CS 355 - Systems Programming Course Project - Spring 2025

Objective: implement a classic snake game.

Expectations

- Study chapters 5-7 of the textbook before starting any work on the project.
- This project is designed to be completed over a period of 2-3 weeks by a team of two students.
- Each student must have very clear roles and responsibilities in the project.
- At the very beginning of each function/code block, add a comment describing the primary author of that code and the main functionality declared/implemented.
- This project must utilize the `curses` or `ncurses` library for all visuals.
- Grading rubric (out of 20 pts):
  - Indentation: 2
  - Commenting: 3
  - Variable/function naming: 3
  - Snake movement/growth: 4
  - Trophies: 4
  - Overall gameplay: 4

What to do?

- Write a C program `snake` that implements the classic snake game.
- The snake pit:
  - The snake pit is the area where the snake can move.
  - The snake pit must utilize all available space of the current terminal window.
  - There must be a visible border delineating the snake pit.
- The snake:
  - The initial length of the snake is three characters.
  - Initial direction of the snake's movement is chosen randomly.
  - The user can press one of the four arrow keys to change the direction of the snake's movement.
  - The snake's speed is proportional to its length.
- The trophies:
  - Trophies are represented by a digit randomly chosen from 1 to 9.
  - There's always exactly one trophy in the snake pit at any given moment.
  - When the snake eats the trophy, its length is increased by the corresponding number of characters.
  - A trophy expires after a random interval from 1 to 9 seconds.
  - A new trophy is shown at a random location on the screen after the previous one has either expired or is eaten by the snake.
- The gameplay:
  - The snake dies and the game ends if:
    - It runs into the border; or
    - It runs into itself; or
    - The user attempts to reverse the snake's direction.
  - The user wins the game if the snake's length grows to the length equal to half the perimeter of the border.

What to submit?

- This project will have two milestones with different requirements:
  1. Intermediate deliverable (due 05/01/2025) needs to have the following functionality:
     - The game starts with the snake of size 5 moving right;
     - Snake movement can be controlled in all directions;
     - Snake does not grow;
     - Snake pit border is visible;
     - No trophies.
  2. Final deliverable (due 05/08/2025):
     - All functionality listed in "What to do?" section is required.

- For each deliverable you will need to submit the following:
  - A single C source code file with your work.
  - A video screencast showing a representative sequence of the gameplay. The video should be no longer than 3 minutes.