SE 3XA3: Module Interface Specification
Wordle 2.0

Team 8,
Richard Fan, fanr13
Noel Zacharia, zacharin
Biranugan Pirabaharan, pirabahb

April 11, 2022

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Table 1: **Revision History**

Date	**Version**	**Notes**
March 14, 2022	0.1	Initial Document
March 15, 2022	0.2	Added modules 1-8
March 16, 2022	0.3	Added module 9-14
March 18, 2022	0.4	Finished MIS for all modules
April 10, 2022	0.5	Updated for Rev1

Click Module

Click Module

Uses

Create Gameboard, darkmode, Stats, Stats View, alert, Style, Index, click, Instructions, share

Syntax

Exported Types

None

Exported Constants

None

Exported Access Programs

Routine name	In	Out	Exceptions
gameplay			

Semantics

Environment Variables

Keyboard, Mouse

State Variables

gameState : Boolean
currentRow : Integer
currentTile : Integer

State Invariant

$currentRow >= 0 \wedge currentTile >= 0$

Assumptions

N/A

Access Routine Semantics

gameplay():

- transition: Handles processing the user inputs and calling other functions to ensure the game is playable.

Local Function:

N/A

Stats View Module

Stats View Module

Uses

Stats, Google Visualization API

Syntax

Exported Types

None

Exported Constants

None

Exported Access Programs

Routine name	In	Out	Exceptions
statsModal			
closeStatsModal			

Semantics

Environment Variables

Screen, Mouse

State Variables

N/A

State Invariant

N/A

Assumptions

- closeStatsModal() is only called after statsModal()

Access Routine Semantics

statsModal():

- transition-output: The user's current statistics are displayed along with a graph of their guess distribution.

closeStatsModal():

- transition: Removes the displayed statistics window

Local Function:

drawBasic(): Displays a bar chart using given data, using the Google API.

Stats Module

Stats Module

Uses

N/A

Syntax

Exported Types

None

Exported Constants

stats = Object of State Variables

Exported Access Programs

Routine name	In	Out	Exceptions
setStats	int		

Semantics

Environment Variables

N/A

State Variables

winDistribution: seq of Integer
gamesFailed: Integer
currentStreak: Integer
bestStreak: Integer
totalGames: Integer
successRate: Integer

State Invariant

$gamesFailed >= 0 \land currentStreak >= 0 \land bestStreak >= 0 \land totalGames >= 0 \land successRate >= 0$

Assumptions

setStats is called when user's game is completed

Access Routine Semantics

setStats(count):

- transition: Updates the user's statistics based on their number of guesses needed; count.
- exception: New user's are given default statistics set to zero.

Local Function:

getSuccessRate(): Returns a percentage of games won.

Style Module

Style Module

Uses

Index

Syntax

Exported Types

None

Exported Constants

None

Exported Access Programs

Routine name	In	Out	Exceptions
styleElements			

Semantics

Environment Variables

Screen

State Variables

N/A

State Invariant

N/A

Assumptions

N/A

Access Routine Semantics

styleElements():

- transition: Updates the style properties of the elements on the web page.

Local Function:

N/A

Update Gameboard Module

Update Gameboard Module

Uses

N/A

Syntax

Exported Types

None

Exported Constants

None

Exported Access Programs

Routine name	In	Out	Exceptions
addLetter	char, int[][], int, int		
removeLetter	int[][], int, int		

Semantics

Environment Variables

Screen, Mouse, Keyboard

State Variables

N/A

State Invariant

N/A

Assumptions

N/A

Access Routine Semantics

addLetter(letter, gameboard, currentTile, currentRow):

- transition: Add a letter to the gameboard in the correct position when the user clicks/types a letter.

- exception: Does nothing if the guess already has 5 letters.

deleteLetter(gameboard, currentTile, currentRow):

- transition: Deletes a letter from the gameboard at the correct position when the user clicks/types the delete key.
- exception: Does nothing if no letters are present.

Local Function:

N/A

Keyboard Colours Module

Keyboard Colours Module

Uses

N/A

Syntax

Exported Types

None

Exported Constants

None

Exported Access Programs

Routine name	In	Out	Exceptions
updateKeyColorGreen	char		
updateKeyColorYellow	char		
updateKeyColorGray	char		

Semantics

Environment Variables

Screen

State Variables

N/A

State Invariant

N/A

Assumptions

N/A

Access Routine Semantics

updateKeyColorGreen(letter):

- transition: Updates the color of the given letter for the on-screen keyboard to green.

updateKeyColorYellow(letter):

- transition: Updates the color of the given letter for the on-screen keyboard to yellow, if it is not green.

updateKeyColorGray(letter):

- transition: Updates the color of the given letter for the on-screen keyboard to gray, if it is not green or yellow.

Local Function:

N/A

Alert Module

Alert Module

Uses

wordOperations

Syntax

Exported Types

None

Exported Constants

None

Exported Access Programs

Routine name	In	Out	Exceptions
message	string		

Semantics

Environment Variables

Screen

State Variables

N/A

State Invariant

N/A

Assumptions

N/A

Access Routine Semantics

message(situation):

- transition: Displays an alert message to the user depending on the situation: if the guess is too short, guess is invalid or if the player failed to guess the word.

Local Function:

N/A

share Module

share Module

Uses

Syntax

Exported Types

None

Exported Constants

None

Exported Access Programs

Routine name	In	Out	Exceptions
share	int[][]		

Semantics

Environment Variables

Screen, Mouse

State Variables

N/A

State Invariant

N/A

Assumptions

share is called when user's game is completed

Access Routine Semantics

message(situation):

- transition-output: Copies the gameboard's final state, specifically the color of the tiles, as emojis to the user's clipboard.

Local Function:

N/A

Valid Guess Module

Valid Guess Module

Uses

Constants

Syntax

Exported Types

None

Exported Constants

None

Exported Access Programs

Routine name	In	Out	Exceptions
isWordInWordList	String	Boolean	

Semantics

Environment Variables

N/A

State Variables

N/A

State Invariant

N/A

Assumptions

N/A

Access Routine Semantics

isWordInWordList(word):

- transition: Returns a true if a word is present in the word lists, else returns false.

Local Function:

N/A

Constants Module

Constants Module

Uses

None

Syntax

Exported Types

None

Exported Constants

Rows, Keys, Valid, Words

Exported Access Programs

None

Semantics

Environment Variables

N/A

State Variables

N/A

State Invariant

N/A

Assumptions

N/A

Access Routine Semantics

N/A

Local Function:

N/A

Create Gameboard Module

Create Gameboard Module

Uses

None

Syntax

Exported Types

None

Exported Constants

None

Exported Access Programs

Routine name	In	Out	Exceptions
createGameBoard	int[][]		

Semantics

Environment Variables

Screen

State Variables

N/A

State Invariant

N/A

Assumptions

N/A

Access Routine Semantics

createGameBoard(rows):

- output: Creates the game board depending upon the number of rows needed.

Local Function:

N/A

darkmode Module

darkmode Module

Uses

None

Syntax

Exported Types

None

Exported Constants

None

Exported Access Programs

Routine name	In	Out	Exceptions
darkmode			

Semantics

Environment Variables

Screen, Mouse

State Variables

N/A

State Invariant

N/A

Assumptions

N/A

Access Routine Semantics

darkmode():

- transition: Changes the UI theme from light mode to dark mode and vice-versa.

Local Function:

N/A

Index Module

Index Module

Uses

None

Syntax

Exported Types

None

Exported Constants

None

Exported Access Programs

Routine name	In	Out	Exceptions
HTML components			

Semantics

Environment Variables

Screen

State Variables

N/A

State Invariant

N/A

Assumptions

N/A

Access Routine Semantics

None

Local Function:

N/A

main Module

main Module

Uses

darkmode, statsVew, instructions, click

Syntax

Exported Types

None

Exported Constants

None

Exported Access Programs

Routine name	In	Out	Exceptions

Semantics

Environment Variables

Screen

State Variables

N/A

State Invariant

N/A

Assumptions

N/A

Access Routine Semantics

N/A

Local Function:

N/A

Instructions Module

Instructions Module

Uses

None

Syntax

Exported Types

None

Exported Constants

None

Exported Access Programs

Routine name	In	Out	Exceptions
instructions			

Semantics

Environment Variables

Sceen, Mouse

State Variables

InfoText

State Invariant

N/A

Assumptions

N/A

Access Routine Semantics

instructions():

- transition: Will display instructions on how to play Wordle whenever called.

Local Function:

N/A

Tile Colours Module

Tile Colours Module

Uses

N/A

Syntax

Exported Types

None

Exported Constants

None

Exported Access Programs

Routine name	In	Out	Exceptions
updateColorGreen	int, int		
updateColorYellow	int, int		
updateColorGray	int, int		

Semantics

Environment Variables

Screen

State Variables

N/A

State Invariant

N/A

Assumptions

N/A

Access Routine Semantics

updateColorGreen(currentTile, currentRow):

- transition: Updates the color of the given tile in the given row to green.

updateColorYellow(currentTile, currentRow):

- transition: Updates the color of the given tile in the given row to yellow.

updateColorGray(currentTile, currentRow):

- transition: Updates the color of the given tile in the given row to gray.

Local Function:

N/A

Word Operations Module

Word Operations Module

Uses

Math, Constants.Words, String.prototype

Syntax

Exported Types

None

Exported Constants

int index = Math.floor(Math.random() * 2316)
string solution = Constants.Words[index].toUpperCase()

Exported Access Programs

Routine name	In	Out	Exceptions
isCorrectWord	string, string	Boolean	

Semantics

Environment Variables

N/A

State Variables

N/A

State Invariant

N/A

Assumptions

N/A

Access Routine Semantics

isCorrectWord(word, solution):

- output: returns true if word is equal to solution, false otherwise.

Local Function:

N/A