

HangmanGame.java

```
1 package Hangman;
2
3 import java.util.ArrayList;
4
5
6
7
8
9
10 /**
11  * This is the HangmanGame "Controller" class that launches the game and takes user input,
12  * and by reading the user input of continuing the game or not, this class also allows users
13  * to run multiple rounds of word guessing in a single run.
14  * Besides, I wrote two versions in one class, because traditional version is
15  * obviously the special version of evil version that contains only one word in
16  * the game set. Therefore, only the game controller class will control
17  * the version that user is playing.
18  * @author Kevin Long
19  *
20  */
21 public class HangmanGame {
22
23     // The Game class is only responsible for generating available arraylist set for guessing
24     ArrayList<String> original = new ArrayList<String>();
25
26     // This variable controls the word length that computer randomly generates for user
27     int available;
28
29     // This variable controls the states of gaming continuing or not
30     boolean conti = true;
31
32     // Instantiate this class
33     public HangmanGame(ArrayList<String> s){
34         this.original = s;
35     }
36
37
38     /**
39     * This static method loops through the available word list and return the maximum length
40     * of the world in the
41     * world list, so that the random method do not generate word length that is too long and
42     * there is not match in
43     * the list.
44     * @param words
45     * @return
46     */
47     public static int availableLength(ArrayList<String> words) {
48
49         // Set the initial length of longest word as 0 and update the value
50         int maxLength = 0;
51
52         // Loop through the word list
53         for (String word: words) {
54             if (word.length() > maxLength) {
55
56                 // Once there is any word that has a length over maxLength, update the value
57                 of the variable
58                 maxLength = word.length();
59             }
60         }
61     }
62 }
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58     return maxLength;
59 }
60
61
62 /**
63  * This method loops through the available word list and return the ArrayList<String> word
  list where all words are
64  * exactly the same length as given int length.
65  * @param length
66  * @return
67  */
68 public ArrayList<String> gameSet(int length) {
69     // Create a new ArrayList and populate it with words that has exactly the same length
  as variable length
71     ArrayList<String> list = new ArrayList<String>();
72
73
74     for(String word: this.original) {
75         if (word.length() == length) {
76
77
78             // Use list.add() method
79             list.add(word);
80         }
81     }
82
83
84     return list;
85 }
86
87
88 public static void main(String[] args) {
89     // TODO Auto-generated method stub
90
91
92     // Initialize the txt that we will use
93     System.out.println("Welcome to HangmanGame! ");
94     String filename = "words.txt";
95
96     // Create new file reader instance to manipulate the txt file and return the "pure"
  word list
97     HangmanFileReader fr = new HangmanFileReader(filename);
98
99     // Get clean word list with no leading or trailing whitespaces
100    ArrayList<String> lines = fr.getCleanContext();
101    System.out.println("System have read the file: " + filename);
102
103    // Create a new HangmanParsing object to parse the lines and return the pure word list
104    HangmanParsing rq = new HangmanParsing(lines);
105    ArrayList<String> s = rq.matchCleaning();
106
107    // Generate the available length
108    int len = HangmanGame.availableLength(s);
109
110    // Use the pure word list to create a HangmanGame object
111    HangmanGame newGame = new HangmanGame(s);
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112
113 // Initialize several variables that we will use in latter parts
114 Random rand = new Random();
115 String pattern = "[a-z]+";
116
117 // Notice the user when creating the pure word list successfully
118 System.out.println("System created a pure guess-able word list.");
119
120 // Initialize the scanner object
121 Scanner scanner = new Scanner(System.in);
122
123
124 // When the conti is true, continue the game
125 while(newGame.conti) {
126
127
128 // Intialize the word list length for creating Hangman Object, use rand.nextInt(i)
+ 1 to get exactly the word length that is used
129 int i = rand.nextInt(len) + 1;
130
131 // Create the gameSet for the game
132 ArrayList<String> game = newGame.gameSet(i);
133
134
135 // If the computer generates the length that has no words in it, repeat the
process and generate a new GameSet
136 while(game.size() == 0) {
137     i = rand.nextInt(len) + 1;
138     game = newGame.gameSet(i);
139 }
140
141 // Setting Game mode, if j is 0, then we are playing traditional hangmang. If j is
1, then we are playing an evil hangman
142 int j = rand.nextInt(2);
143
144 // If the game is traditional, select a random words from gameset arrylist and
process (Actually, traditional hangman game is a special version of evil hangman game)
145 if(j == 0) {
146     int inde = rand.nextInt(game.size());
147     ArrayList<String> game1 = new ArrayList<String>();
148     game1.add(game.get(inde));
149     game = game1;
150 }
151
152 // Use game(ArrayList<String>) and i(int, represents the length of the word
selected) to create a Hangman object
153 Hangman newHangman = new Hangman(game, i);
154
155 // Print the Rule of the hangman Game
156 System.out.println("Welcome to Hangman Game!");
157 System.out.println(" ");
158 System.out.println("You'll play against computer who randomly choose a word(or
word group of a specific length;");
159 System.out.println("You'll immediately know how many characters are in the
word(s), but you won't know you're guessing");
160 System.out.println("a word or a dynamic word group;(You'll get to know it
afterwards, though!);");
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161         System.out.println("All characters undiscovered are marked as '-'.");
162         System.out.println("If you guess the character right, it will automatically appear
on a location (or more)");
163         System.out.println("Now try youre best and hit all of them as soon as
possible! ");
164         System.out.println(" ");
165         System.out.println("-----Instruction-----");
-----");
166         System.out.println("Please input a single lowercase character, or put the
character in string beginning position, such as a, ab, ass");
167         System.out.println("-----");
-----");
168
169         // Print the length out at the start of the game and ask the user to input
170         System.out.println("Guess a letter");
171
172         System.out.println(newHangman.print());
173
174         // Record the very first string printed
175         //String s1 = newHangman.print();
176
177         // Make a judgement to see if the user has guessed all the characters correctly
178         while(!newHangman.guessAll()) {
179
180             // Get user guess
181             String guess = scanner.next();
182
183             // Compare the user input with regex pattern and try to get a lowercase
character at first position
184             boolean isMatch = Pattern.matches(pattern, "" + guess.charAt(0));
185             // If user didn't input a lowercae character at the first position of the
string, pop up the error message and asks the user to input again
186             while(!isMatch) {
187                 System.out.println("You ara typing un-recongized guess format, make sure
you input lowercase character in the beginning");
188                 System.out.println("Guess a letter");
189                 guess = scanner.next();
190                 isMatch = Pattern.matches(pattern, "" + ""+guess.charAt(0));
191             }
192
193             // System.out.println("Game size: "+newHangman.testSet.size());
194
195             // Print if users have guessed a character that was guessed
196             newHangman.remindRepeatance(guess.charAt(0));
197
198             // Implement the updateMap method and update the frequency Map
199             newHangman.updateMap(guess.charAt(0));
200
201
202             // Compare the frequency Map and update the gameset if the group is with any
position of the word.
203             newHangman.updatePrint(guess.charAt(0));
204
205             // Iterate until all characters that has the maximum frequency are replaced in
other two map
206 //             while (!s1.equals(newHangman.print())){
207 //                 s1 = newHangman.print();

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208 //         newHangman.updateArray(guess.charAt(0));
209 //     }
210
211     // Initialize frequency map
212     newHangman.reInitialize();
213
214     // Print another guess requirement for users
215     System.out.println("Guess a letter");
216
217     // Print the printMap out to assit user guessing more characters
218     System.out.println(newHangman.print());
219
220
221 }
222
223 // Tell User the game version that they are playing
224 if (j == 0) {
225     System.out.println("You've just finished a traditional version hangman
game!");
226 } else {
227     System.out.println("You've just finihsed an evil version hangman game!");
228 }
229
230 // When all positions are been updated as "has guesd", end this round
231 System.out.println("You have guessed all words. This is the end of this around.
Input Y if you want to start another round, or it ends.");
232
233 // Asks the user input and look at if user want to keep on or want to stop
234 String keep = scanner.next();
235
236 // If user want to keep the game, start the loop again
237 if(!keep.equals("Y")) {
238     newGame.conti = false;
239 }
240 }
241
242 // If the user don't want to stard another round, end the game
243 scanner.close();
244 }
245
246 }
247
```