Problem Chosen	2025 MCM/ICM Summary Sheet	Team Control Number
ABCDEF		12345678

The MCM Thesis of Team 12345678

Summary

This is a summary.

Keywords: keyword1, keyword2, keyword3

Contents

1 Introduction

1.1 Problem Background

Wordle, developed by Jonathan Feinberg in 2008, was created to help students expand their vocabulary. However, due to its simple gameplay, it quickly went viral on social media at the end of 2021 and was later acquired by The New York Times in 2022, integrating it into their online games section. It is a web-based game with two difficulty modes: easy and hard. It focuses on user experience and game logic, and there are many variations of the game, such as Quordle (guessing 4 words simultaneously), Octordle (guessing 8 words simultaneously), and Worldle (a geography version where players guess a country or region). The rules for the hard mode are as follows.

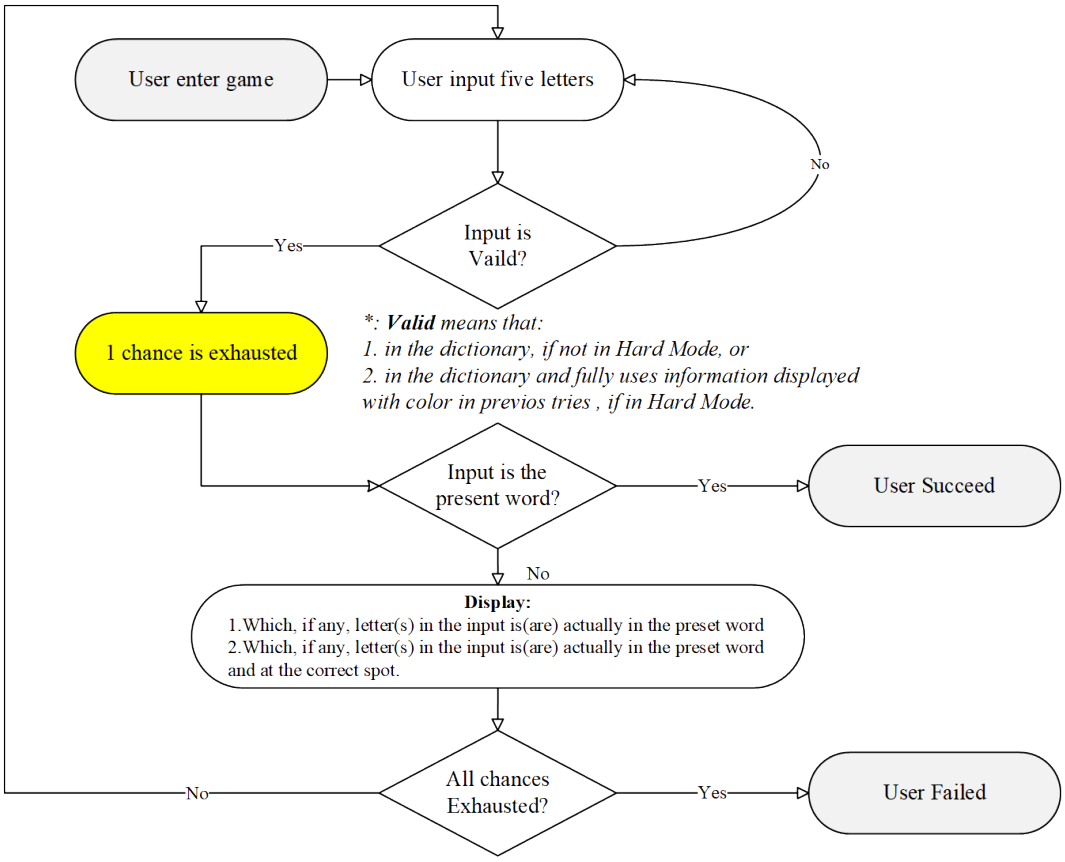

Figure 1: Rules

1.2 Restatement of the Problem

We need to analyze the data provided by The New York Times and address the following tasks:

- **Problem 1:**Develop a model to explain the variations in the daily reported results and predict the range of reported results for March 1, 2023. Additionally, analyze which word attributes influence players' decisions to select Hard Mode.

- **Problem 2:**Build a prediction model to estimate the percentage distribution of results (1, 2, 3, 4, 5, 6, X) for a future day, with specific predictions for "EERIE" on March 1, 2023, and assess the model's accuracy.
- **Problem 3:**Develop a classification model to categorize words by difficulty level and identify their attributes. Conduct a detailed analysis for "EERIE" and evaluate the model's accuracy.
- **Problem 4:**Explore and describe any other interesting insights or patterns found within the data.

1.3 Our Work

2 Assumptions and Notations

3 Model 1

4 Model 2

5 Model 3

6 Interesting Findings

7 Sensitivety Analysis

8 Model Assessment

8.1 Strengths

8.2 Weaknesses

9 Letter

$$E = mc^2 \tag{1}$$

$$E = mc^2$$

- This is a item.
- This is a item.

- This is a assumption.
- This is a assumption.

- This is a assumption.
- This is a assumption.

I love math.

I love math.

I love math.

Appendices

Memorandum

To: MCM office

From: MCM Team 12345678

Subject: MCM

Date: January 13, 2025

This is a memorandum.

Table 1: Caption

Title a	Title b	Title c	Title d
Aaa	Bbb	Ccc	Ddd
Aaa	Bbb	Ccc	Ddd
Aaa	Bbb	Ccc	Ddd

Appendix A First appendix

Here are simulation programmes we used in our model as follow.
MATLAB source code:

Appendix B Second appendix

Python source code: