**Dev Log**

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**Resources used:**

<https://www.youtube.com/watch?v=MCVU0w73uKI>

<https://www.youtube.com/watch?v=apOvF9NVguA>

<https://templatelab.com/user-story-templates/>

<https://www.adobe.com/express/feature/image/transparent-background>

<https://developer.mozilla.org/en-US/docs/Web/API/setTimeout>

<https://noaheakin.medium.com/adding-sound-to-your-js-web-app-f6a0ca728984>

<https://www.classicgaming.cc/classics/space-invaders/sounds>

<https://www.pngegg.com/en/search?q=space+Invaders>

<https://www.online-image-editor.com/>

<https://www.freecodecamp.org/news/javascript-settimeout-how-to-set-a-timer-in-javascript-or-sleep-for-n-seconds/>

<https://developer.mozilla.org/en-US/docs/Web/API/Window/cancelAnimationFrame>

<https://developer.mozilla.org/en-US/docs/Web/API/window/requestAnimationFrame>

<https://www.w3schools.com/jsref/met_win_setinterval.asp>

<https://getbootstrap.com/>

<https://getbootstrap.com/docs/5.3/components/button-group/#button-toolbar>

<https://developer.mozilla.org/en-US/docs/Web/API/Element/children>

<https://www.w3schools.com/html/html_images.asp>

<https://www.w3schools.com/jsref/prop_audio_muted.asp>

<https://stackoverflow.com/questions/14221231/how-to-find-the-relative-path-of-an-image-tag-with-javascript/14221287#14221287>

<https://www.w3schools.com/jsref/met_element_getattribute.asp>

<https://www.w3schools.com/jsref/prop_node_firstchild.asp>

<https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Array/indexOf>

<https://getbootstrap.com/docs/5.3/components/card/>

<https://getbootstrap.com/docs/5.3/utilities/spacing/#margin-and-padding>

<https://stackoverflow.com/questions/38799096/clear-input-fields-on-page-refresh-microsoft-edge>

<https://getbootstrap.com/docs/5.3/forms/overview/>

<https://gomakethings.com/sorting-an-array-by-multiple-criteria-with-vanilla-javascript/>

"Document Object Model" section of the Traversy "Modern JavaScript From the Beginning 2.0 - 2023 Revamp" course on udemy.com : <https://www.udemy.com/course/modern-javascript-from-the-beginning/learn/lecture/37192472?authuser=0#overview>

<https://stackoverflow.com/questions/3955229/remove-all-child-elements-of-a-dom-node-in-javascript>

**GitHub repository link**

https://github.com/kristijanH1998/module-2-js-final-project-kristijan-hornung.git

**Log**

Date: 2/10/2024 (total 1 hr 40 min)

4:20 pm - 6 pm

* Read instructions for project parts 1-11; created Google Drive folder with the Dev Log; created GitHub repository for the project.

Date: 2/11/2024 (total 2 hr)

7:40 pm - 8:30 pm

* watching Space Invaders Game Tutorial on YouTube + coding along. Initial object structure written, player spaceship created with movement ability, player projectiles created.

9:30 pm - 10:10 pm

* watching Space Invaders Game Tutorial on YouTube + coding along. Invaders created and invader grids filled at intervals.

11:35 pm - 12:05 am

* watching Space Invaders Game Tutorial on YouTube + coding along. Player’s ability to shoot projectiles at invaders added.

Date: 2/12/2024 (total 2 hr)

1:15 am - 1:50 am

* watching Space Invaders Game Tutorial on YouTube + coding along. Code written to enable invaders to shoot back at the player.

3 pm - 3:25 pm

* watching Space Invaders Game Tutorial on YouTube + coding along. Enemy explosion code written.

3:35 pm - 4:35 pm

* watching Space Invaders Game Tutorial on YouTube + coding along. Player explosion code added. Invader grid proportion issue fixed.

Date: 2/13/2024 (total 2 hr)

12:40 am - 1:30 am

* watching Space Invaders Game Tutorial on YouTube + coding along. Background stars code written. Lose condition to end the game added.

3:50 pm - 5 pm

* watching Space Invaders Game Tutorial on YouTube + coding along. Score keeping html element with update functionality added, game container dimensions fixed relative to the window.

(end of code-along phase)

(start of implementing my own ideas for the game + other project parts)

Date: 2/13/2024 (total 2 hr 15 min)

5:00 pm - 5:30 pm

* Updating Developer Log

9:30 pm - 10:00 pm

* Drawing a sketch of the space invaders final project game on Figma

10:30 pm - 11:45 pm

* Drawing UI wireframes for space invaders game project on Figma

Date: 2/14/2024 (total 1 hr 15 min)

5:00 pm - 5:50 pm

* writing the MVP Outline document for final project; watching tutorials for user stories

7:10 pm - 7:35 pm

* Finished writing the MVP Outline document for final project.

Date: 2/15/2024 (total 8 hr 20 min)

1:25 am - 2:20 am

* reading and familiarizing with the existing code of Space Invaders game app for final project

2:25 am - 6:15 am

* making asteroids and planets fly over the canvas of Space Invaders game app

3:15 pm - 5:30 pm

* Added planets, edited planet images, added code to enable player to shoot at asteroids

7:40 pm - 8:30 pm

* Added more planet images to the canvas; fixed z-index bug involving objects on the canvas

9:20 pm - 9:50 pm

* Improved planet respawn time, location, and velocity

Date: 2/16/2024 (total 5 hr 10 min)

12:15 am - 2:00 am

* Implemented sound effects in the game (for events: invader destroyed, invader fires at player, player fires, played explodes, asteroid explodes)

4:40 am - 5:50 am

* Asteroid respawn mechanics (time, location, velocity) randomized

7:40 pm - 8:45 pm

* Updating Dev Log and enabling leveling up functionality in Space Invaders game project

11:30 pm - 12:40 am

* code written for invader design changes as user levels up

Date: 2/17/2024 (total 2 hr 35 min)

2:30 am - 3:15 am

* spacing between invaders in a grid changed; invader fire rate and x-axis movement speed increase as level increases

3:40 pm - 5:30 pm

* code written to make asteroids change design and asteroid count increases as level increases

Date: 2/18/2024 (total 1 hr 30 min)

3:30 am - 5:00 am

* bugs with asteroid count increase fixed; asteroid speed now made to increase with leveling up

Date: 2/19/2024 (total 2 hr 40 min)

12:25 am - 3:05 am

* bosses added to the game; bosses movement on x-axis constrained within bounds; leveling up and new invader grids disabled from spawning on boss levels

Date: 2/20/2024 (total 0 hr 0 min)

Date: 2/21/2024 (total 3 hr 45 min)

2:25 am - 3:45 am

* Boss 1 on Level 6 now shoots projectiles at the player

2:20 pm - 4:00 pm

* bosses can now be damaged and destroyed by player's projectiles

9:35 pm - 10:20 pm

* leveling up now occurs at fixed time intervals (every 1 min), instead of depending on the current score

Date: 2/22/2024 (total 4 hr 35 min)

12:00 am - 1:00 am

* bosses explode with larger explosion particles; they also have specified endurance (how many projectiles they can take before being killed)

4:10 am - 5:15 am

* boss 2 laser implemented

4:00 pm - 6:00 pm

* boss 2 now shoots both inner laser and outer projectiles

11:00pm - 11:30pm

* boss 2 projectiles dimensions changed; bug fixed that prevented outer projectiles to reach bottom of canvas

Date: 2/23/2024 (total 0 hr 55 min)

1:00 am - 1:55 am

* html element displaying player's remaining lives added and updates when player is hit by projectiles or asteroids

Date: 2/24/2024 (total 1 hr 5 min)

1:30 am - 2:35 am

* lives html element created with 3 lives for the player on normal difficulty; lives drop when player is hit by enemy objects

Date: 2/25/2024 (total 2 hr 10 min)

3:30 am - 5:40 am

* graphical effect of player flickering if hit while having more than 0 lives remaining implemented; menu button created using Bootstrap

Date: 2/26/2024 (total 4 hr 10 min)

3:30 am - 5:50 am

* menu UI created with buttons using Bootstrap; New Game, Options, and Menu buttons functionality implemented

4:40 pm - 5:20 pm

* back buttons implemented for Options and sub-Options menu interfaces

11:55 pm - 1:05 am

* canvas background color customization enabled from Options menu

Date: 2/27/2024 (total 3 hr 10 min)

2:05 am - 3:10 am

* sound setting on/off enabled to mute or unmute all event sounds

6:00 am - 7:20 am

* spaceship design customization enabled from the Options menu

11:30 pm - 12:15 am

* Game Over made to display when player loses all lives remaining

Date: 2/28/2024 (total 2 hr 40 min)

1:15 am - 3:05 am

* 'You Won' text now displays when player destroys last boss; Continue button separated from New Game button; Difficulty Levels added to choose at the start of the game

9:50 pm - 10:40 pm

* Difficulty selection menu opens after user clicks New Game, with three difficulties available which determine how many lives player has

Date: 2/29/2024 (total 1 hr 40 min)

1:15 am - 2:15 am

* Help button fully functional (from Menu); all Instructions written for users that explain how the game should be played; Instructions accessible by clicking on Help button

2:15 am - 2:55 am

* Updating Dev Log

Date: 3/1/2024 (total 6 hr 35 min)

2:20 am - 3:05 am

* bug fixed that allowed user to start the game with 0 or undefined number of lives, by selecting New Game, skipping difficulty selection by clicking on Main Menu button, and then starting a new game again

2:20 am - 2:35 am

* Updating Dev Log

4:50 am - 6:25 am

* username input form at difficulty selection step implemented

11:40 pm - 3:40 am

* scores now save to local storage when user wins the game; scores are now sorted in local storage first by the difficulty level (Hard level followed by Medium followed by Easy), then by actual score value (integer); main menu UI and its sub-menus centrally positioned on the canvas; ul list created and visible after clicking on High Scores button; bug fixed that froze the application when boss2's laser shot the player; scores from local storage now display in the High Scores list but not yet with relevant data visible; on High Scores list all scores now show username, score value, and difficulty the score was achieved on