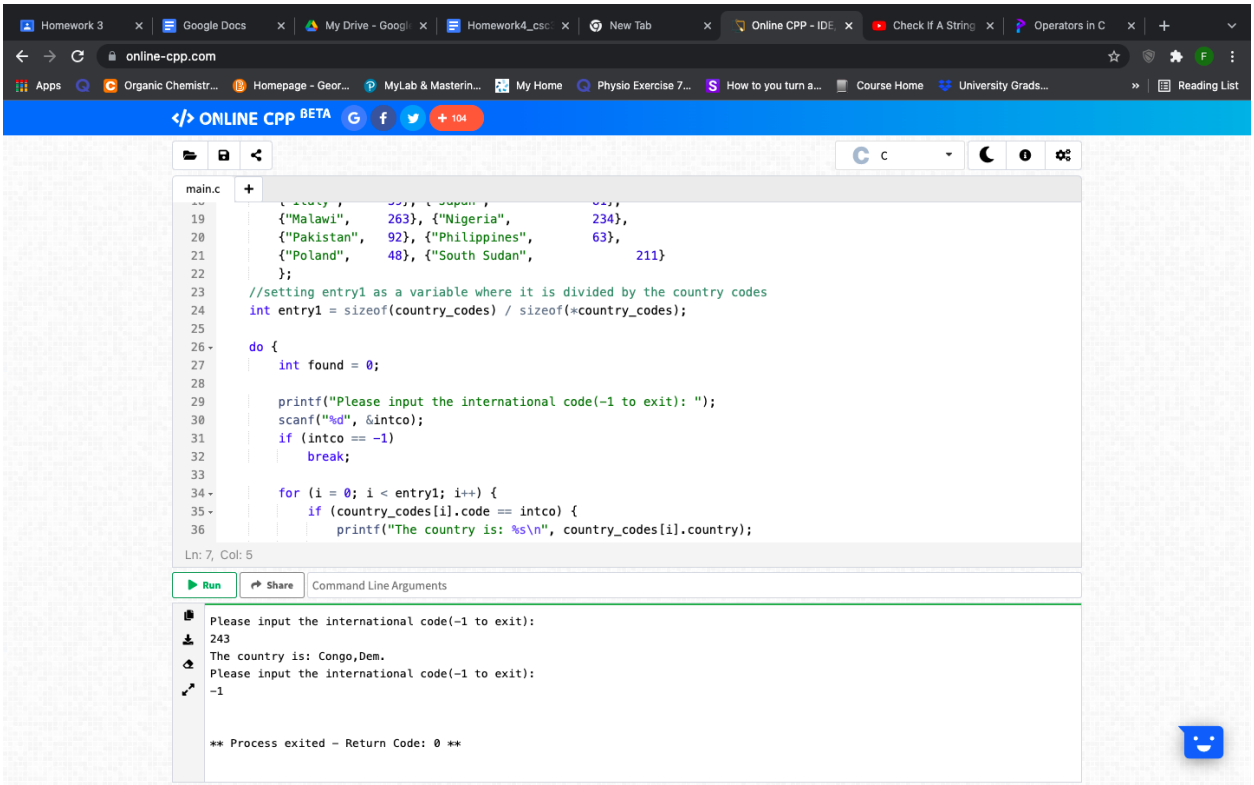

online-cpp.com
main.c
// here is what the 2 messages will be after we swap the sentences
printf("sentence1 after: %s\n", sent1);
printf("sentence2 after: %s\n", sent2);
return 0;
}
void swap(char* s1, char* s2) {
//if there is an error in the sentences and and not equal then run trhough for loop
if (strlen(s1) != strlen(s2)) {
printf("Sentences are not equal length. Cant Swap \n");
return;
}
int length = strlen(s1);
for (int i = 0; i < length; ++i) {
s1[i] = s1[i] ^ s2[i];//here we are swapping the variables
s2[i] = s1[i] ^ s2[i];
s1[i] = s1[i] ^ s2[i];
}
}
Ln: 10, Col: 33
Run
Share
Command Line Arguments
Enter 1 sentence:
the mushroom walks
Enter another sentence of equal length:
the mushroom falls
sentence1 after: the mushroom walks
sentence2 after: the mushroom falls
** Process exited - Return Code: 0 **
Help us improve by sharing your feedback.

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)

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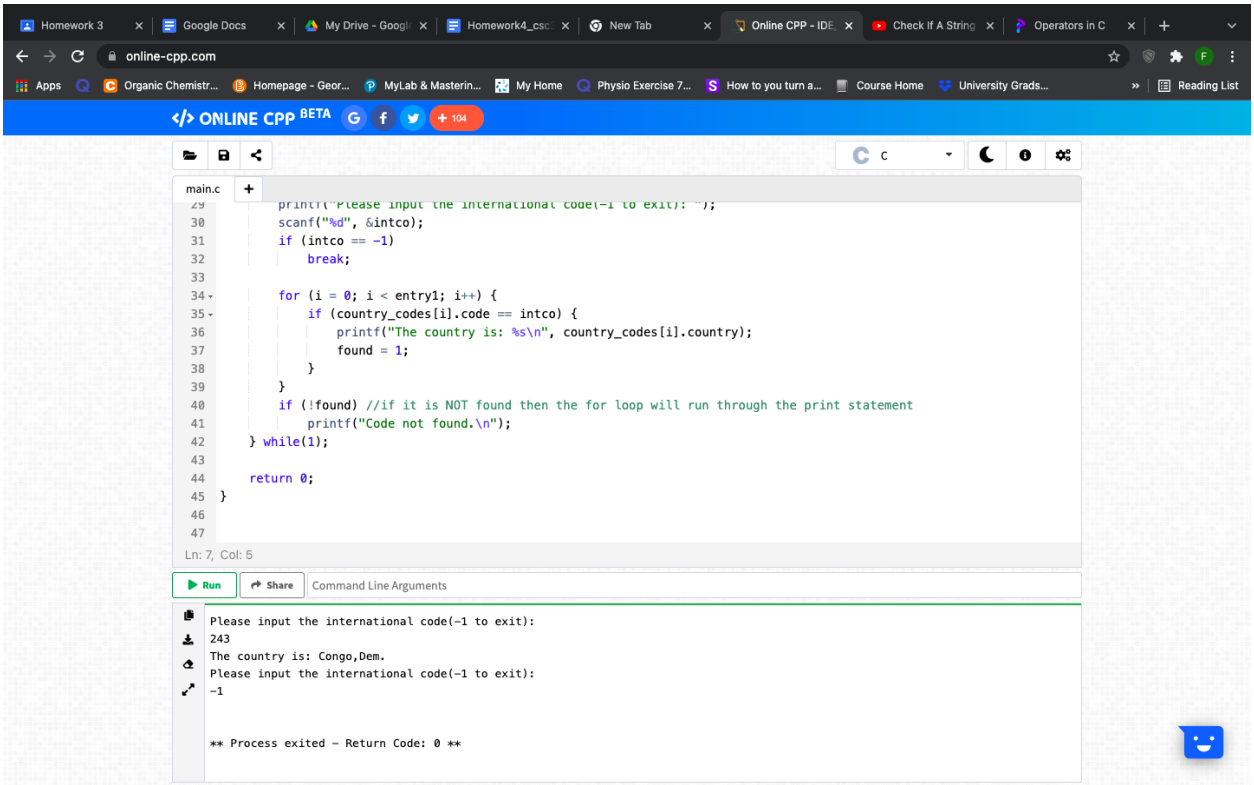
+ 104
C
main.c
{"Malawi", 263}, {"Nigeria", 234},
{"Pakistan", 92}, {"Philippines", 63},
{"Poland", 48}, {"South Sudan", 211}
};
//setting entry1 as a variable where it is divided by the country codes
int entry1 = sizeof(country_codes) / sizeof(*country_codes);
do {
int found = 0;
printf("Please input the international code(-1 to exit): ");
scanf("%d", &intco);
if (intco == -1)
break;
for (i = 0; i < entry1; i++) {
if (country_codes[i].code == intco) {
printf("The country is: %s\n", country_codes[i].country);
Ln: 7, Col: 5
Run
Share
Command Line Arguments
Please input the international code(-1 to exit):
243
The country is: Congo,Dem.
Please input the international code(-1 to exit):
-1
** Process exited - Return Code: 0 **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My Home
Physio Exercise 7...
How to you turn a...
Course Home
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+ 104
C
main.c
printf("Please input the international code(-1 to exit): ");
scanf("%d", &intco);
if (intco == -1)
break;
for (i = 0; i < entry1; i++) {
if (country_codes[i].code == intco) {
printf("The country is: %s\n", country_codes[i].country);
found = 1;
}
}
if (!found) //if it is NOT found then the for loop will run through the print statement
printf("Code not found.\n");
} while(1);
return 0;
}
Ln: 7, Col: 5
Run
Share
Command Line Arguments
Please input the international code(-1 to exit):
243
The country is: Congo,Dem.
Please input the international code(-1 to exit):
-1
** Process exited - Return Code: 0 **