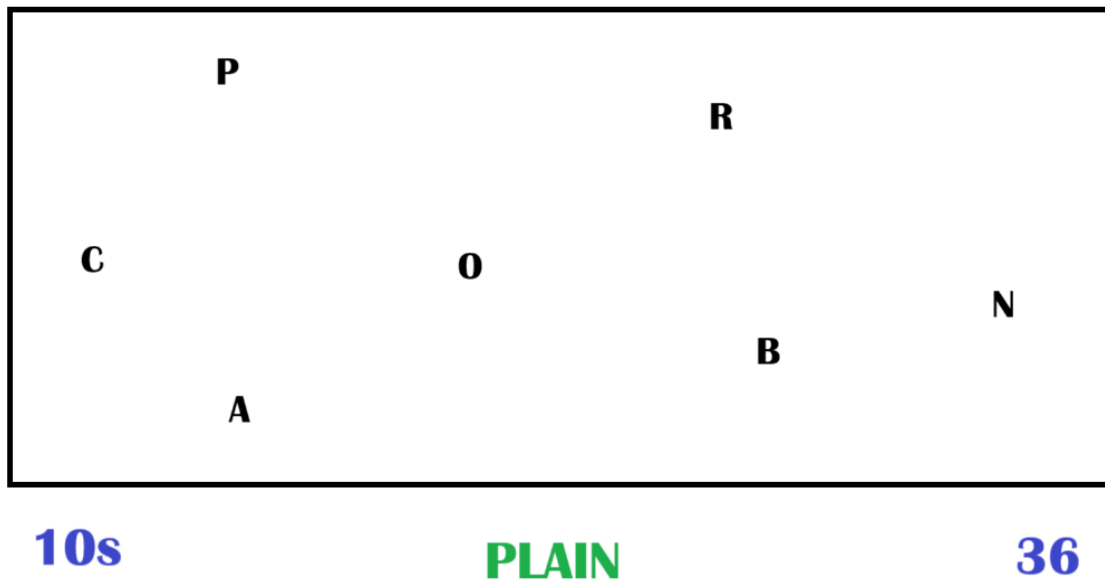# Spellfall Requirements

Overview

Spellfall is a simple word building game. In essence, letters fall from the top, and the user is required to make as many words as possible within time.

Game layout

- Game is laid out in 800x600px layout (width x height)
- When user opens the game, the initial screen with a "start" button is shown
- The game has a plain solid color background
- When the game is over, a "game over" screen is shown with a "start game" button. The score at the bottom is left intact.

Assembled word

Assembled word is an attempt by the user to construct a word out of a subset of letters available on the screen.

Rules:
- User can use any or all letters available on the screen
- User can only use the letters available on the screen
- One letter may only be used once
- Attempted word must be a valid English word according to Scrabble dictionary
- Minimum length of the attempted word is 3
- Assembled words are case insensitive

UX:
- User types the letters using the keyboard
- When user wants to attempt a word, user hits the enter key
- As the user types the letters, they appear at the bottom of the screen. All letters are shown in upper case irrespective of whether the user types in lower case or upper case.
- After the user hits enter, if the word is accepted it briefly turns green and disappears. If the word is not accepted, it briefly turns red and disappears
- Any non-letter keystrokes are ignored

Falling letters

- Letters fall from the top and go to the bottom and disappear
- In the first version of the game, the letters are random. As an improvement, the mix of letters has the same probability as the Scrabble mix of letters.
- The speed of falling letters is configurable by the developer as it needs to be tuned after user testing. Initially set it to 5 seconds for a letter from appearing at the top of the screen to disappearing at the bottom of the screen.
- Spawning rate is configurable by developer. Initially set it to 1 letter spawn a second.
- When an assembled word is accepted, all the letters used up by the word disappear from the screen
- Letters fall in imaginary columns. Initial number of columns set to 12.
- Letters spawn in random columns. They may spawn in a column if other letters are already present in the column
- Each letter size is determined by the width of the column. Letter fits in a column with a little padding from the next columns.
- All falling letters are in upper case.

Scoring

When an assembled word is accepted, the user's score is updated. Scoring is computed by adding:
- Score for each letter used in the word. Letter score is according to letter scores used in Scrabble game
- $(n-2)^2$ where n is the length of the accepted assembled word
- Score is always displayed at the bottom right.

Time constraint

- User has 5 seconds to attempt a word
- When the user successfully creates an assembled word, the timer resets
- User gets 10 seconds when the game starts to create the first assembled word
- If the time runs out, the game ends
- Remaining time is shown at the bottom left as a count down
- When 3 seconds are left, the timer display turns to red
- Once started game cannot be paused