

## Problem Formulation for Hangman Game :

Hangman is a classic word-guessing game where one player thinks of a word, and the other player tries to guess the word by suggesting letters one at a time. The objective of the game is to guess the word correctly before the player runs out of attempts, which are typically represented by drawing a hanging man on a gallows.

To formulate the problem of the Hangman game, we need to define the game's rules and constraints. First, the word to be guessed must be selected from a pre-defined list of words. The length of the word must also be fixed, and the number of attempts the player has must be limited.

The second step is to represent the word to be guessed as a series of blank spaces, with each blank space representing a letter in the word. As the player guesses letters, we replace the blank spaces with the letters that match the word's letters. If the guessed letter is not present in the word, we deduct an attempt from the total number of attempts remaining.

To make the game more challenging, we can limit the number of guesses a player can make based on the length of the word. For example, if the word to be guessed has six letters, we can give the player eight attempts. If the player fails to guess the word within the given number of attempts, the game is over, and the player loses.

Finally, we can add additional constraints to the game to make it more interesting. For example, we can introduce a penalty for guessing the same letter multiple times or award bonus points for guessing the word correctly within a limited number of attempts.

In summary, the problem formulation for the Hangman game involves selecting a word from a pre-defined list, representing the word as a series of blank spaces, allowing the player to guess letters, and penalizing the player for incorrect guesses. The objective of the game is to guess the word correctly within the given number of attempts.