

# Codenames Game Design Final Sprint

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## Tasks for the final sprint :



Clean the clues for player mode



Turn off music button



Clean up our code



Algorithms explanation

# WordNetLemmatizer



**Lemmatization:** By reducing words to their common base form, you can improve the matching and comparison of words.



**Word Similarity:** provides information about words and their relationships.



**Word Clustering or Categorization:** The lemmatized forms of words can be used to group or categorize words based on their semantic similarity.



It is valuable tool for improving word processing, normalization, and semantic analysis within the game's context.



# WordNet Lemmatizer

Ulcer	Tan	Tag	Memory	Quicksand
Lip	Raise	Validity	Pair	Guitar
Moose	Frog	Cake	Coffee	Waffle
Line	Gear	Help	Event	Taper
Bench	Monkey	Safe	Leather	Number

For Team red, The Current Clue is: raising, the number of target cards is 1  
The distance between clue and guess is 0

Please Input Your Guess:

CLUE

● We updated the algorithm to lemmetize the -ing ending words to an original word for clues.

# Music Toggle Function

- Purpose of the code snippet: It demonstrates a function to toggle music playing using '`pygame.mixer.music`'.

- Code Explanation:

- ❖ **Music\_Playing Variable** is used to track the current state of the music (playing or paused). Set to True as the default value.
- ❖ **Toggle\_music()** is responsible for toggling the state of the music playback.
- ❖ **Music\_playing variable** is False -> `pygame.mixer.music.pause()`.
- ❖ **Music\_playing variable** is True-> `pygame.mixer.music.unpause()`.



# Clean up our code

```
1057
1058     # -----
1059     # the whole game s
1060     homepage()
1061
1062     # Be IDLE friendly
1063     pygame.quit()
```

- Originally we got over 1000 lines of code

- Lower than 1000 lines after cleaning

```
994     # -----
995     # the whole game starts
996     homepage()
997
998     # Be IDLE friendly. If y
999     pygame.quit()
```

# Algorithm of Giving Clues

Team Cards

Positive and Negative Effects

Text Preprocessing:

- Convert words to lowercase.
- Filter out incorrect words.
- Keep only noun words.
- Remove the 25 game cards from the list.
- Lemmatize the remaining words.
- Randomly select a card from the current team's cards as the target card.

Distance Calculation

Clue Selection:

- Sort the list based on distance in ascending order.
- Select the word with the smallest distance as the clue.

Distance Calculation (Team Cards)

Threshold and Turn

# Algorithm of Guessing the Target



## User Input:

Store the user's input text.



## Text Preprocessing:

Lowercase the user's input.  
Capitalize the user's input.



## Finding Similar Words:

Use the `model.similar_by_word` function to obtain a list of similar words based on the lowercase or capitalized input.



## Preprocessing Similar Words:

Lowercase all words in the similar list.



## Matching Game Cards:

Iterate through the list to find the first match with the 25 game cards.  
Remove the matching word if it corresponds to a guessed card.



## Multiple Guesses:

Repeat the loop based on the user's specified number of times to get additional guess cards.



*Thank you for  
your attention!*



A close-up photograph of a board game. In the center, a red die with white pips is positioned on a green game board. To the left, a blue pawn stands on a white path. To the right, a red pawn is visible. The game board features a green field with yellow sheep and a brown building. In the foreground, circular tokens with the numbers 8, 9, and 10 are visible. The background is blurred, showing more of the game board and a yellow pawn. The text "Our game version" is overlaid in a white, cursive font on the right side of the image.

*Our game version*