

EPIC is too big to be completed in a single iteration, so it's split into smaller ones

As a player I want to be able to play Bulls and Cows (EPIC)

1. As a player I want to be able to **request** a secret code so I can try to decipher it
2. As a player I want to be able to **enter** a guess so I can decipher the secret code
3. As a player I want to be able to **save** a secret code so I can try to decipher it at another time
4. As a player I want to be able to **load** a secret code so I can continue trying to decipher a saved secret code
5. As a player I want to be able to **show the solution** so I can see a deciphered secret code for a code I can't decipher
6. As a player I want to **store my player name** so the software can track my game play statistics
7. As a player I want the software to **track the number of secret codes I have successfully deciphered** so I can see how many I've deciphered
8. As a player I want the software to **track the number of secret codes I have attempted to decipher** so I can see how many I've attempted
9. As a player I want the software to **track the number of bulls and cows I have guessed so I can see how accurate I am as a percentage of my total number of guesses**
10. As a player I want to **display my game play statistics** so I can see my performance
11. As a player I want to **load my details** so I can track my game play statistics
12. As a player I want to be able to **see the top 10 scores** for number of successfully deciphered codes so I can see what I need to score to be within the top 10
13. As a player I want to be able to **get a hint for a letter/number** so I can decipher the secret code

Acceptance Criteria

1. As a player I want to be able to **request** a secret code so I can try to decipher it
 - Scenario: Player requests letters secret code
 - Given there are words stored
 - When the player requests a secret code
 - Then a secret code representing an English word which is an isogram is returned and number of secret code attempts is updated.
 - Scenario: Player requests numbers secret code
 - Given the player has opened the program
 - When the player requests a secret code
 - Then a secret code is generated representing a sequence of unique numbers and number of secret code attempts is updated.
 - Scenario: Player requests a letters secret code but no phrases file exists
 - Given there are no words stored
 - When the player requests a secret code
 - Then an error message is shown and the game exits
2. As a player I want to be able to **enter** a guess so I can decipher the secret code
 - Scenario: player enters a guess
 - Given a secret code is displayed
 - When the player enters a guess
 - Then the number of bulls and cows are displayed and the player stats are updated

- Scenario: player enters the correct guess and successfully deciphers the code
 - Given a secret code is displayed
 - When the player enters the correct guess
 - Then a success message is displayed, their stats are updated and the game is finished
 - Scenario: player enters a guess with an invalid length
 - Given a secret code is displayed
 - When the player enters a guess with an invalid length
 - Then an error message is displayed and they are asked to try again
 - Scenario: player enters an invalid guess for a letters code
 - Given a secret code is displayed
 - When the player enters a guess containing numbers
 - Then an error message is displayed and they are asked to try again
 - Scenario: player enters an invalid guess for a numbers code
 - Given a secret code is displayed
 - When the player enters a guess containing letters
 - Then an error message is displayed and they are asked to try again
3. As a player I want to be able to **save** a secret code so I can try to decipher it at another time
- Scenario: player saves secret code
 - Given a secret code is displayed and the player is currently trying to decipher it
 - When the player indicates they wish to save
 - Then the secret code and state of play should be saved to a file for that player
 - Scenario: player already has a saved secret code
 - Given a player has a saved secret code and the player is currently trying to decipher a different secret code
 - When the player indicates they wish to save
 - Then they are asked if they want to overwrite the save file, if so it's overwritten if not the original saved game is kept.
4. As a player I want to be able to **load** a secret code so I can continue trying to decipher a saved secret code
- Scenario: player loads their saved game
 - Given a player has stored a saved game
 - When the player asks to load the saved game
 - Then the game is loaded ready to resume play
 - Scenario: player has no previously saved game
 - Given a player has no previous saved game
 - When the player asks to load a saved game
 - Then an error message is shown
 - Scenario: error loading previously saved game (corrupt file)
 - Given a player has stored a saved game but the file has been corrupted
 - When the player asks to load the game

- Then an error message is shown
5. As a player I want to be able to **show the solution** so I can see a deciphered secret code for a code I can't decipher
- Scenario: player shows the solution
 - Given a secret code is displayed and the player is currently trying to decipher it
 - When the player selects to show the solution
 - Then the solution is displayed to the player and the game is finished
6. As a player I want to **store my player name** so the software can track my game play statistics
- Scenario: save statistics
 - Given a player has been created
 - When the player asks to exit the game
 - Then their name and statistics are saved to a file
7. As a player I want the software to **track the number of secret codes I have successfully deciphered**
- Scenario: secret code successfully deciphered
 - Given a secret code is displayed
 - When the player correctly deciphers the secret code
 - Then the number of secret codes successfully deciphered is incremented and a success message is presented to the player
 - Scenario: secret code unsuccessfully deciphered
 - Given a secret code is displayed
 - When the player inputs an incorrect guess
 - Then the bulls and cows are displayed and the game play is resumed
8. As a player I want the software to **track the number of secret codes I have attempted to decipher** so I can see how many I've attempted
- Scenario: new secret code displayed
 - Given the player has opened the program
 - When the requests a new secret code
 - Then the number of secret codes the player has attempted to decipher is increased by one
 - Scenario: secret code loaded
 - Given the player has opened the program
 - When they request to load their saved game
 - Then the game is loaded and no change is made to the number of secret codes the player has attempted to decipher

9. As a player I want the software to **track the number of bulls and cows** I have guessed so I can see how accurate I am as a percentage of my total number of guesses
- Scenario: guess contains 1 or more bulls
 - Given a guess has been entered
 - When the guess contains 1 or more bulls
 - Then the number of bulls and the number of guesses are increased
 - Scenario: guess contains no bulls
 - Given a guess has been entered
 - When the guess contains no bulls
 - Then the number of guesses is increased by one
 - Scenario: guess contains 1 or more cows
 - Given a guess has been entered
 - When the guess contains 1 or more cows
 - Then the number of cows and the number of guesses are increased
 - Scenario: guess contains no cows
 - Given a guess has been entered
 - When the guess contains no cows
 - Then the number of guesses is increased by one
 - Scenario: guess contains 1 or more bulls and 1 or more cows
 - Given a guess has been entered
 - When the guess contains 1 or more bulls and 1 or more cows
 - Then the number of bulls, number of cows and the number of guesses are increased
10. As a player I want to **display my game play statistics** so I can see my performance
- a. Scenario: player hasn't played any games
 - i. Given a player hasn't played any games
 - ii. When the player asks to display their game play statistics
 - iii. Then an error message is shown
 - b. Scenario: player has played at least one game
 - i. Given a player has played at least one games
 - ii. When the player asks to display their game play statistics
 - iii. Then the player's statistics are displayed
11. As a player I want to **load my details** so I can track my game play statistics
- a. Scenario: player details loaded
 - i. Given a player has previously tried to decipher at least one secret code
 - ii. When the player identifies themselves
 - iii. Then the player's details are loaded
 - b. Scenario: error loading player details
 - i. Given a player has previously tried to decipher at least one secret code
 - ii. When a player identifies themselves and there is a problem with their detail file
 - iii. Then an error message is shown
 - c. Scenario: error loading player, they don't exist
 - i. Given a player tries to load details
 - ii. When the player details have not been stored
 - iii. Then show an error message to the player and create a new player

12. As a player I want to be able **to see the top 10 scores** for number of successfully deciphered codes

- a. Scenario: player wants to see the top 10 players ordered by proportion of successfully deciphered codes
 - i. Given at least one player has successfully deciphered a secret code
 - ii. When a player selects to see the top 10 players by number of successfully deciphered codes
 - iii. Then the top 10 players are shown, ordered by highest proportion of successfully deciphered codes to least, with blank spaces where there is no player to fill that position
- b. Scenario: no player stats have been stored
 - i. Given no player stats have been stored
 - ii. When the player selects to see the top 10 players
 - iii. Then an error message is shown

13. As a player I want to be able to **get a hint for a letter/number**, so I can decipher the secret code

- a. Scenario: first hint
 - i. Given a secret code is displayed and the player is currently trying to decipher it
 - ii. When a player asks for a hint
 - iii. Then the letter/number for one of the incorrect positions is given to the player
- b. Scenario: hints have previously been asked for
 - i. Given a secret code is displayed and the player is currently trying to decipher it
 - ii. When a player asks for a hint
 - iii. Then the letter/number for one of the incorrect positions is given to the player which must be a new hint

Non-functional Requirements

Secret codes and their state of play should be saved to a text file, only one per player

Player statistics and information should be saved to a text file

The words must be in English

The words must be isograms

Each number in a numbers secret code must be unique

Secret codes must have a length of 4

Scoreboards should show the top 10 players

There should be around 15 words in the words text file