CSE 102 Spring 2025 – Computer Programming Assignment 6

Due on April 18, 2025 at 23:59

In this assignment, you will implement a number-guessing game inspired by a **"codebreaker"** scenario. You will write a C program that generates a secret numeric code and allows the player to guess it. The game gives feedback on each guess and keeps score based on accuracy.

The game has two modes:

- **Admin Mode:** Set the game rules and save them to a config file.
- **Player Mode:** Play the game using rules defined in the config.

Requirements

Your program must support the following:

1. **Admin Mode:**
   - Triggered by pressing "**A"** at program start.
   - Prompts the user to enter:
     - Code length (e.g., 4)
     - Digit range (e.g., min: 0, max: 9)
     - Allow duplicates? (0 = No, 1 = Yes)
     - Maximum number of attempts
     - Points for:
       - Correct digit in correct place (C)
       - Correct digit in wrong place (M)
       - Penalty for wrong digit (W)
   - Saves these to `vault_config.txt`

2. **Player Mode:**

   - Triggered by pressing **"P"** at program start.
   - Loads rules from `vault_config.txt`
   - Generates a random secret code and saves it to `vault_code.txt`.
   - Prompts the player to enter guesses.
   - After each guess:
     - Provides feedback (e.g., C M W W)
     - Updates score
     - Logs each guess and result in `game_log.txt`

- Ends when:
  - Player guesses the code correctly, or
  - Maximum number of attempts is reached
- Displays final score and assigns a title:

Score Range	Title
90+	Code Master 🧠
70-89	Cipher Hunter 🔎
50-69	Number Sleuth 🕵️
30-49	Safe Kicker 🛡️
10-29	Lucky Breaker 🍀
<10	Code Potato 🥔

Function Design Constraints

You **must implement** the following two functions with dynamic memory allocation and return values via pointers:

int* generate_code();
int* get_guess();

These functions must:

- Allocate memory dynamically using malloc
- Return a pointer to an integer array containing:
  - The generated secret code (generate_code): Generates a random numeric code based on the rules specified in vault_config.txt.
  - The player's numeric guess (get_guess): Reads the player's guess from standard input and converts it to an integer array.
- The memory must be freed in the main function after use

Do not use global or static arrays to store the code or guess.

IMPORTANT NOTES:

- Submit your homework as a zip file named as your student id (StudentID.zip) and this file should include:
    - YourStudentID.c file
    - A reports containing the screenshots of running code and generated outputs.
- Programs with compilation errors will get 0.
- The output format must be as given, do not change it.
- Compile your work with given command “gcc --ansi your_program.c -o your_program”.
- For any questions and problems, you can always contact me **via email** (bbuluz@gtu.edu.tr), or you can find me in Alcyon Lab during scheduled office hours.

🧾 Grading Rubric (Total: 100 Points)

Category	Description	Points
1. Config & Admin Mode	Taking rules from user and saving to `vault_config.txt`	20
2. Code Generation & Input	Generating valid code and handling user input	20
3. Feedback & Scoring	Providing accurate C/M/W feedback and computing score	30
4. File Logging	Writing `vault_code.txt` and `game_log.txt` properly	30
Total		**100**