**Validation:**

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| --- | --- | --- | --- | --- |
| **Mechanic Num** | **Description** | **Required** | **Implemented** | **Comment** |
| **Game.1** | Player has 3 lives. A life is lost when the player touches an enemy. | Yes | Yes |  |
| **Game.2** | Require enemies travelling across screen. | Yes | Yes | Implemented 7 enemy types: Crocodile, lorry, car, snake and 3 different race karts. |
| **Game.3** | Game ends when player loses all 3 lives. | Yes | ? | Scores are reset and the level starts again with a text message telling them they’ve died. |
| **Game.4** | When the frog reaches a base at the end of the level the game ends or a new level is begun. | Yes | ? | When the player reaches a base, a marker is put on that base and the player is put back on their starting position, but the level continues. If there is already a marker on the base they jumped on they lose a life.  If the player fills all the bases with markers the game is ended after a screen telling them they’ve won.  (In the video the score threshold for this winning condition was lowered due to difficulty getting to all 10 bases in under 5 minutes while displaying the other game features). |
| **Game.5** | A timer that the level must be completed within or the player instantly loses all their lives. | No | Yes |  |
| **Game.6** | Text UI on the top of the screen telling the player their score, lives left, difficulty stage and time left. |  |  |  |
| **Move.1** | Player must be able to move player left, right, down and up with the arrow keys. | Yes | Yes |  |
| **Move.2** | Player can move player with WASD keys. | No | Yes |  |
| **Area.1** | Pavement ground type (safe) and | Yes | Yes |  |
| **Area.2** | A road area where there are vehicles moving left and right across the screen at different speeds. | Yes | Yes |  |
| **Area.3** | A home area at the top. | Yes | Yes |  |
| **Area.4** | Water area with moving objects like the road but will kill the player if they touch it. Will have platforms the player must jump on to cross this area. | No | Yes |  |

**Verification:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Test Num | Mechanic Num Tested | Description | Positive/Negative | Expected Result | Actual Result | Comment |
| **1** | **Move.2** | Press W Once | Positive | Move up one row. | 🡨 | (Movement tests were done without any objects on the map in center screen). |
| **2** | **Move.2** | Press A Once | Positive | Move left one row’s height. | 🡨 |  |
| **3** | **Move.2** | Press S Once | Positive | Move down one row. | 🡨 |  |
| **4** | **Move.2** | Press D Once | Positive | Move right one row’s height. | 🡨 |  |
| **5** | **Move.1** | Press Up Arrow Once | Positive | Move up one row. | 🡨 |  |
| **6** | **Move.1** | Press Left Arrow Once | Positive | Move left one row’s height. | 🡨 |  |
| **7** | **Move.1** | Press Down Arrow Once | Positive | Move down one row. | 🡨 |  |
| **8** | **Move.1** | Press Right Arrow Once | Positive | Move right one row’s height. | 🡨 |  |
| **9** | **Move.2** | Hold W | Negative | Will likely move up until it reaches approximately the top of the window. | 🡨 | \*Defect 1 |
| **10** | **Move.2** | Hold A | Negative | Will likely move left until it reaches the left edge of the window. | 🡨 |  |
| **11** | **Move.2** | Hold S | Negative | Will likely move down until it reaches approximately the bottom of the window. | 🡨 |  |
| **12** | **Move.2** | Hold D | Negative | Will likely move right until it reaches the left edge of the window. | 🡨 |  |
| **13** | **Move.1 & Move.2** | Press W and A at the same time.  (This will be done to test if the player is able to get to platforms or enemy free spaces diagonal to them when they shouldn’t be able to). | Negative | Ideally nothing will happen or one of the inputs will that was input fractionally faster will be the only effecting input. | **Failed** | \*Defect 2 |
| **14** | **Game.1**  **Game.2**  **Area.2**  **Area.4** | Collide frog with an enemy then restart game. Do this for each enemy and the water. | Positive | Player will lose 1 life, the death animation will play, and they’ll be put back in their starting position. All other output game values will remain the same. | 🡨 |  |
| **15** | **Game.3** | Collide with 3 enemies or the water. | Positive | Player will lose 1 life per collision until on the 3rd the level will restart with the death message displayed at the top of the screen and the game values reset.  Player shouldn’t be able to move while the animation plays. | 🡨 |  |
| **16** | **Game.4** | Collide with each of the winning bases at the top of the screen. | Positive | On each collision a frog marker will be placed on the collided base and the player will be sent back to the start of the level with all their values remaining the same.  If the player collides with an already marked base they’ll lose a life and be sent back to the start like an enemy does.  When all the bases are full the end game screen will show and 2 seconds later the window will close. | 🡨 | \*Defect 3 |
| **17** | **Game.5** | Wait for timer to run out. | Positive | When there’s less than a minute left the text will turn red. When it reaches 0 the level with reset along with all values. | 🡨 |  |
| **18** | **Game.6** | Cout each text output game value to the console. | Positive | The text output should be the same as the console output. | 🡨 |  |

\*Didn’t get time to make graphs.

**Known Defects and Issues:**

The frog moves in leaps/large spaces, and the window barrier is implemented though disabling movement if the frog’s position + its leap would be on outside of the window’s bounds.

1. This means that depending on where on the X-Axis the logs have carried the frog, the frog can be at different distances from the edge throughout the game.
2. Player can move diagonally into safe spaces by pressing 2 keys at once. While difficult to actually do successfully, is still a defect nonetheless.
3. The precision of which base the frog lands on is off because the sprites and therefore bounding boxes are slightly overlapping.

**Testing Method:**

All testing done was white box as I couldn’t find time to organize peer reviewing.

I made the code by a function at a time and tested each upon implementation.

Throughout I kept version control using GitLab so whenever a new feature induced a bug, because I had a backlog and only worked on a function at a time, it was easier to narrow down where the error was.

**Assets Sources:**

**Fonts –** <https://www.1001fonts.com/new-and-fresh-fonts.html?page=7&items=10>

**Sprites –** Konami’s Original Frogger Arcade Game as captured by GARYCXJK.