CSC 3320: System-Level Programming

Week of 02/03/2025

Lab 4

© Instructor: Dr. Md. Mahfuzur Rahman

100 Points

Objectives:
Today we will be covering the following topics:

1. Use of variables, expressions, and formatted I/O in a C program.
2. Practice type conversion during evaluation of C expression. (if needed)

Instructions:

- Attendance is mandatory.
- Labs must be completed individually.
- If you have any questions, please do not hesitate to ask TA.
- Follow submission instructions in the deliverable section.
- Lab assignments are due by 5:00 PM the next day after your lab session.

1. Distance between two points (x1, y1) and (x2, y2) is governed by the formula

$$D = (x2 - x1)^2 + (y2 - y1)^2$$

Write a program to compute D given the coordinates of the points.

Your program will ask for the coordinates (x1, y1) and (x2, y2) from the user and compute the distance between the two points. Use two decimal places in your output. For example, it will look like the following on the terminal:

```
Enter first point: 2 3              (e.g., 2 3 are user input and then PRESS Enter)
Enter second point: 5 6
Distance between the points: 4.24 units
```

Do the following tasks:

(a) (10 points) Make sure you are taking input points as floating point numbers. `[check your scanf function]`

(b) (20 points) Make sure you used two decimal places for printing output. `[use appropriate format specifier]`

(c) (20 points) Make sure you are using the formula correctly in your program to compute the distance..

(d) (10 points) Start recording your session using the `script` utility.

(e) (10 points) Show the contents of lab4.c using the `cat` command.

(f) (10 points) Compile lab4.c using the `gcc` compiler. Use appropriate flag for the executable file name using `-o`.
For example: `gcc c_filename -o executable_filename -lm`
Please note (`-lm` is required on some platforms to include math library because many gcc versions do not include the math library automatically during compilation)

(g) (10 points) Run your program using appropriate command.
For example: `./executable_filename`

(h) (10 points) Finish your recording (use the `exit` command).

Deliverables
For today's lab, clean the text file (.txt) you recorded during your terminal session, if there are unwanted characters. In other words, make it as you observed during your terminal session. Please name your text file as **lastname_firstname_lab04.txt**. You will need to submit the text file (terminal session record) and your C file (lab4.c) to the **Lab 04** dropbox in iCollege.

Broader Grading Criteria

- If no C (`.c`) file is submitted (regardless if `.txt` file submitted or not), a student will receive only 40% for attendance. Submission will not be graded.
- If a C file is given but no `.txt` file (terminal session) is given, a submission will receive a maximum 70% (will vary between 40% and 70% based on the correctness of the C program).
- If a `.txt` file is given along with the `.c` file, but the `.txt` file is not clean and not comprehensible to the TA, a submission will receive a maximum 80% (which will vary from 40% to 80% depending on the accuracy of the C program).
- If both a clean `.txt` file and the `.c` file are given, your submission will normally be evaluated based on the tasks and the corresponding point distributions.
- Screenshots are not substitutes for code and/or the .txt files submission.