Question 1. [5 points] If i = 4 and j = 2, what will print: true or false? Briefly explain.

**Question 2**. [5 points] Briefly explain the bug(s) in the following code, which is intended to compute the sum of the integers from 1 to 10:

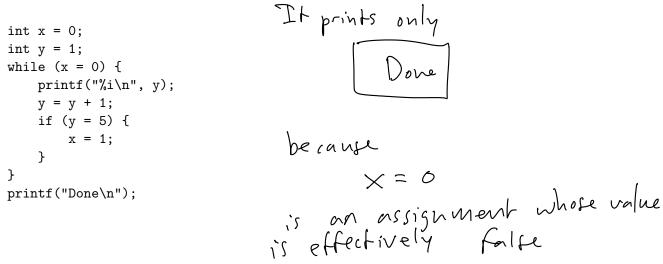
**Question 3**. [5 points] Circle which one of the following is most likely to be correct if used in C programming?

a. for (int i = 0; i < 10, i++); b. while (int i = 0; i < 10; i++) c. for (int i = 0; i < 10; i++) d. for (int i = 0, i < 10, i++) e. for (int i = 10; i >= 10; i++)

**Question 4**. [8 points] Write code that simulates one roll of a 6-sided die and prints out the resulting value.

**Question 5**. [5 points] Briefly explain the bug(s) in the following code, which is intended to print the integers from 1 to 5:

**Question 6**. [5 points] What output is printed by the following code? (Note: make sure you read carefully!)



**Question 7**. [2 points] What is the Boolean operator in C for logical **OR** ?

Question 8. [5 points] Consider the following partially-specified code:

```
int n;
printf("Enter a positive integer: ");
scanf("%i", &n);
for (int i = 1; i <= n; i++) {
    int x = [Missing];
    printf("%i\n", x);
}
```

The goal is to complete the code so that it prints out the first **n** positive odd integers, starting from 1. Example run (user input in **bold**):

	٨	λ¥.)_	( / 米 ブ ) 一 )	
Enter a positive integer: ${f 5}$	1	2		_
1	ſ	$\overline{\checkmark}$	2	
3	с С		2	
5	2	Ģ	ζ	
7	Ч	8	7	
5	5	1 D	, Ч	

What code should be substituted for Missing? Note that you should not define any new variables. Hint: give an expression which uses i, the loop variable.

$$(i * 2) - 1$$

Question 9. [10 points] Write the output of this code as it executes.

double sum = 0;  
int 1, j;  
for (i = 0; i < 3; i++)  
{  
for (j = 0; j <= 3; j++)  
{  
sum += i\*j;  
printf("i = %i, j = %i, sum = %i\n",i,j,sum);  
thus  
}  
thus  
be  
int not  
double  

$$i = 0, j = 0, sum = 0$$
  
 $i = 0, j = 1, sum = 0$   
 $i = 0, j = 1, sum = 0$   
 $i = 0, j = 1, sum = 0$   
 $i = 0, j = 1, sum = 0$   
 $i = 0, j = 1, sum = 0$   
 $i = 1, j = 1, sum = 1$   
 $i = 1, j = 1, sum = 1$   
 $i = 1, j = 2, sum = 3$   
 $i = 1, j = 1, sum = 6$   
 $i = 2, j = 0, sum = 6$   
 $i = 2, j = 1, sum = 12$   
 $j = 2, j = 3, sum = 18$ 

## Programming Questions

**Note**: For all of the programming questions, you should use **scanf** to read the input value(s) required by the program.

**Note**: Make sure your programs produce the output in **exactly** the format described, including capitalization and punctuation. You may not receive credit for programs that produce incorrectly-formatted output.

**Getting started**: Start **Cygwin Terminal** and **Notepad++** and make sure ALL TABS are closed. (Note: do *not* open any other programs.) Your instructor will give you the name of a zip file. In your terminal, run the following commands:

```
cd h:
mkdir -p CS101
cd CS101
curl -O http://faculty.ycp.edu/~dhovemey/spring2017/cs101/zipfile
unzip zipfile
cd CS101_Exam02
```

Note that in the curl command, the -0 has the letter 'O', not the digit 'O'.

Substitute the name of the zip file for *zipfile*.

Editing code: Use your text editor to open the source file (e.g., question10.cpp) referred to in the question. Do not open any files other than the ones for the exam.

**Compiling**: To compile the program for Question 10, run the following command in the terminal:

make question10.exe

Change the number as appropriate for the other questions (e.g., question11.exe).

Running: To run the program for Question 10, run the following command in the terminal:

./question10.exe

Change the number as appropriate for the other questions (e.g., question11.exe).

To submit: In Cygwin Terminal, run the command

make submit

Enter your Marmoset username and password when prompted.

## Good luck!

Question 10. [25 points] Complete the program in question10.cpp so that it reads a single int value N from the user and then prints a line with the form

 ${\tt Sum \ is \ } X$ 

where X is the sum of the first N odd integers. For example, if the input value N is 3, then the program should print the output

Sum is 9

because 1, 3, and 5 are the first three odd integers and

1 + 3 + 5 = 9

Example run (user input in **bold**):

Enter a positive integer: 3 Sum is 9

Example run (user input in **bold**):

```
Enter a positive integer: 7
Sum is 49
```

Hints:

- Write a loop that executes N times
- Each iteration of the loop must compute the next odd number and add it to the sum. You may NOT use the modulo operator to determine the odd integers
- The sum variable should be defined and initialized before the loop starts

Question 11. [25 points] Complete the program in question11.cpp so that it repeatedly reads integer values until a -1 value is read. After the -1 value is read, the program should print a message of the form

Even integers:  $\boldsymbol{N}$ 

where N is the total number of even integers entered.

Example run (user input in **bold**):

Hints:

- Make sure your loop variable(s) are initialized correctly
- You will need *at least* two loop variables (one to count even input values and one to control the loop)