

THE COMBAT  
SIMULATOR

GAME-MANUAL

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## INTRODUCTION

### 1.1 BRIEF DESCRIPTION

The combat simulator is a strategic game where two players build their army with the initial fund provided to them and based on their army unit's strengths and weaknesses against opponent's army unit decision is made and likewise till the end of the army units of any of the player the war continues. At last, whichever player has his/her army units left that player wins the battle.

**The Combat Simulator:** In this version players must build their army based on their choices amongst three units (Archer, Knight, Soldier). These units have their health and based on their health their prices vary.

UNIT	HEALTH	PRICE	MEDIC PRICE
<b>Archer</b>	1	\$1	\$1
<b>Soldier</b>	2	\$2	\$2
<b>Knight</b>	3	\$3	\$3

Figure 1.1

Also, in this game, players get medics if they have their funds remaining which automatically gets applied if their unit gets injured and loses all health in the battle. Medic prices to heal any unit is equivalent to that unit's buying price (Example: if knight loses its health then to heal it, the player spends \$3 from his/her funds to get it back in his/her army.). Likewise battle continues until any of the players runs out of his/her army and then the winner of the war is declared.

### 1.2 HOW DOES THE GAME WORKS?

The game starts with a start screen displaying the game title and asking the user to press any key, to begin with, the game. Then the second screen asks the players to enter their names. It's a two player game where both the players are playing in the role of a king and they are getting ready for the battle with each other, preparing their army to save their kingdoms. Both the players are then asked to select their army units one by one on the third screen where they are displayed with a menu to choose their units or if they want to exit the game they can exit by pressing 'E' and 'J' to stop buying the units and get ready for the combat. Once both the players build their armies, the battle initiates and one unit from each army comes in the battlefield for the combat one by one which is displayed as the rounds. The unit which wins the round stays in the battlefield for the next round till any of the players loses all its army units. Later in this manual find out the GAME-SNAPSHOTS which will show the gameplay snaps.

## REQUIREMENTS

### 2.1 FUNCTIONAL REQUIREMENTS

- 1.) This game allows only 2 players to join the battle.
- 2.) The game comprises mainly two entities 'Player' and 'Army unit' and a controller function which manages the flow of the game.
- 3.) Players are able to purchase the units from 'Archer', 'Knight', 'Soldier' to build an army using their funds.
- 4.) Players can initiate the war.
- 5.) In this game units lose their 3 health points if they have a disadvantage over another opponent unit and if they have an advantage, then they bear a damage of 1 health point by the opponent unit.
- 6.) In this game, players can heal their units automatically when their unit loses its complete health and they have enough funds remaining to get the medic whose price depends on the health of the unit. More is the health point higher is the medic price for that unit to heal it.
- 7.) The game can declare the combat winner by checking which player has its army left and which player has lost all its army.

### 2.2 SYSTEM REQUIREMENTS & INSTALLATION

- To develop and maintain the game, system requirements are as follows:

**OS:** Windows XP and above, UNIX, MacOS.

**Python:** Version 3.X

**Editor or IDE:** Notepad++, Sublime, or PyCharm

- To run the game, system requirement is as follows:

**OS:** Windows XP and above, UNIX, MacOS.

**Python:** Version 3.X

**To Run:** Command Prompt / Powershell with the command:

```
>>> python extended_game.py    [for The Combat Simulator]
```

## GAME FEATURES

### 3.1 EXTENDED COMBAT FEATURES

**Player Entity:** This entity represents the player which plays the game and a player instance holds the properties like *funds*, *name*, *army\_units*. This instance can select army units as it has the functionality of *select\_units()* which gives the menu to select from units like Archer, Knight, & Soldier.

**ArmyUnit Entity:** This entity represents an army unit which joins the army of the player instance. An instance of army unit has attributes like type (Archer, Knight, Soldier), buying price, versus (dictionary which holds the list of units on which it has advantage or disadvantage or neither), and *unit\_owner* which tells that instance of the unit belongs to which player. This instance can be assigned to any type based on the function call to create *archer\_unit()*, *knight\_unit()*, *soldier\_unit()*.

**Health:** This feature gives different health points to different units which result in their different buying prices (Example: a knight has 3 health points, so its buying price is \$3 and soldier has 2 health points for a price of \$2). This feature follows the same concept of advantage and disadvantage of units on each other like basic combat simulator but with a catch that this time unit will not die in just one single attack, it will deal damage to its health and its opponent unit's health. If a unit has an advantage over another unit then another opponent unit will lose 3 health points but it will damage 1 health point at least to the unit with an advantage.

**Medic:** This feature gives the player to heal their army unit which gets injured or loses all its health in the combat. Medic is applied automatically when the army unit loses in the combat by making its health points equals to 0 if and only if the player has sufficient funds to sponsor the treatment after which unit joins the army again. Medic prices vary as per the unit's health points (like Soldier holds 2 health points and loses that in a battle than to heal it medic is applied which will cost \$2 to the player).

**Controller:** This is the *extended\_game.py* file which maintains the complete flow of the game. It holds the main function in which step by step the players get created and using their respective instances game allows them to select units and build their army. It gives the functionality to *begin\_war()* between the two players where one by one in the order of their purchase, each unit combats with another opponent unit round by round and if the funds are remaining with the player then the unit which loses the round gets revived using *apply\_medic()* and joins the army again(i.e. added at the last position in the army's queue). Thereafter the winner is declared if any unit is left in his/her army and the opponent player runs out of the army.

## ASSUMPTIONS

There are few assumptions and some key rules from the problem statement taken into consideration while developing the combat game which is as follows:

- 1.) This game allows two players to play the game against one another.
- 2.) This game assumes both the players in the role of a king of some kingdom who battle against the other king to save his kingdom using his strategy to smartly built his army.
- 3.) Every player is rewarded with \$10 at the start of the game to build their army and enter in the battle.
- 4.) An army unit enters in the battlefield in the order in which they were purchased.
- 5.) Each army unit has different prices.
  - i. Archer \$1
  - ii. Soldier \$2
  - iii. Knight \$3
- 6.) Each unit's medic prices vary as per their strength.
  - i. Archer : Health=1 Medic= \$1
  - ii. Soldier: Health=2 Medic= \$2
  - iii. Knight: Health=3 Medic= \$3
- 7.) If any unit has an advantage over another unit then it will harm the opponent unit by reducing that unit's health by 3 points and in return will bear a loss of 1 health point. In case of a tie where no one has any advantage over each other then both unit loses 2 health points and combat continues.

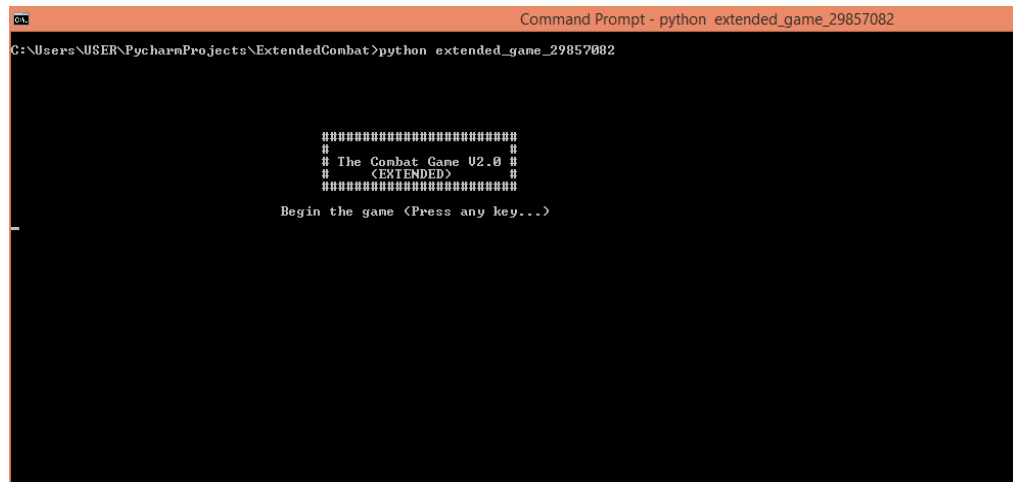
## LIMITATIONS

- 1.) It lacks user interaction, not much to do for the user.
- 2.) There is no way the user can get more funds in his account because by default game gives only \$10.
- 3.) The Player does not get a choice to apply the medic, it's done automatically because of which user cannot smartly spend his/her funds on medic to save only the important units and not the ones which are not of much help in the war. (Example: The Player has \$1 remaining and the recent unit which died was Archer and the player don't want to save the Archer, as he/she wants to save the fund for the upcoming units like Knight which when needs the medic can be provided with that).
- 4.) Medic pack is applied on the unit to revive its complete health ( like if Knight is revived it will get 3 health points) and since the medic price depends on the strength of the unit, the player needs to spend \$3 to revive the knight, so even if the player has \$2 remaining in his/her funds, the knight cannot be revived with the partial health of 2 points in 2\$.
- 5.) This game allows only 2 players to combat, there is no multiplayer mode so that multiple players can combat against each other and can watch their progress on the leaderboard.
- 6.) The state of the player is not maintained to show level-ups as per his/her past battles with other players.

## GAME-SNAPSHOTS

### 6.1 The Combat Game Snapshots

- **TITLE SCREEN:**



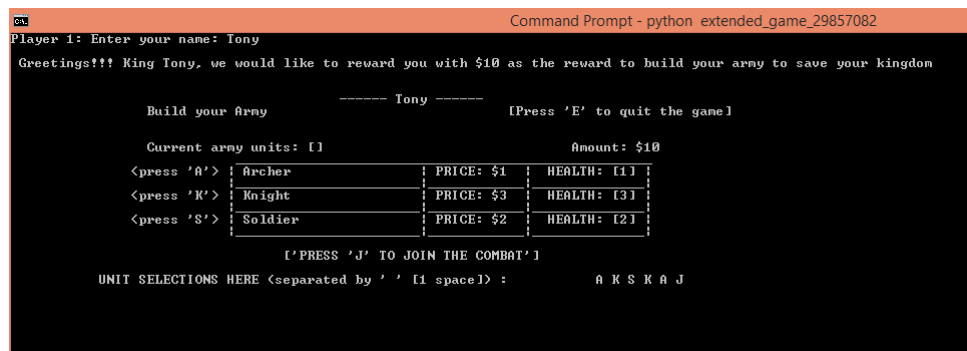
```
Command Prompt - python extended_game_29857082
C:\Users\USER\PycharmProjects\ExtendedCombat>python extended_game_29857082

#####
#                                     #
#   The Combat Game V2.0   #
#   <EXTENDED>             #
#                                     #
#####

Begin the game <Press any key...>
```

Figure 6.1 (a.)

- **PLAYER SELECTS ARMY UNITS:**



```
Command Prompt - python extended_game_29857082
Player 1: Enter your name: Tony
Greetings!!! King Tony, we would like to reward you with $10 as the reward to build your army to save your kingdom

Build your Army ----- Tony ----- [Press 'E' to quit the game]

Current army units: [] Amount: $10

<press 'A'> | Archer | PRICE: $1 | HEALTH: [1] |
<press 'K'> | Knight | PRICE: $3 | HEALTH: [3] |
<press 'S'> | Soldier | PRICE: $2 | HEALTH: [2] |

['PRESS 'J' TO JOIN THE COMBAT']

UNIT SELECTIONS HERE (separated by ' ' [1 space]) : A K S K A J
```

Figure 6.1 (b.)

- **PLAYER SELECTS MORE UNITS THEN HIS/HER FUNDS:**

```
Command Prompt - python extended_game_29857082
Player 2: Enter your name: Steve
Greetings!!! King Steve, we would like to reward you with $10 as the reward to build your army to save your kingdom

Build your Army ----- Steve ----- [Press 'E' to quit the game]

Current army units: [] Amount: $10
<press 'A'> | Archer | PRICE: $1 | HEALTH: [1] |
<press 'K'> | Knight | PRICE: $3 | HEALTH: [3] |
<press 'S'> | Soldier | PRICE: $2 | HEALTH: [2] |

[PRESS 'J' TO JOIN THE COMBAT]
UNIT SELECTIONS HERE (separated by ' ' [1 space]) : A K S A K S J
```

Figure 6.1 (c.)

```
Command Prompt - python extended_game_29857082
Player 2: Enter your name: Steve
Greetings!!! King Steve, we would like to reward you with $10 as the reward to build your army to save your kingdom

Build your Army ----- Steve ----- [Press 'E' to quit the game]

Current army units: [] Amount: $10
<press 'A'> | Archer | PRICE: $1 | HEALTH: [1] |
<press 'K'> | Knight | PRICE: $3 | HEALTH: [3] |
<press 'S'> | Soldier | PRICE: $2 | HEALTH: [2] |

[PRESS 'J' TO JOIN THE COMBAT]
UNIT SELECTIONS HERE (separated by ' ' [1 space]) : A K S A K S J
Sorry but due to your insufficient funds we could add only some units in your army
This is your Army ['Archer', 'Knight', 'Soldier', 'Archer', 'Knight']
You are out of funds, you cannot purchase any further units.
Joining you in the combat
Joining you in the combat ...
```

Figure 6.1 (d.)



- BATTLE ROUND DETAILS:**

```
CA Command Prompt

----- Round-1 -----
Tony:  !!  Steve:
Unit's Health : Archer versus Archer
                [1] <-----> [1]
                0/  --->  <---  \0
                /!  \    /!  \
                /!  \    /!  \

! Both lose, round tie !
! King Tony Sorry!! we cannot save this unit of yours. You only have $0 !
! King Steve Sorry!! we cannot save this unit of yours. You only have $0 !

----- Round-2 -----
Tony:  !!  Steve:
Unit's Health : Archer versus Knight
                [1] <-----> [3]
                0/  --->  <---  \0
                /!  \    /!  \
                /!  \    /!  \

! King Steve your Knight wins this round !
! King Tony Sorry!! we cannot save this unit of yours. You only have $0 !

----- Round-3 -----
Tony:  !!  Steve:
Unit's Health : Knight versus Knight
                [3] <-----> [2]
                0/  --->  <---  \0
                /!  \    /!  \
                /!  \    /!  \

! King Tony your Knight wins this round !
! King Steve Sorry!! we cannot save this unit of yours. You only have $0 !
```

Figure 6.1 (e.)

```
CA Command Prompt

----- Round-4 -----
Tony:  !!  Steve:
Unit's Health : Knight versus Knight
                [1] <-----> [3]
                0/  --->  <---  \0
                /!  \    /!  \
                /!  \    /!  \

! King Steve your Knight wins this round !
! King Tony Sorry!! we cannot save this unit of yours. You only have $0 !

----- Round-5 -----
Tony:  !!  Steve:
Unit's Health : Knight versus Knight
                [3] <-----> [1]
                0/  --->  <---  \0
                /!  \    /!  \
                /!  \    /!  \

! King Tony your Knight wins this round !
! King Steve Sorry!! we cannot save this unit of yours. You only have $0 !

----- Round-6 -----
Tony:  !!  Steve:
Unit's Health : Knight versus Archer
                [1] <-----> [1]
                0/  --->  <---  \0
                /!  \    /!  \
                /!  \    /!  \

! Both lose, round tie !
! King Tony Sorry!! we cannot save this unit of yours. You only have $0 !
! King Steve Sorry!! we cannot save this unit of yours. You only have $0 !
```

Figure 6.1 (f.)

```
Command Prompt

----- Round-7 -----
Tony:  !!      Steve:
      Soldier versus Soldier
Unit's Health :  [2] <-----> [2]
      0/  --->  <---  \0
      /!\      /!\

!! Both lose, round tie !
!! King Tony Sorry!! we cannot save this unit of yours. You only have $0 !
!! King Steve Sorry!! we cannot save this unit of yours. You only have $0 !

      The Match Ties between King Tony & King Steve

King Tony your remaining army : []
King Steve your remaining army : []
C:\Users\USER\PycharmProjects\ExtendedCombat>
```

Figure 6.1 (g.)

Likewise, there are multiple scenarios which can arise in the game, these are just a few snapshots of the gameplay.

### CONCLUSION

The combat simulator is altogether a combo pack of strategy and fun, where the player uses his brain to smartly select his/her army units and the opponent's army units are unknown to the player. The battle goes round by round which informs the player about his army status and keeps the player engaged and excited to know the outcome of the next battle round whether he/she will be able to win the combat or not.

This game is developed in python using basic libraries like string, os, time. It involves concepts of classes and objects and some basic collections like dictionary and list. This game has various limitations and future scope which can make it more interactive and engaging.