

# Combat Simulation

## CCPROG1 Coursework 5

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Combat simulations are games where a player and an enemy damages each other until one of the two runs out of hit points or HP. A popular example of this is the game Pokemon. For this quiz, one is tasked to create a simple turn-based combat simulation with a set of specifications.

Both the player and the enemy start with 9 hit points each. The player starts first and can select an action. After the player's action, the enemy can perform an action as well. **The effects of the two actions happen simultaneously**. Actions available are as shown below:

Action	Option	Description
Attack	1	Inflicts damage to the opponent by 3 points.
Defend	2	Make it so that the attack action of the opponent will not cause damage.
Heal	3	Increases the health of the user by 3 points.

The enemy's AI is a simple repeating set of actions. The sequence of actions is as follows:

**Attack > Defend > Attack > Heal > Defend**

Should the enemy or the player have their HPs go below or equal to zero, the game ends. The player wins if they have HP, and the enemy runs out while the enemy wins if the player runs out of HP.

Write a C program that will make this combat simulation game.

### Additional Rules and Situations:

- Use the code template provided. Put your answers in the CW5.C file.
  - [https://drive.google.com/file/d/1ZTkTR0yx8FmQMWNnZmAXPpCx6yD8gnaL/view?usp=share\\_link](https://drive.google.com/file/d/1ZTkTR0yx8FmQMWNnZmAXPpCx6yD8gnaL/view?usp=share_link)
- Follow the screen output of the sample runs but use the functions found in the Prompts.c and .h files. No scanf or printf statements should be found in the CW5.c file.
  - Sample runs can be found in the last page of this document.
  - The screen output should be followed exactly with the use of the Promp.c functions.
- If the player selects defend and the enemy attacks, the damage is negated. The same rule is applied when the enemy attacks and the player defends. Think of this as the move "protect" in pokemon.
- When healing and the HP is already at 9, the HP should not exceed 9.
- If the player has 3 HP, the player heals and the enemy attacks, the player may briefly touch zero HP. This will not trigger a game over and the player will be healed back to 3 HP. The same applies for the opponent in the same situation.
- When both the player and enemy defend, nothing happens. Then on the following turn one of them attacks and the other does not defend, the protection of the previous turn is not applied.
- In the event that both hit zero hit points at the same time, the player loses.

## Coding Rules:

- This submission must use a loop. Any of the three loops may be used.
- Any number of functions can be used but all of the functions should be in the CW5.c file.
- Assume that the user will always input a valid user input. Meaning the user will never input a number that is not part of the valid options.
- All display prompts and scans must use the functions from the Prompts.c and .h files. Do not modify these files.
- Exit the program immediately after winning or losing. Do not ask the player if they want to play again.
- Use the “-Wall” compiler option when writing this program.
- **Brute forcing** the actions to check every possible action combination will **result in a zero grade**.
  - There are combinations like the following: Attack vs Attack, Attack vs Defend, Attack vs Heal, etc.

## Submission Details

- Submit the CW5.c file only.
- Submit into the canvas page:
  - <https://dlsu.instructure.com/>
  - Go to: Assignments > Course Activities: Homework > CW5: Combat Sim
- This activity is worth 20 points
- Deadline: Nov 23, 2022 11:59 PM

## Sample Runs

Text in green shows these are user inputs. The sample runs are read top to bottom and then left to right for Run 3.

Run 1	Run 2	Run 3	
Player 9/9 Enemy 9/9  1 - Attack 2 - Defend 3 - Heal Input Action: 1  Player Attacks  Enemy Attacks  Player 6/9 Enemy 6/9  1 - Attack 2 - Defend 3 - Heal Input Action: 3  Player Heals 3HP  Enemy defends  Player 9/9 Enemy 6/9  1 - Attack 2 - Defend 3 - Heal Input Action: 1  Player Attacks  Enemy Attacks  Player 6/9 Enemy 3/9  1 - Attack 2 - Defend 3 - Heal Input Action: 1  Player Attacks  Enemy Heals 3HP  Player 6/9 Enemy 3/9  1 - Attack 2 - Defend 3 - Heal Input Action: 3  Player Heals 3HP  Enemy defends  Player 9/9 Enemy 3/9  1 - Attack 2 - Defend 3 - Heal Input Action: 1  Player Attacks  Enemy Attacks  Player 6/9 Enemy 0/9  Player Wins!	Player 9/9 Enemy 9/9  1 - Attack 2 - Defend 3 - Heal Input Action: 1  Player Attacks  Enemy Attacks  Player 6/9 Enemy 6/9  1 - Attack 2 - Defend 3 - Heal Input Action: 2  Player defends  Enemy defends  Player 6/9 Enemy 3/9  1 - Attack 2 - Defend 3 - Heal Input Action: 2  Player Attacks  Enemy Attacks  Player 3/9 Enemy 3/9  1 - Attack 2 - Defend 3 - Heal Input Action: 1  Player Attacks  Enemy Attacks  Player 3/9 Enemy 3/9  1 - Attack 2 - Defend 3 - Heal Input Action: 2  Player defends  Enemy Heals 3HP  Player 3/9 Enemy 6/9  1 - Attack 2 - Defend 3 - Heal Input Action: 1  Player Attacks  Enemy defends  Player 3/9 Enemy 3/9  1 - Attack 2 - Defend 3 - Heal Input Action: 1  Player Attacks  Enemy Attacks  Player 0/9 Enemy 3/9  Player Loses	Player 9/9 Enemy 9/9  1 - Attack 2 - Defend 3 - Heal Input Action: 2  Player defends  Enemy Attacks  Player 9/9 Enemy 9/9  1 - Attack 2 - Defend 3 - Heal Input Action: 1  Player Attacks  Enemy defends  Player 9/9 Enemy 9/9  1 - Attack 2 - Defend 3 - Heal Input Action: 2  Player Attacks  Enemy Attacks  Player 9/9 Enemy 9/9  1 - Attack 2 - Defend 3 - Heal Input Action: 3  Player Heals 3HP  Enemy Heals 3HP  Player 9/9 Enemy 9/9  1 - Attack 2 - Defend 3 - Heal Input Action: 1  Player Attacks  Enemy defends  Player 9/9 Enemy 9/9  1 - Attack 2 - Defend 3 - Heal Input Action: 1  Player Attacks  Enemy Attacks  Player 6/9 Enemy 6/9	1 - Attack 2 - Defend 3 - Heal Input Action: 1  Player Attacks  Enemy defends  Player 6/9 Enemy 6/9  1 - Attack 2 - Defend 3 - Heal Input Action: 1  Player Attacks  Enemy Attacks  Player 3/9 Enemy 3/9  1 - Attack 2 - Defend 3 - Heal Input Action: 1  Player Attacks  Enemy Heals 3HP  Player 3/9 Enemy 3/9  1 - Attack 2 - Defend 3 - Heal Input Action: 1  Player Attacks  Enemy defends  Player 3/9 Enemy 3/9  1 - Attack 2 - Defend 3 - Heal Input Action: 1  Player Attacks  Enemy Attacks  Player 0/9 Enemy 0/9  Player Loses