

## Testing Description

### Introduction:

Testing is an integral part of Software Development. In this document, we will be describing how each of our user stories can be tested. Each user story below is followed by the acceptance test for it. We'll be using Junit for unit testing and will have it automated with Jenkins.

### User Stories & Acceptance Testing:

1. **User Story:** As a gamer, I want to be able to select the difficulty level so that my interest in the game is retained.

**Acceptance Testing:** When the user begins to play, a window is displayed with three levels-Easy, Medium and Hard. The user can choose a level by clicking a button.

2. **User Story:** As a student, I want to learn the types of errors that might exist in a code so that I can identify them.

**Acceptance Testing:** Once the user debugs the code snippet correctly, he will be shown a window that will provide information about the type of error (syntax error, array out of bounds, etc.) that existed in the code snippet. This way the user will get the knowledge of the type of errors that exist in a program.

3. **User Story:** As a user, I want to be given some hints when I'm stuck with a code so that it helps me in debugging the code.

**Acceptance Testing:** A "Hints" button will be visible to the user above the code snippet while he is debugging. This hint button can be clicked on to view a hint for that specific code snippet.

4. **User Story:** As a gamer, I want the game to be interesting and hence, I would like to have the puzzle divided into different number of pieces based upon my choice, so that there is some level of difficulty in the game.

**Acceptance Testing:** When the user begins to play, a window is displayed with three levels-Easy, Medium and Hard. The user can choose a level by clicking and based on the level selected, the pictures will be divided into 2,4 and 9 pieces respectively. The user can then view the puzzle and its corresponding puzzle pieces.

5. **User Story:** As a student, I want to view the correct code so that if I am not able to debug, I am aware of my mistakes and learn something from those.

**Acceptance Testing:** When the user is debugging the code snippet, a "Give Up" button will be visible to the user (right above the code snippet). This button can be clicked to view the correct solution for the specific code snippet. This will appear in the section where the user was editing the code.

6. **User Story:** As a student, I want to get the ability to run my code so that I can figure out errors in it.

**Acceptance Testing:** While the user is debugging, a “Run” button will be visible to the user above the code snippet. This button can be clicked to run the code and the user will be shown a message - success message if the errors planted are debugged correctly/ the number of errors if the code still contains bugs.

**7. User Story:** As a user, I want to know the time taken by me to debug the code so that I can be competitive.

**Acceptance Testing:** When the user clicks on the puzzle piece, a code snippet to be debugged will be shown and a timer will start.

**8. User Story:** As a user, I want to have the ability to switch to a different puzzle piece so that if I am stuck at fixing a particular error, I can solve the other puzzle and return to the unfixed one later on.

**Acceptance Testing:** On clicking a puzzle piece, the user will be shown the code snippet to debug. If the user wishes to try debugging some other code snippet, he can click on some other puzzle piece. On clicking on another piece, the user will be shown a new code snippet linked to that piece. Hence, the user can switch anytime between puzzle pieces whenever he is stuck with debugging a snippet.

**9. User Story:** As a user, I want to be provided with option of selecting different pictures for the puzzle so that I don't lose interest in the game.

**Acceptance Testing:** When the user selects the level, a default puzzle picture is displayed. The user can click on the puzzle picture to view different picture and can select any of the picture based upon his choice. With each click, the picture gets changed.

**10. User Story:** As a user, I want to be able to have control over the puzzle pieces in the main puzzle frame so that I can set the positioning of the piece in the puzzle.

**Acceptance Testing:** Once the user has debugged all the code snippets linked to the puzzle pieces successfully, he can solve the puzzle. A default puzzle piece will be given. To solve the puzzle, the user can swap between default piece and any of its adjacent puzzle pieces. Hence, when the user clicks on any piece adjacent to the default piece, both the pieces are swapped.

**11. User Story:** As a user, I would like to know about the specifications of the code snippet so that I can understand what I need to do.

**Acceptance Testing:** When the user clicks on the puzzle piece, he will be shown a code snippet to be debugged. Above the code snippet, some statements (specification of the code) will be displayed which will tell the user what the code does. This way it will be easy for the user to understand the code snippet and then he can proceed with debugging the error.

**12. User Story:** As a student, I would want the original code snippet to be visible to me even when I'm making changes in the snippet so that while I am debugging, I know what all changes I have made.

**Acceptance Testing:** When the user clicks on a puzzle piece, he will be shown the original code in a textarea which will be uneditable and right below it, there will be another textarea which will display the code but this will be editable. The user can have a look at the original snippet and modify it in the editable textarea to debug it.