

# CS 1313 010 Spring 2025 Homework #9

Quiz to be held in class 9:00-9:15am Mon March 24 2025

Please feel free to discuss these questions with your classmates, but **NOT** to copy each other.

**NOTE:** Except where and as explicitly permitted in writing (for example, in a Homework), you are **ABSOLUTELY FORBIDDEN** to **COPY EVEN A SINGLE CHARACTER** from,

or to have **ANY** shared code with, **ANY** other entity,  
whether a human being (regardless of whether in CS1313 or not),  
a text resource, a computing resource or anything else,  
whether in person, on a local computer, online or anywhere else.

It's **INCREDIBLY EASY** for us to detect such copying, so **DON'T EVEN THINK ABOUT IT!**

1. **DEBUG** the following program. If you aren't confident of your answer, type in, compile and run the C program to test it.

```
#include <stdio.h>
int main ()
{ /* main */
    int input_value1, input_value2;
    int aggregate = 0;

    printf("Input two integers:\n");
    scanf("%d %d", &input_value1, &input_value2);
    printf("Before\n");
    if (input_value1 < input_value2) ||
        (input_value1 > input_value2) {
        printf("First\n");
        aggregate = input_value1 + input_value2;
    } /* if (input_value1 < input_value2) || ... */
    printf("After\n");
    printf("aggregate = %d\n", aggregate);
} /* main */
```

2. For the following program, **WHAT IS THE OUTPUT** for each of the given sets of input? Your answer does not need to include the message that prompts the user to input the data, nor the user's input. If you aren't confident of your answer, type in, compile and run the C program to test it.

```
#include <stdio.h>
int main ()
{ /* main */
    int input_value1, input_value2;
    int aggregate = 0;

    printf("Input two integers:\n");
    scanf("%d %d", &input_value1, &input_value2);
    printf("Before\n");
    if (input_value1 < input_value2) {
        printf("First\n");
        aggregate = input_value1 + input_value2;
    } /* if (input_value1 < input_value2) */
    else if (input_value1 > input_value2) {
        printf("Second\n");
        aggregate = input_value1 - input_value2;
    } /* if (input_value1 > input_value2) */
    printf("After\n");
    printf("aggregate = %d\n", aggregate);
} /* main */
```

(a) **10 10**

(b) **10 20**

(c) **20 10**

(d) **Draw** the flowchart (on a separate page if necessary).

3. For the following program, **WHAT IS THE OUTPUT** for each of the given sets of input? Your answer does not need to include the message that prompts the user to input the data, nor the user's input. If you aren't confident of your answer, type in, compile and run the C program to test it.

```
#include <stdio.h>
int main ()
{ /* main */
    int input_value1, input_value2;
    int aggregate = 0;

    printf("Input two integers:\n");
    scanf("%d %d", &input_value1, &input_value2);
    printf("Before\n");
    if (input_value1 < input_value2) {
        printf("First\n");
        aggregate = input_value1 + input_value2;
    } /* if (input_value1 < input_value2) */
    else if (input_value1 > input_value2) {
        printf("Second\n");
        aggregate = input_value1 - input_value2;
    } /* if (input_value1 > input_value2) */
    else {
        printf("Neither\n");
        aggregate = input_value1 * input_value2;
    } /* if (input_value1 > input_value2)...else */
    printf("After\n");
    printf("aggregate = %d\n", aggregate);
} /* main */
```

(a) **10 10**

(b) **10 20**

(c) **20 10**

(d) **Draw** the flowchart (on a separate page if necessary).

4. When you write an `if`-block for idiotproofing, does the `exit` statement belong **before** the `if`-block, **inside** the `if`-block or **after** the `if`-block? Therefore, should the `exit` statement be indented **less than** the `if` statement, **the same as** the `if` statement, or **more than** the `if` statement?

5. The Kelvin temperature scale is very similar to the Celsius temperature scale, except that zero degrees Kelvin is *absolute zero*, the lowest physically conceivable temperature. Zero degrees Kelvin is -273.15 degrees Celsius.<sup>1</sup>

Write a program that prompts for and inputs a temperature in degrees Kelvin, then **idiot-proofs**, then calculates the associated temperature in degrees Celsius, then outputs the temperature in degrees Celsius.

You **DON'T** have to use comments. Otherwise, all rules for Programming Projects (through PP#4) apply.

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<sup>1</sup>[https://en.wikipedia.org/wiki/Absolute\\_zero](https://en.wikipedia.org/wiki/Absolute_zero)

6. **DESCRIBE THE CONDITION** of a `while` loop. (“The condition is a …”)
  
7. Are the properties of the condition of a `while` loop the same as, or different from, the properties of the condition of an `if` block?
  
8. **WHAT ARE THE STEPS** that describe the execution of a `while` loop?
  - (a)
  
  - (b)
  
  - (c)
  
9. **HOW** does a `while` loop **DIFFER** from an `if` block?

10. For each of these kinds of statements, mark CAN if it can appear in the body of a `while` loop, and mark CANNOT if it cannot appear in the body of a `while` loop. EXPLAIN.
- (a) A named constant declaration
  
  - (b) A variable declaration
  
  - (c) A `printf` statement
  
  - (d) A `scanf` statement
  
  - (e) An assignment statement
  
  - (f) A `exit` statement
  
  - (g) An `if` block
  
  - (h) A `while` loop

11. **TRACE** the example program on slides 23 - 25 of the lecture packet titled “while Loop Lesson,” using the input values shown on slides 26 - 27. Your trace should show the following variables: `users_number`, `users_distance`, `users_last_distance` and `correct_number_hasnt_been_input`, but in the trace you can abbreviate their names as UN, UD, ULD and CNHBI, respectively.



12. **DRAW A FLOWCHART** for the Infinite Loop program on slide 15 of the lecture slide packet titled “while Loop Lesson.”

If you use **ANY** resources other than Dr. Neeman, the TAs/graders (Basiri, Bilal), the course textbook or the materials posted on the course webpage, you **MUST** reference them on the quiz. **THIS INCLUDES CLASSMATES, FRIENDS, PROFESSORS, ONLINE RESOURCES, ETC.**