Software Debugging and Refactoring

Name

Student ID

Course Name

Course Code

**Part 1: Bug Fixes**

**Functional Bugs**

|  | **Bug Title** | **Bug Short Description** | **Bug Long Description** | **Severity** | **Fix Time/Link** |
| --- | --- | --- | --- | --- | --- |
| Name | JavaScript text update issue | Text does not update properly causing overlap | The text update function does not clear the element properly, leading to overlap and readability issues. | Medium | **1 hour**/https://github.com/raymondluu/JSScroll/blob/master/index.html |
| Name | Image Slider Creation Issue | Slider creation doesn't handle negative duration values. | The slider creation function does not handle negative duration values properly, which can lead to unexpected behavior. | Medium | 1 hour/ https://github.com/SajibBarua-art/assignmentBugFixing/blob/main/app.js |
| Name | Player Death Detection Issue | Player death detection function returns false. | The isPlayerDead function does not correctly determine if the player is dead, always returning false. | Medium | 30 Mins/https://github.com/ziad-saab/oop-game-project/blob/master/js/kittens.js |

**Non-Functional Bugs (NFR)**

| **Student Name** | **Bug Title** | **Bug Short Description** | **Bug Long Description** | **Severity** | **Fix Time/Link** |
| --- | --- | --- | --- | --- | --- |
| Name | Text color change issue | Text color change function does not alternate properly | The color change function does not alternate colors smoothly, causing inconsistency. | Low | **30 mins**/https://github.com/raymondluu/JSScroll/blob/master/index.html |
| Name | Image Selection Toggle Issue | Image selection toggle does not work as expected. | The image selection toggle function does not toggle the selection state properly, leading to inconsistencies in the selected images. | Low | 30 mins/https://github.com/SajibBarua-art/assignmentBugFixing/blob/main/app.js |
| Name | State Update Handling | Improve State Update Handling in handleClick Method | The handleClick method directly updates the state using this.state, which can lead to issues with state consistency and potential race conditions in concurrent updates. | Low | 15 min/https://github.com/Andrew-CC-Martin/fix-the-bug/blob/main/src/App.js |

**Part 2: Code Refactoring**

**Functional Code (FR) Refactoring**

|  | **Refactoring Code Title** | **Refactoring Type** | **Un-refactored Code** | **Refactored Code** | **Complexity Rate** |
| --- | --- | --- | --- | --- | --- |
| Name | Improve text update function | Functional | function updateText() {  if (words[word\_counter][character\_counter] == " ") {  el.innerHTML = el.innerHTML + "&nbsp;";  character\_counter++;  } else {  el.innerHTML = el.innerHTML + words[word\_counter][character\_counter++];  }  if (character\_counter == words[word\_counter].length + 1) {  word\_counter++;  character\_counter = 0;  el.innerHTML = '';  if (word\_counter == words.length)  word\_counter = 0;  }  } | function updateText() {  if (words[word\_counter][character\_counter] == " ") {  el.innerHTML += "&nbsp;";  } else {  el.innerHTML += words[word\_counter][character\_counter++];  }  if (character\_counter == words[word\_counter].length + 1) {  word\_counter++;  character\_counter = 0;  el.innerHTML = '';  if (word\_counter == words.length)  word\_counter = 0;  }  } | 2 (Low) |
| Name | Optimize Image Slider Creation Function | Functional | if (sliders.length < 2) {  alert('Select at least 2 image.');  return;  } | if (sliders.length < 2) {  alert('Select at least 2 images.');  return;  } | 1 Low |
| Name | Improve Enemy Rendering Performance | Functional | render(ctx) {  ctx.drawImage(this.sprite, this.x, this.y);  } | render(ctx) {  if (this.y < GAME\_HEIGHT) {  ctx.drawImage(this.sprite, this.x, this.y);  }  } | 2 (Low |

**Non-Functional Code (NFR) Refactoring**

|  | **Refactoring Code Title** | **Refactoring Type** | **Un-refactored Code** | **Refactored Code** | **Complexity Rate** |
| --- | --- | --- | --- | --- | --- |
| Name | Optimize color change function | Non-Functional | function changeTextColor() {  if (document.querySelector("#magic").style.color == "rgb(119, 119, 119)") {  document.querySelector("#magic").style.color = "rgb(250, 250, 50)";  } else {  document.querySelector("#magic").style.color = "rgb(119, 119, 119)";  }  } | function changeTextColor() {  var magicElement = document.querySelector("#magic");  var currentColor = magicElement.style.color;  var newColor = currentColor === "rgb(119, 119, 119)" ? "rgb(250, 250, 50)" : "rgb(119, 119, 119)"; magicElement.style.color = newColor;  } | 3 (Medium) |
| Name | Improve State Update Handling in handleClick Method | Non-Functional | handleClick() {  this.setState({ timesClicked: this.state.timesClicked + 1 })  } | handleClick() {  this.setState(prevState => ({ timesClicked: prevState.timesClicked + 1 }));  } | 2 (Low) |