2179610 REFLECTIVE REPORT

Programme

1. **Overview**

    The "Guess the Word" programme is an interactive game where players attempt to guess a hidden word by guessing individual letters. It features two difficulty levels: EASY and HARD. This report reflects on the programme's development, focusing on its data structures, algorithms, and design choices, with particular emphasis on the unique mechanics introduced in HARD mode.

2. **Programme Design and Data Structures**

    The programme's design revolves around a flexible and scalable structure to accommodate the guessing mechanics and dynamic word pattern updates. Key elements include:

3. **Word Loading:**

    - The load_word_list function reads a text file containing the dictionary, filters words by length, and returns a list of valid words.
    - **Strength:** Allows flexibility with different word pools, enabling varied gameplay.
    - **Limitation:** Requires accurate file paths and is constrained by the size and quality of the dictionary file.

4. **Dynamic Word Revelation:**

    - The reveal_word function determines how the hidden word is presented to the player:
        - **EASY Mode:** Reveals all occurrences of a correctly guessed letter.
        - **HARD Mode:** Reveals only as many instances of the guessed letter as guessed so far, requiring multiple guesses for repeated letters.
    - **Strength:** Enhances user experience by providing dynamic feedback.
    - **Limitation:** The HARD mode mechanics can be unintuitive for new players.

5. **Word Pool Refinement:**

    - The refine_word_pool function filters potential words based on the revealed pattern and guessed letters.
    - **Strength:** Dynamically narrows down possible words, improving the game's responsiveness to player input.

- **Limitation:** For very large dictionaries, the filtering process might slow down gameplay.

6. EASY vs. HARD Modes

The EASY and HARD modes differ in how they reveal information to the player and handle repeated letter guesses:

EASY Mode:

- o **Mechanics:** Reveals all instances of a correctly guessed letter immediately.
- o **Example:** For the word "BALLOON," guessing 'L' reveals "_ _ L L _ _ _."
- o **Summary:** Encourages success by reducing ambiguity.

HARD Mode:

- o **Mechanics:** Players must guess a letter multiple times to reveal all its occurrences. If 'L' is guessed once for "BALLOON," only the first occurrence appears: "_ _ L _ _ _." The player must guess 'L' again to reveal the second occurrence.
- o **Summary:** Introduces a challenging layer by requiring strategic thinking and careful letter management.

7. Strengths of the Programme

- **Dynamic Feedback:** Players receive immediate and evolving word patterns based on their guesses.

- **Customisable Word Pool:** The dictionary-based design allows easy expansion or modification of the word set.

- **Dual Difficulty Levels:** The EASY and HARD modes cater to both casual players and those seeking a challenge.

- **Replayability:** The random word selection and adaptive difficulty ensure fresh experiences with each playthrough.

8. Limitations of the Programme

- **Dependency on External Files:** Errors in the dictionary file format can disrupt gameplay.

- **Performance Issues:** The filtering process in refine_word_pool could slow down for very large dictionaries.

- **HARD Mode Accessibility:** The requirement to guess letters multiple times in HARD mode may frustrate players unfamiliar with its mechanics.

9. **Conclusion**

The "Guess the Word" programme effectively demonstrates the use of algorithms and data structures to create an engaging game. HARD mode's letter-count mechanics highlight an innovative approach to difficulty scaling, adding strategic depth. Future improvements could focus on optimising performance for larger dictionaries and introducing tutorials or hints to make HARD mode more intuitive.

Appendix 1:
Instructions for Running the Programme

1. **Setup Requirements:**

   - Install Python 3.x.
   - Place the dictionary file (e.g., dictionary.txt) in the same directory as the programme.

2. **Running the Programme:**

   - Open a terminal or command prompt.
   - Navigate to the programme's directory and execute the script: *guesstheword.py*

3. **Gameplay:**

   - Select your difficulty level: EASY or HARD.
   - Guess letters one at a time. The programme will update the word pattern and indicate whether your guess was correct.

4. **Winning and Losing:**

   - **Winning:** Successfully guess all the letters in the word before running out of attempts.
   - **Losing:** If you run out of attempts, the programme reveals the hidden word.