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1 package use_case_controller;
2
3 import java.util.HashMap;
4
5 /**
6  * Class LogInController to manage various validation and control flows of use case "Log In".
7  * @author Daria Vekic (Student ID: 586661)
8  *
9  */
10 public class LogInController {
11
12     //Instance fields
13     private FileIO fileHandler = new FileIO(); //for file handling
14     private CommonElements common = new CommonElements(); //for common View elements
15     //Error messages
16     public String errorUsername = "Username does not exist.";
17     public String errorNoMatch = "Password does not match.";
18
19     /**
20      * Method to update a password value in the Map.
21      * @param map the Map to be updated.
22      * @param username the Key of the Value to be updated.
23      * @param newPw the new password to be hashed.
24      */
25     private void changePassword(HashMap<String, String> map, String username, String newPw) {
26         String salt = BCrypt.gensalt(10);
27         String hash = BCrypt.hashpw(newPw, salt);
28         map.replace(username, hash); //update the map with hash of new password
29         fileHandler.writeToFile(map);
30     } //end method changePassword
31
32     /**
33      * Method to check if password input by user is the same as the password in the Map.
34      * @param map the HashMap containing login credentials.
35      * @param username the Key in the Map.
36      * @param input the password input by the user.
37      * @return true if input matches hash value in the Map; false otherwise.
38      */
39     private boolean checkMatch(HashMap<String, String> map, String username, String input) {
40         return BCrypt.checkpw(input, map.get(username)); //check input against hash in file
41     } //end method checkMatch
42
43     /**
44      * Method to check if username input by user is contained in the Map.
45      * @param input the username input by the user.
46      * @param map the Map to check input against.
47      * @return true if username is found in the Map; false otherwise.
48      */
49     private boolean checkUsername(String input, HashMap<String, String> map) {
50         return map.containsKey(input); //returns true if username contained in the Map
51     } //end method checkUsernameInMap
52
53     /**
54      * Method to control routine of resetting a user's password.
55      */
56 }
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63  * Checks a username exists. If it does, checks user's old password is current Value.
64  * Validates the new password meets criteria according business rules.
65  * If it does, the new password is hashed and stored in file.
66  * @param usernameTxtField used to receive username input.
67  * @param oldPwTxtField used to receive old password input.
68  * @param newPwTxtField used to receive new password input.
69  * @return true if password is successfully changed; false otherwise.
70  */
71  public boolean resetPassword(JTextField usernameTxtField, JPasswordField oldPwTxtField, JPasswordField newPwTxtField) {
72      String username = usernameTxtField.getText();
73      HashMap<String, String> mapFromFile = fileHandler.readFromFile();
74      boolean exists = checkUsername(username, mapFromFile); //check username exists
75      if(!exists) //if username not found
76          common.showError(errorUsername, "Error");
77      else { //if username exists
78          String oldPw = String.valueOf(oldPwTxtField.getPassword()); //get old password
79          boolean match = checkMatch(mapFromFile, username, oldPw); //check old password matches
80          if(!match) { //if old password doesn't match
81              common.showError("Old" + errorNoMatch.toLowerCase(), "Error");
82          } else { //if old password is a match
83              String newPw = String.valueOf(newPwTxtField.getPassword()); //get the new password
84              boolean meetsCriteria = validateNewPassword(newPw); //check new password meets criteria in business rules
85              if(!meetsCriteria) { //if new password doesn't meet criteria
86                  common.showError("New password does not meet criteria.\nMust be minimum 12 characters"
87                      + " and include at least 1 special character, 1 number, and 1 uppercase letter.", "Error");
88              } else { //if new password is good
89                  changePassword(mapFromFile, username, newPw); //update the Map
90                  JOptionPane.showMessageDialog(null, "Password successfully changed.\nPress OK to return to Log In.",
91                      "Success", JOptionPane.INFORMATION_MESSAGE);
92                  return true;
93              } //end if else
94          } //end if else
95      } //end if else
96      return false;
97  } //end method resetPassword
98
99  /**
100  * Method to control routine of signing in to system.
101  * @param usernameTxtField used to receive username input.
102  * @param pwField used to receive password input.
103  * @return true if login details are valid; false otherwise.
104  */
105  public boolean signIn(JTextField usernameTxtField, JPasswordField pwField) {
106      HashMap<String, String> map = fileHandler.readFromFile();
107      String username = usernameTxtField.getText(); //get the username
108      if(!checkUsername(username, map)) {
109          common.showError(errorUsername, "Error");
110      } else {
111          String password = String.valueOf(pwField.getPassword());
112          if(!checkMatch(map, username, password)) {
113              common.showError(errorNoMatch, "Error");
114          } else {
115              return true;
116          } //end if else

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117         } //end if else
118         return false;
119     } //end method signIn
120
121     /**
122     * Method to check new password meets criteria according to business rules.
123     * Checks new password is minimum 12 characters and contains at least 1 special
124     * character, 1 digit, and 1 uppercase letter.
125     * @param newPassword the user's new password to validate.
126     * @return true if new password is acceptable; false otherwise.
127     */
128     private boolean validateNewPassword(String newPassword) {
129         boolean meetsCriteria = false;
130         //check length
131         if(newPassword.length() >= 12) {
132             //make use of Pattern and Matcher class to check for special characters
133             Pattern p = Pattern.compile("[~!@#$%^&*()_+{}\\[\\]\\:;,.<>/?-]");
134             Matcher m = p.matcher(newPassword);
135             if(m.find()) {
136                 //update p and m to check for digits
137                 p = Pattern.compile(".*\\d.*");
138                 m = p.matcher(newPassword);
139                 if(m.find()) {
140                     //update p and m to check for uppercase letters
141                     p = Pattern.compile(".*[A-Z].*");
142                     m = p.matcher(newPassword);
143                     if(m.find()) {
144                         //now we can flip the flag
145                         meetsCriteria = true;
146                     } //endif
147                 } //endif
148             } //endif
149         } //endif
150         return meetsCriteria;
151     } //end method validateNewPassword
152 } //end class LogInController
```