

CSE 102 SPRING 2025-COMPUTER PROGRAMMING ASSIGNMENT-6

Achievements

- **C Programming:** Gained experience in file operations, memory management, and user interaction.
- **Data Structures:** Used arrays and file I/O operations to structure the code efficiently.
- **Date and Time:** Correctly implemented date and time functions to log game events with timestamps.
- **Feedback System:** Implemented score calculation and feedback to provide motivation for players.
- **Error Handling:** Validated user inputs and provided meaningful error messages, creating a user-friendly interface.

Challenges

- **Memory Management:** Managing memory using malloc and free was challenging to avoid memory leaks.
- **File Handling:** Managing file reading/writing operations with proper error checks was complex.
- **Algorithm Complexity:** Handling the feedback and score calculation algorithms required careful attention.
- **Game End Control:** Ensuring the game ends properly and results are correctly calculated was tricky.

Things to Be Careful About

- **Memory Management:** To avoid memory leaks, free should be used after every malloc operation.
- **File Operations:** Files should be opened and closed properly, and care should be taken during write operations.
- **Invalid Inputs:** User inputs should always be validated, and error messages should be provided for invalid data.
- **Score System:** The score calculation and feedback algorithms should be carefully implemented to avoid incorrect results.

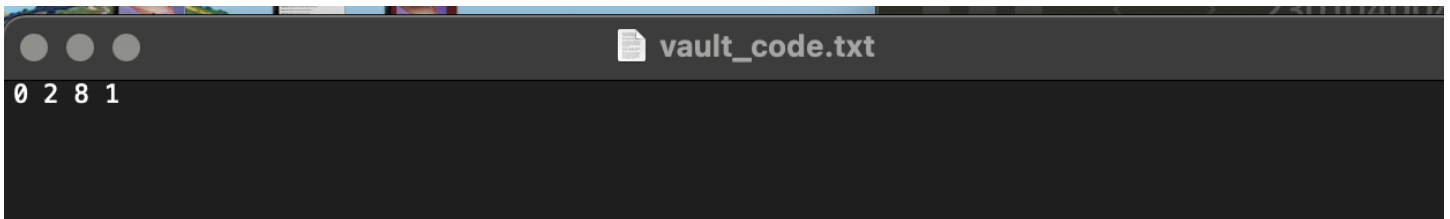
below are some screenshots of the game :

```
Last login: Fri Apr 18 23:06:37 on ttys018
eyyupildem@Eyyup-MacBook-Air ~ % cd desktop
eyyupildem@Eyyup-MacBook-Air desktop % cd 230104004087
eyyupildem@Eyyup-MacBook-Air 230104004087 % ls
230104004087.c          vault_code.txt
game_log.txt           vault_config.txt
eyyupildem@Eyyup-MacBook-Air 230104004087 % gcc --ansi 230104004087.c -o 2301040
04087
eyyupildem@Eyyup-MacBook-Air 230104004087 % ./230104004087
Enter 'A' for Admin mode or 'P' for Player mode: A
Code length (e.g., 4): 4
Digit range (min: 0 max: 9, e.g., 4 9): 0 9
Allow duplicates (0 = No, 1 = Yes): 1
Maximum number of attempts: 10
Points for correct digit in correct place (C): 10
Points for misplaced digit (M): 5
Penalty for wrong digit (W): 2
eyyupildem@Eyyup-MacBook-Air 230104004087 % █
```

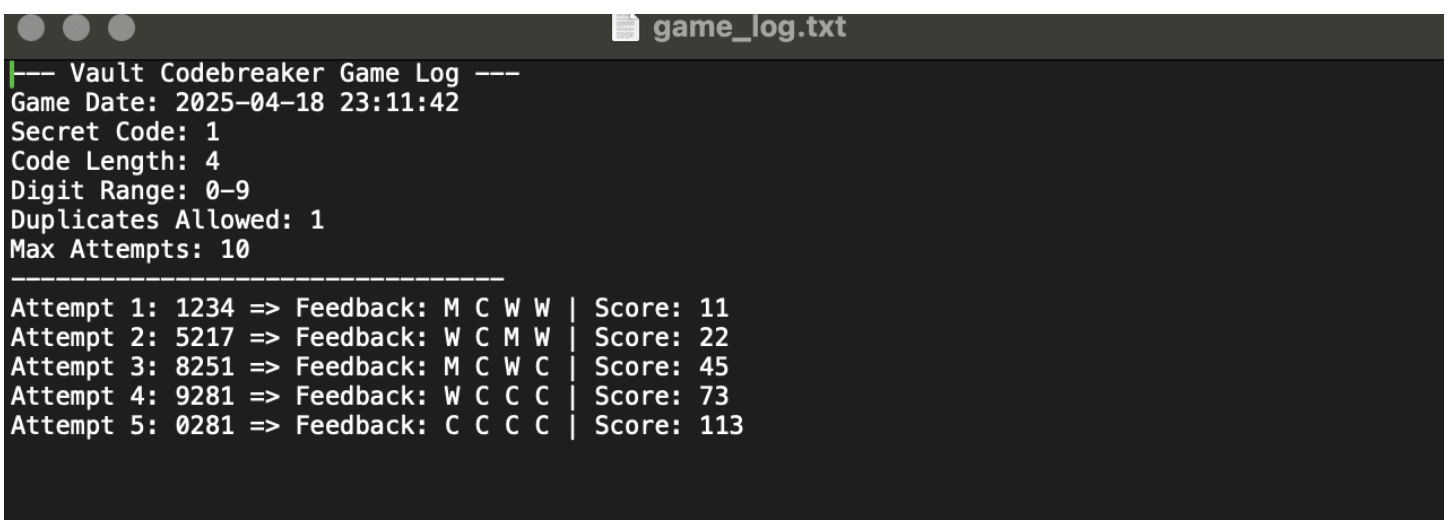
The screenshot shows a macOS desktop environment with two windows. The left window is a terminal titled '230104004087 - zsh - 80x39' containing the same command sequence as the first image. The right window is a text editor titled 'vault_config.txt' displaying the configuration for the program.

```
CODE_LENGTH= 4
DIGIT_MIN= 0
DIGIT_MAX= 9
MAX_ATTEMPTS= 10
ALLOW_DUPLICATES= 1
POINTS_CORRECT= 10
POINTS_MISPLACED= 5
PENALTY_WRONG= 2
```

```
[eyyupildem@Eyyup-MacBook-Air 230104004087 % ./230104004087
Enter 'A' for Admin mode or 'P' for Player mode: P
Enter your guess (e.g., 1 2 3 4): 1 2 3 4
Feedback: M C W W
Enter your guess (e.g., 1 2 3 4): 5 2 1 7
Feedback: W C M W
Enter your guess (e.g., 1 2 3 4): 8 2 5 1
Feedback: M C W C
Enter your guess (e.g., 1 2 3 4): 9 2 8 1
Feedback: W C C C
Enter your guess (e.g., 1 2 3 4): 0 2 8 1
Feedback: C C C C
Congratulations! You've guessed the code.
Final score: 113
Code Master
eyyupildem@Eyyup-MacBook-Air 230104004087 %
```



A screenshot of a terminal window with a dark background. The title bar at the top shows three window control buttons (red, yellow, green) and the filename 'vault_code.txt'. The terminal content displays the secret code '0 2 8 1' on a single line.



A screenshot of a terminal window with a dark background. The title bar at the top shows three window control buttons (red, yellow, green) and the filename 'game_log.txt'. The terminal content displays a game log with the following text:

```
--- Vault Codebreaker Game Log ---
Game Date: 2025-04-18 23:11:42
Secret Code: 1
Code Length: 4
Digit Range: 0-9
Duplicates Allowed: 1
Max Attempts: 10
-----
Attempt 1: 1234 => Feedback: M C W W | Score: 11
Attempt 2: 5217 => Feedback: W C M W | Score: 22
Attempt 3: 8251 => Feedback: M C W C | Score: 45
Attempt 4: 9281 => Feedback: W C C C | Score: 73
Attempt 5: 0281 => Feedback: C C C C | Score: 113
```