

ESPACIO 2.5D SHOOTER GAME

A PROJECT REPORT

Submitted by

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1. About

I. Game overview:

Title: Espacio

Platform: PC (Windows OS x64,x86)

Genre: Shoot 'em up

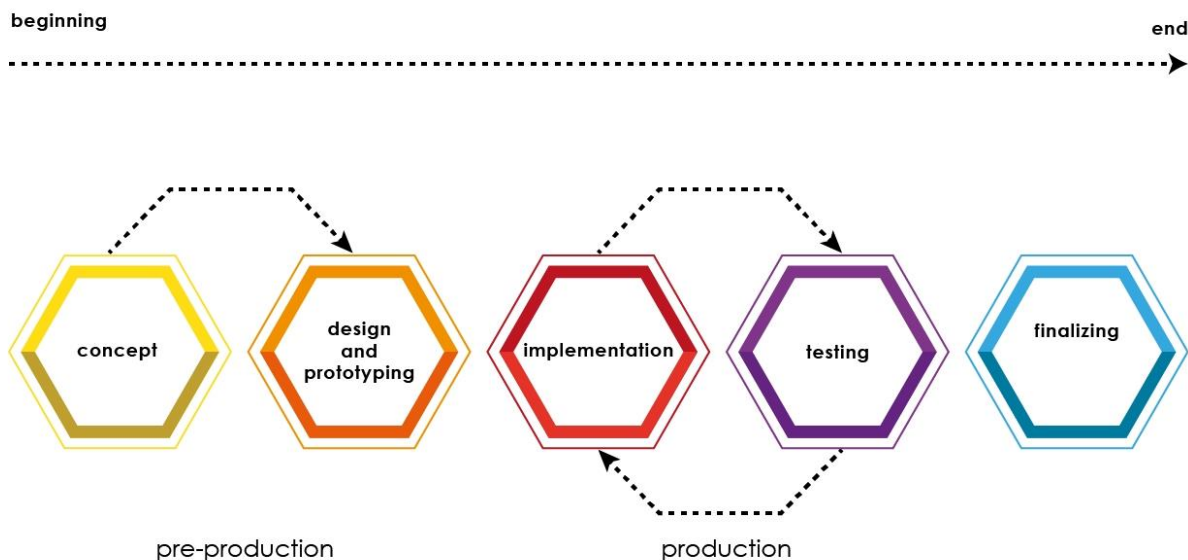
Target: Casual gamer (aging from 12 - 30)

Developed with: Unity game engine

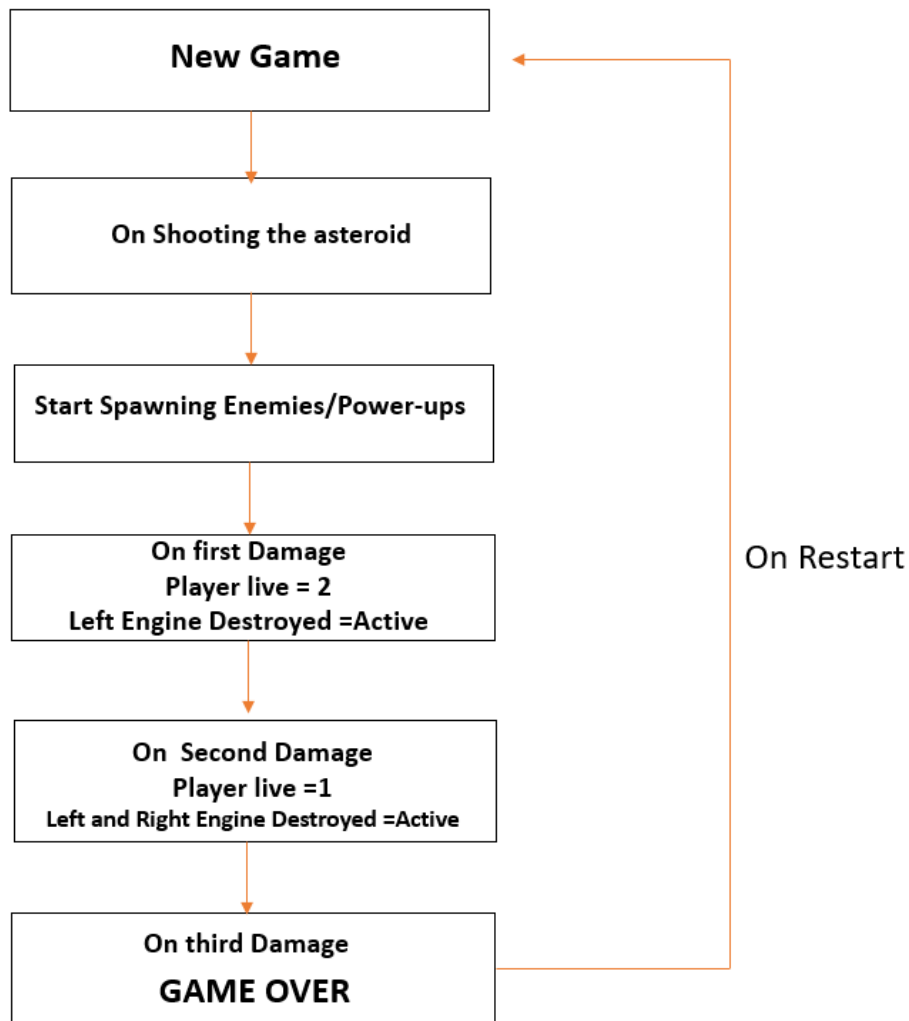
I. Abstract:

- Espacio means space in Spanish.
- As the name reflects its 2.5D space shooter game where the player will be controlling the space ship and destroying the enemies.
 - In the game there will certain power ups coming which will provide player with the weapon advantages, speed advantages and protection from enemies attack for a certain span of time.
- Player will equipped with 3 lives and no extra lives is provided or added during gameplay and lives will keep on decreasing on colliding with Obstacles, Enemies space ship and Enemies laser weapon.
 - Gameplay is stopped when reaches to 0 lives.
- The score will be based on how long the player lasts and number of enemies destroyed.

2. Methodology Adopted

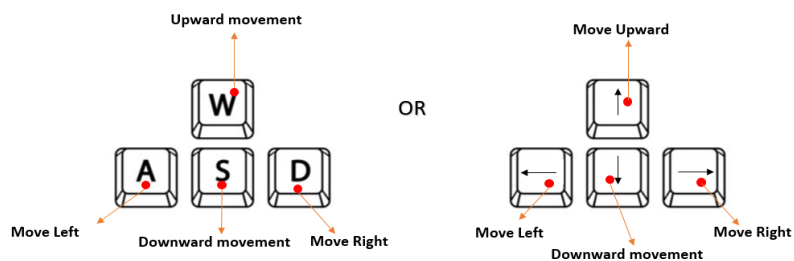


3. Game Structure



4. Gameplay Controls

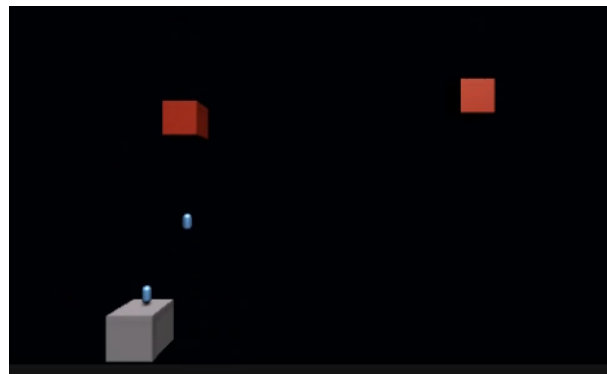
MOVEMENT



Shooting



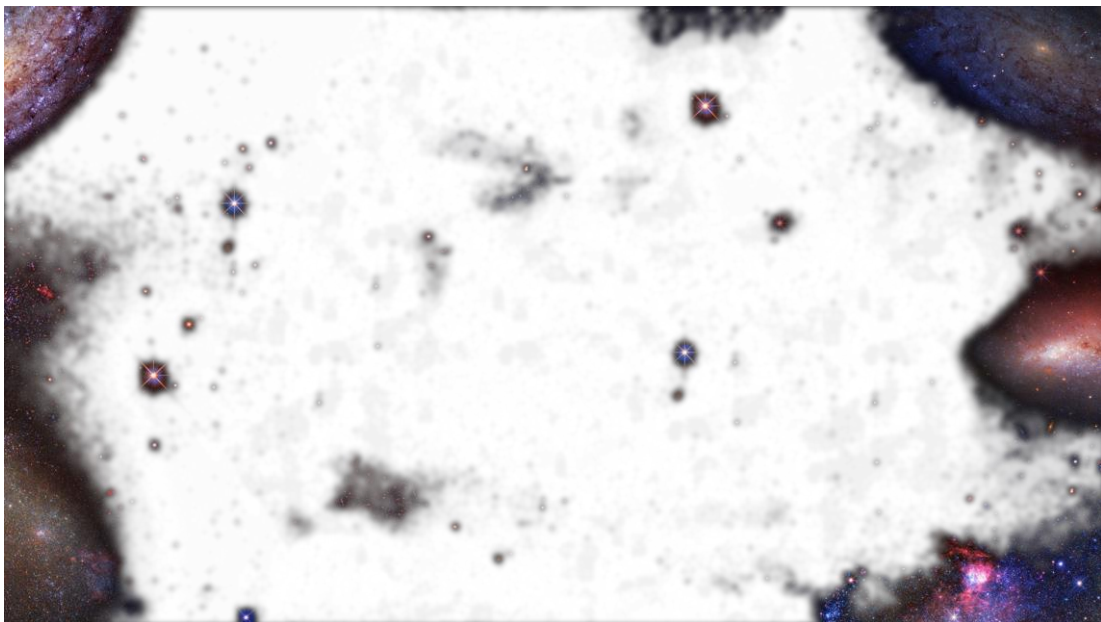
5. Prototype



- The above images are the prototypes that are created before overlaying the 2D sprites and background.

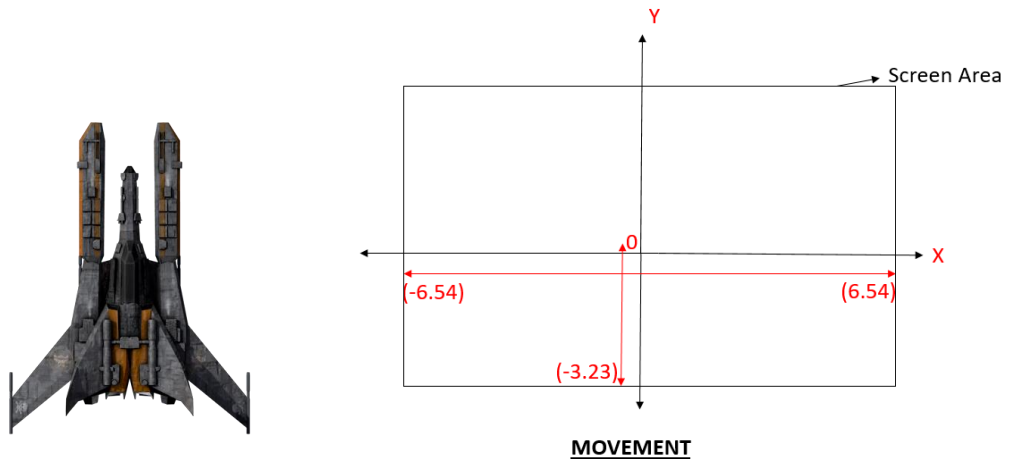
6. Mechanics

I. Background :



- The above image serves as the background for the game.

II. The player:



a) MOVEMENTS

- The player has the movements “Vertical” and “Horizontal”.
- The player is restricted movement on horizontal axis 6.4 and -6.54 on the screen on reaching these coordinates the player is transformed to the opposite side.
Ex- on reaching 6.4 player is transformed to -6.4 and vice versa.
- The player is restricted to go beyond “0 upside” and “-3.23 downside” on the vertical or X axis.

b) WEAPON (**Prehab**):

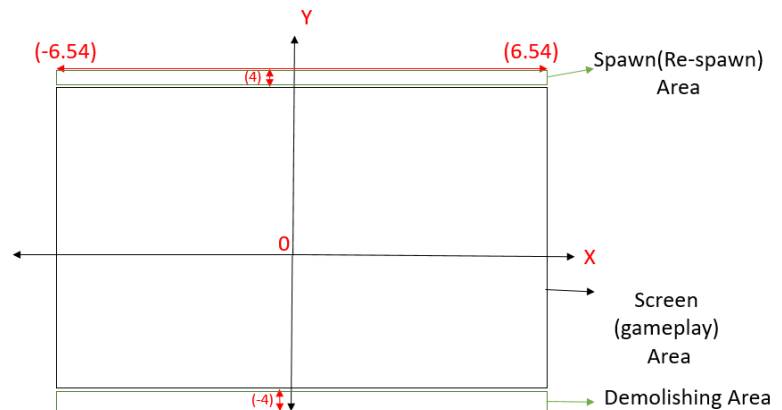


- By default enemy is equipped with the above weapon (single shot laser).
- The player is able to shoot the laser every 0.15 seconds on pressing the “space” key.
- Weapon is multiplied on collecting the power-ups.

c) POWER UPS

- The player will be equipping different power ups on colliding with the power up objects.
- The powers include
 - i. 3 laser shot for 5 seconds.
 - ii. Speed boost for 5 seconds.
 - iii. Shield for 10 seconds.

III. The Enemy(Prehab):



SPAWN(RE-SPAWN) AREA (for Enemies and powers-ups)

a) SPAWNING

- The enemy is spawned on X axis randomly which ranges between 6.54 and -6.54 coordinated on the screen.
- The payer's death the enemy stops spawning.

b) MOVEMENT

- The enemy moves downwards after being spawned on 4 on Y axis.
- If the player misses and enemy reaches to the -4 on Y axis safely then it's respawned to 4 on y axis and randomly between 6.54 and -6.54 on X axis.

c) ENEMIES' WEAPON (Prehab):



- After enemies are spawned Lasers are fired by them towards down.
- Lasers are fired with the time difference between 3 to 7 seconds and with the speed of 5f.

IV. Triple shot (3 laser power-up) (Prehab):



a) SPAWNING and FEATURE

- The triple shot power-up is spawned randomly after 8 to 12 seconds time between 6.54 and -6.54 on X axis.
- It has Array index [0] in the power-up script.
- On collecting the power up the player gets ability to 3 lasers at a time for 5 seconds having time interval 0.15 seconds.

b) ANIMATION

- Triple Shot is animated using multiple colours of similar 2D sprites so that it appears as glowing in the screen.

V. Speed Power-up (Prephab):



a) SPAWNING and FEATURE

- The triple shot power-up is spawned randomly after 8 to 12 seconds time between 6.54 and -6.54 on X axis.
- It has Array index [1] in the power-up script.
- On collecting the power up the player movement speed will be doubled.

b) ANIMATION

- Triple Shot is animated using multiple colours of similar 2D sprites so that it appears as glowing in the screen.

VI. Shield Power-up (Prephab):



a) SPAWNING and FEATURE

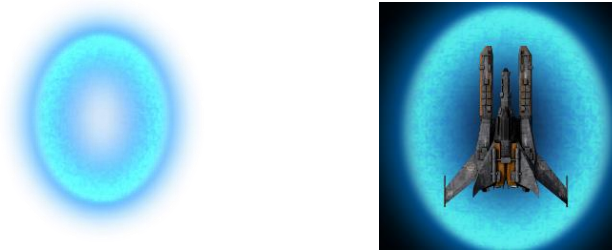
- The triple shot power-up is spawned randomly after 8 to 12 seconds time between 6.54 and -6.54 on X axis.

- It has Array index [2] in the power-up script.
- On collecting the power up the player will be protected from any damage once.
- The power will be active for 10 seconds after collecting

b) ANIMATION

- Triple Shot is animated using multiple colours of similar 2D sprites so that it appears as glowing in the screen.

c) SHIELD VISUALIZATION:



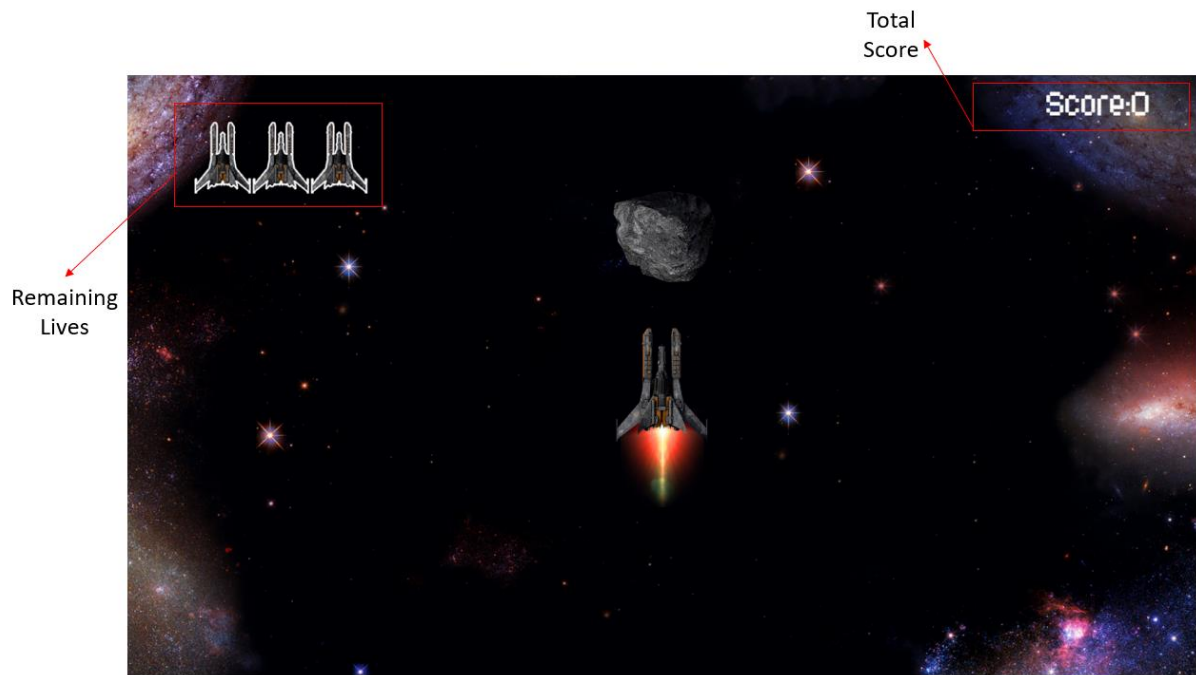
- On collecting the shield power the ring around the player will be active unless the power will be active.

7. User Interface (UI)

a) MAIN MENU



b) GAME WINDOW



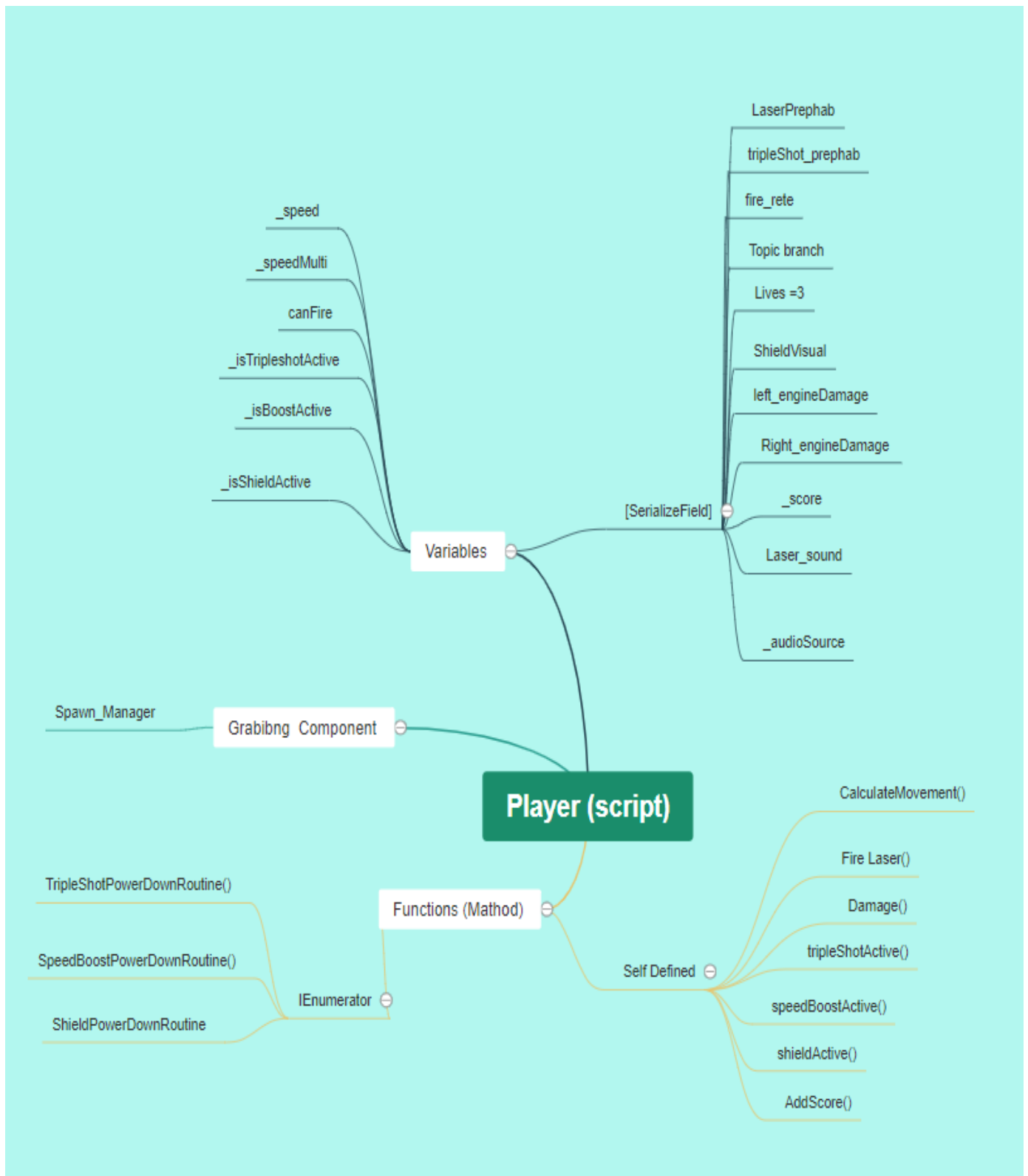
c) On GAME OVER



8. Script Details

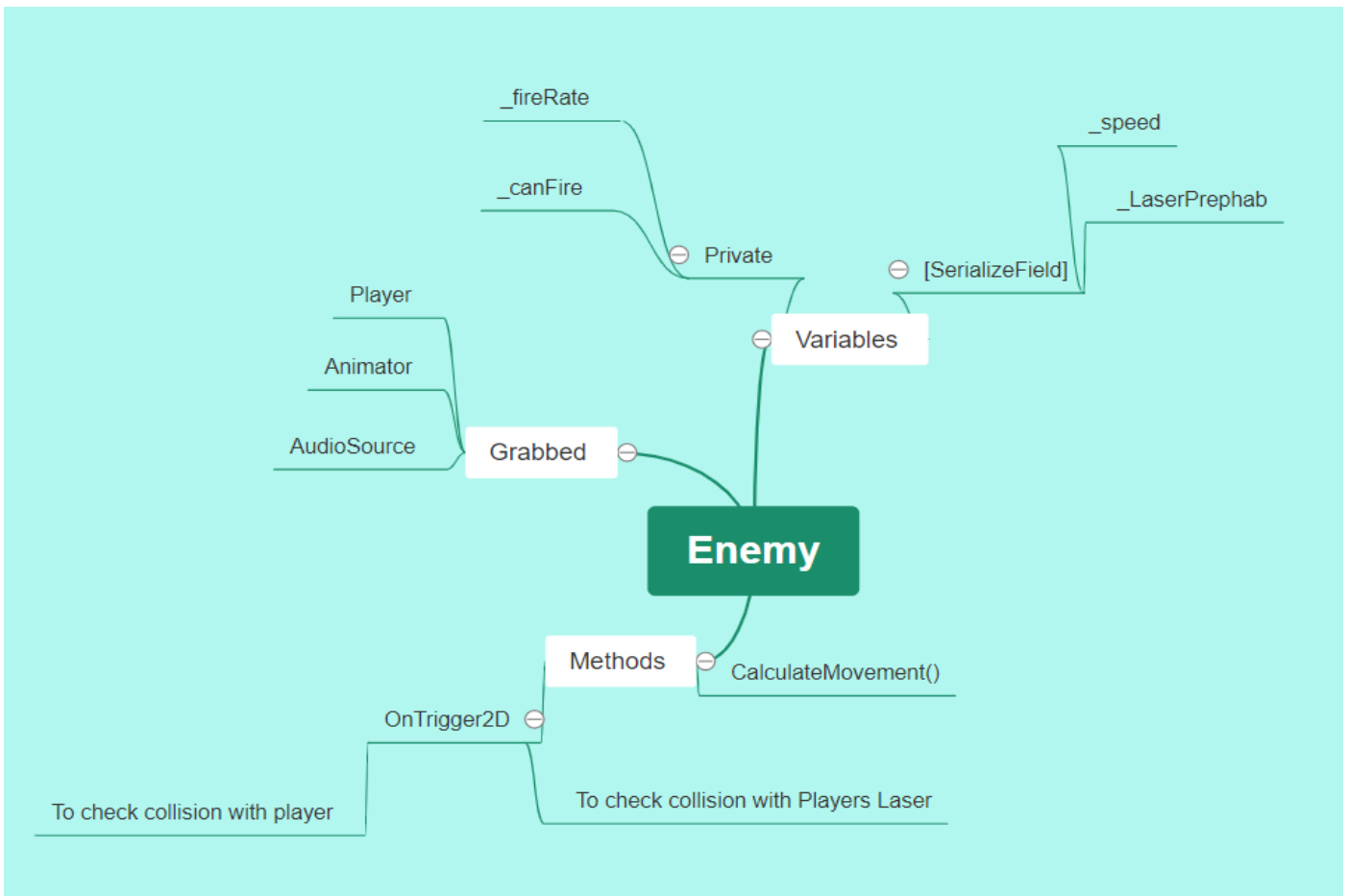
I. Player

➤ Attached to Player.



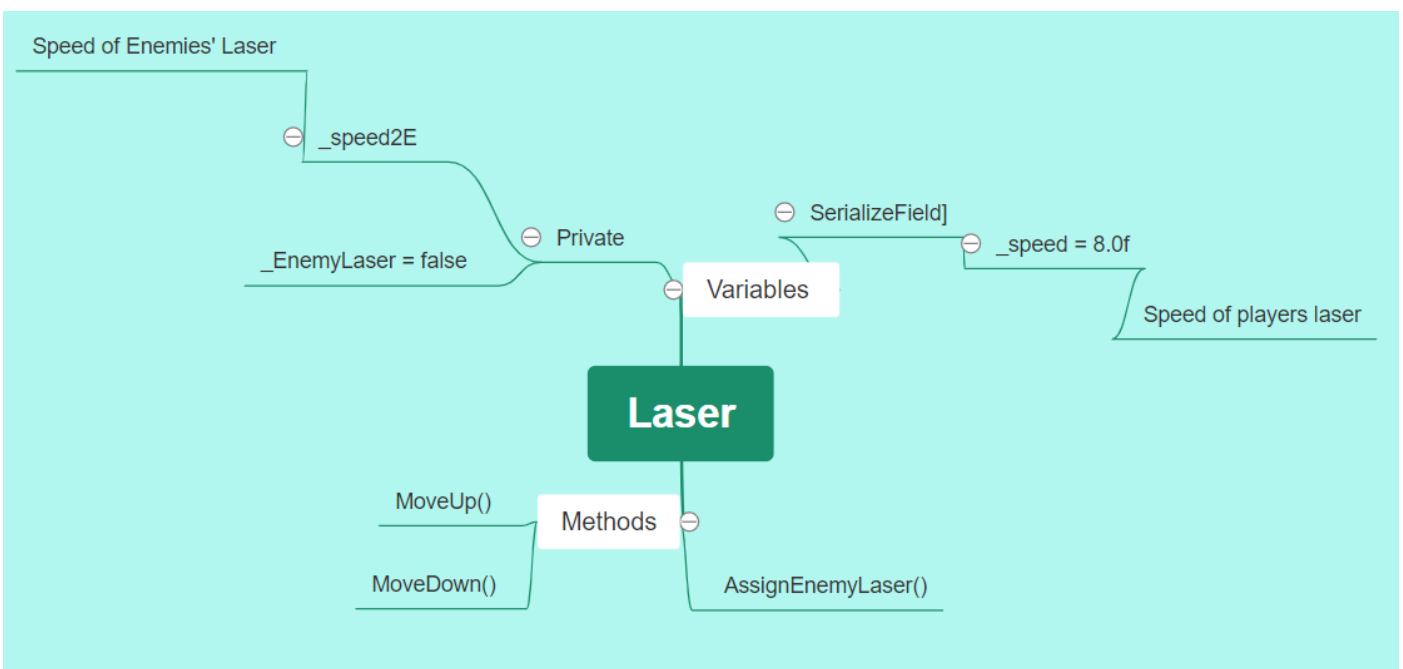
II. Enemy

➤ Attached to Enemy Prehab.

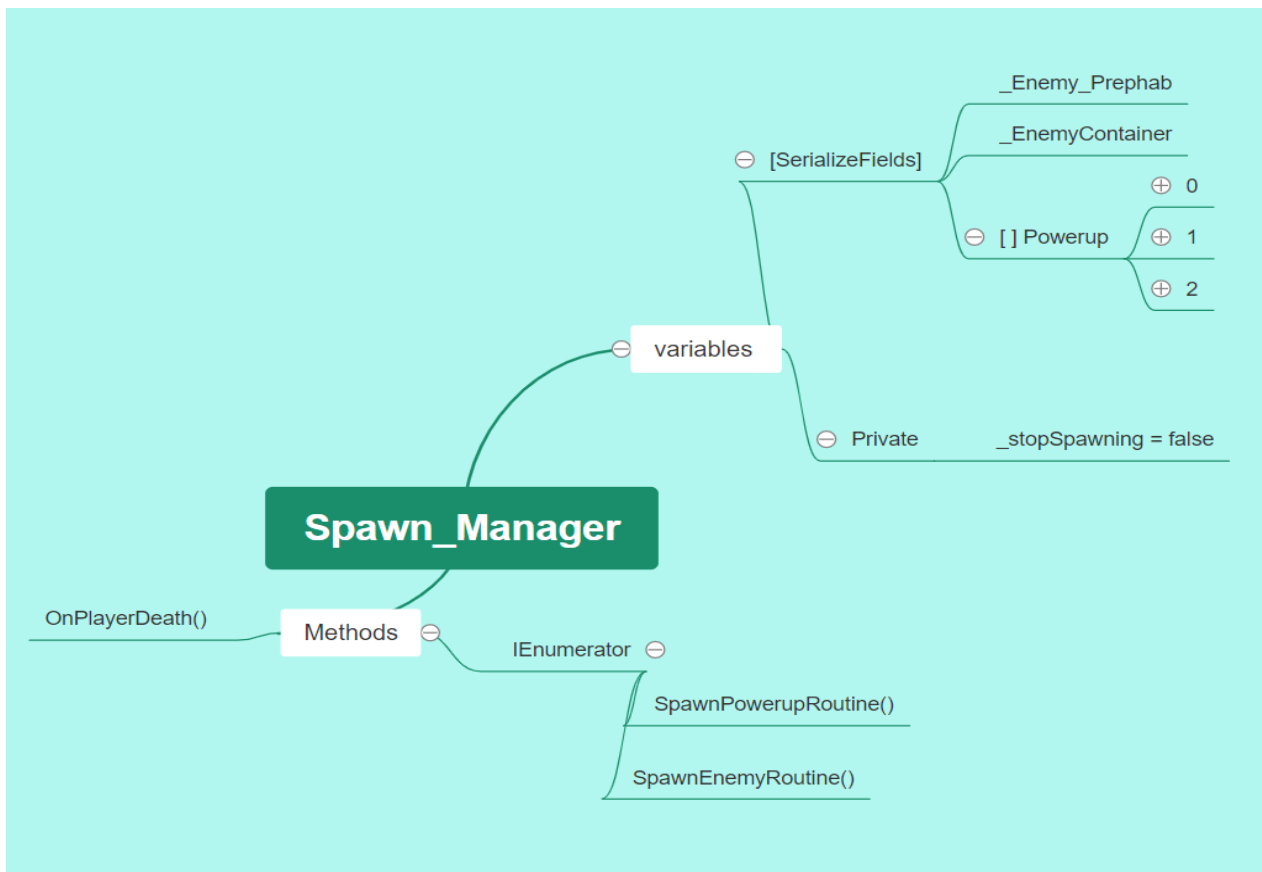


III. Laser

➤ Attached to Laser Prehab.

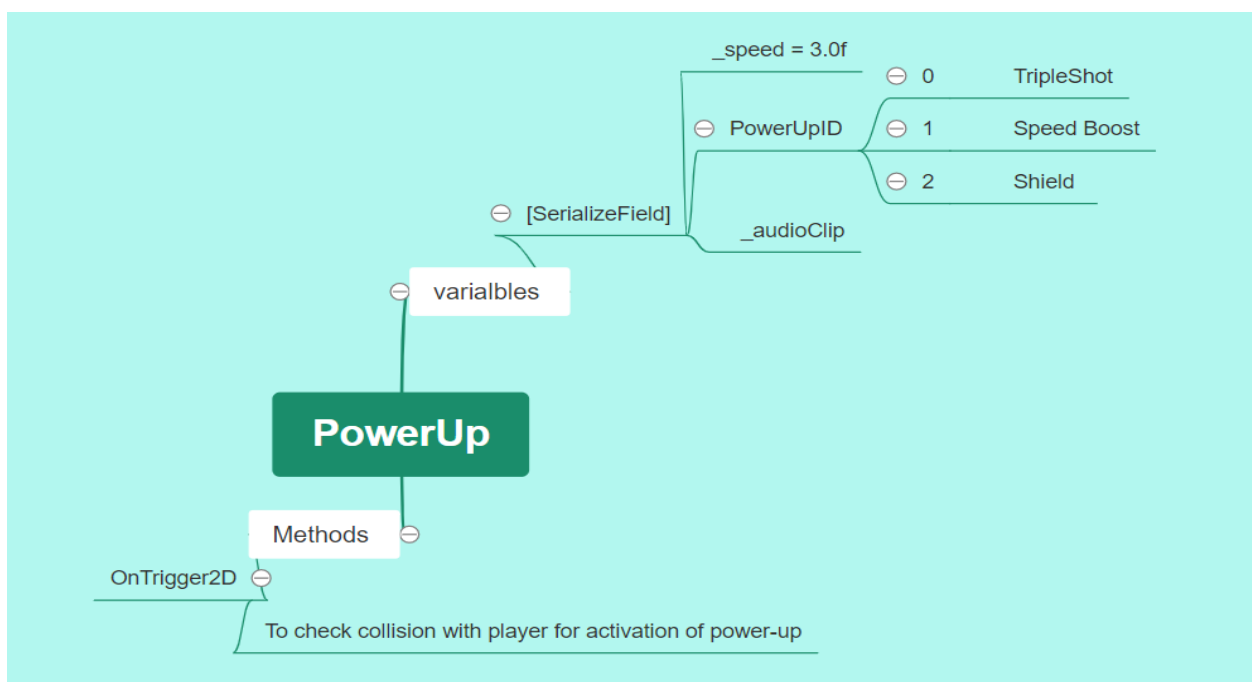


IV. Spawn_Manager



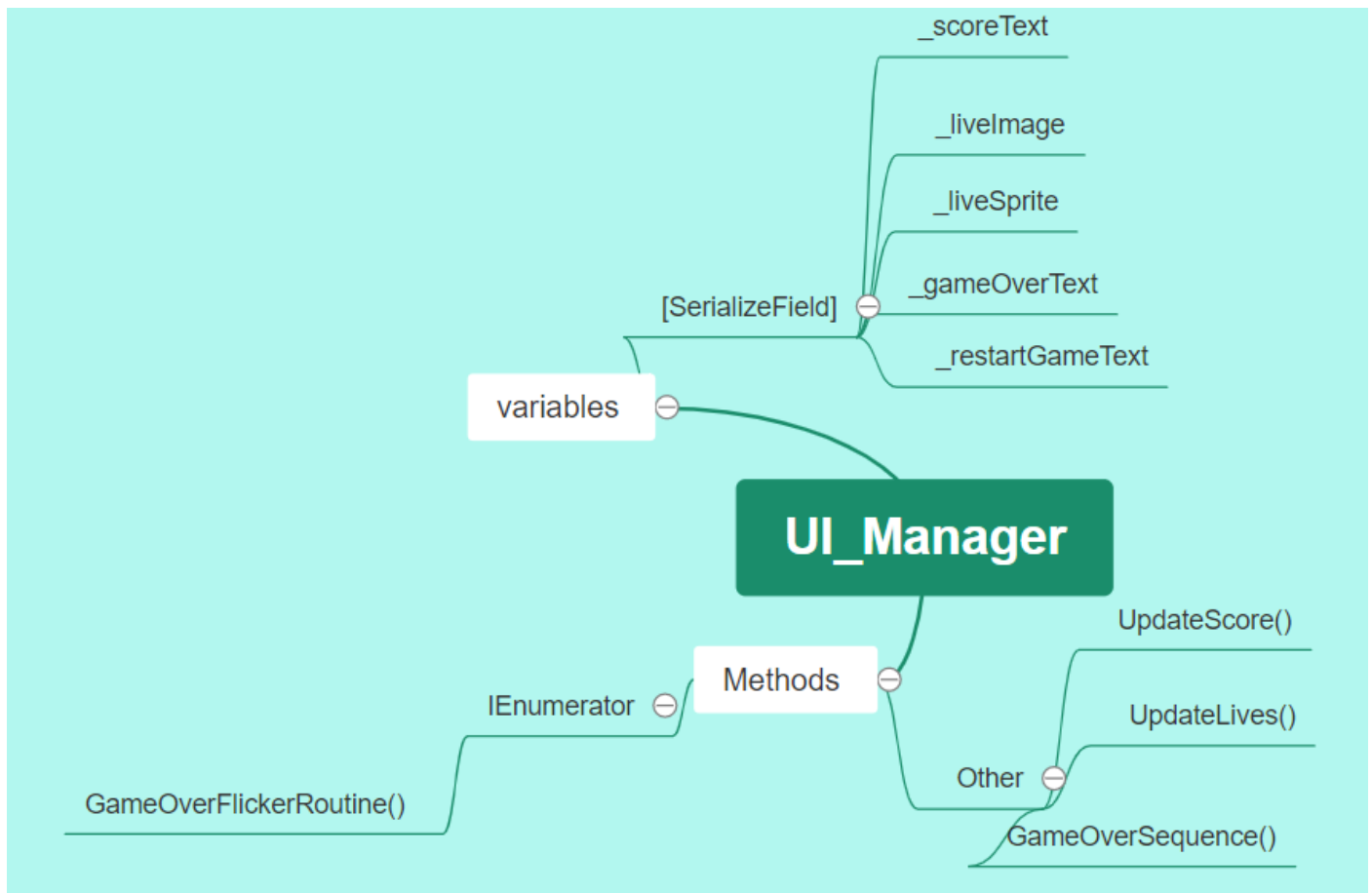
V. PowerUp

- Attached to all Power-up Prehabs.



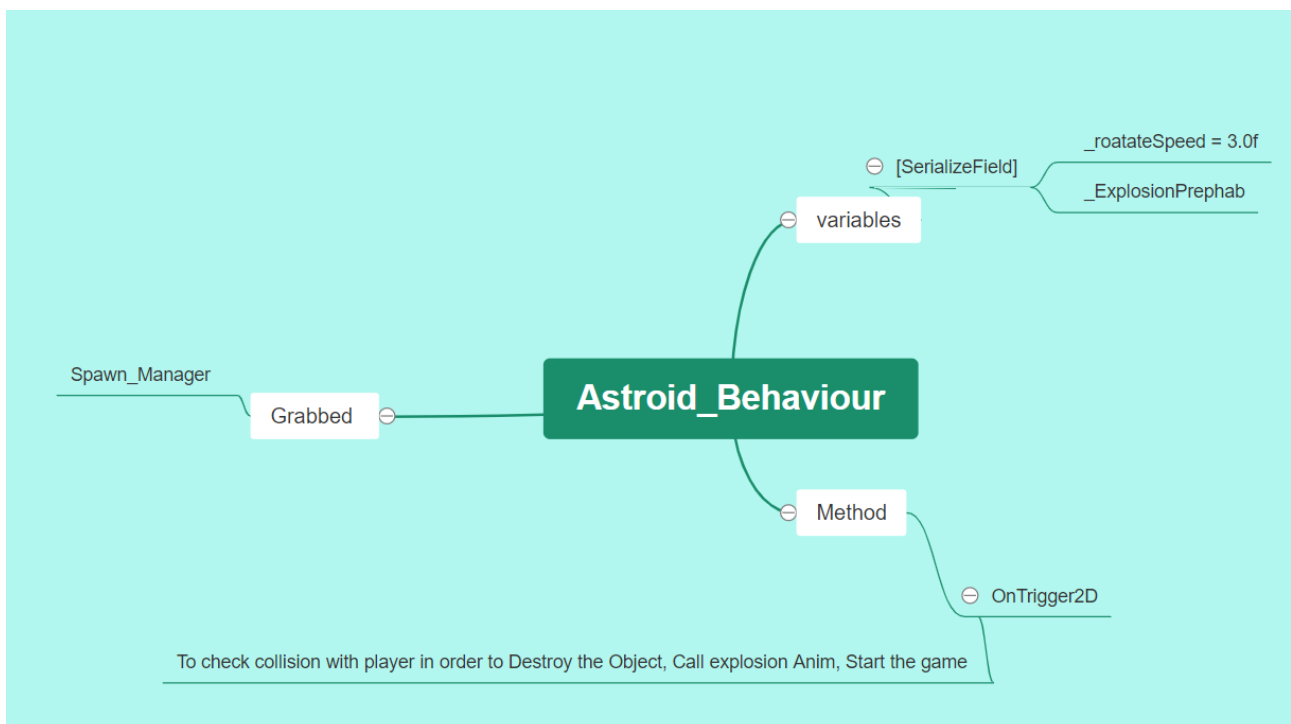
VI. UI_Manager

- Attached to empty object UIManager.



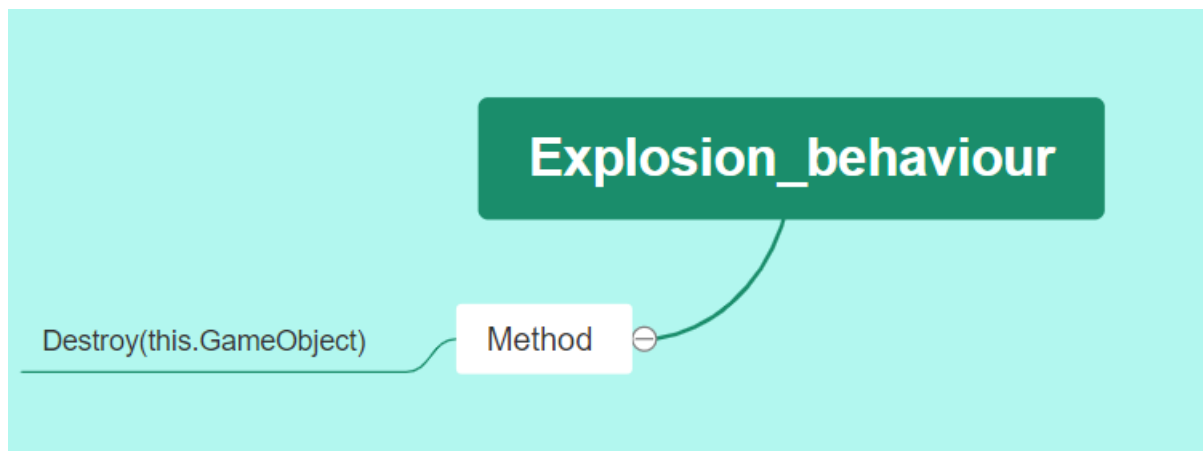
VII. Astroid_Behaviour

- Attached to Asteroid Prephab.



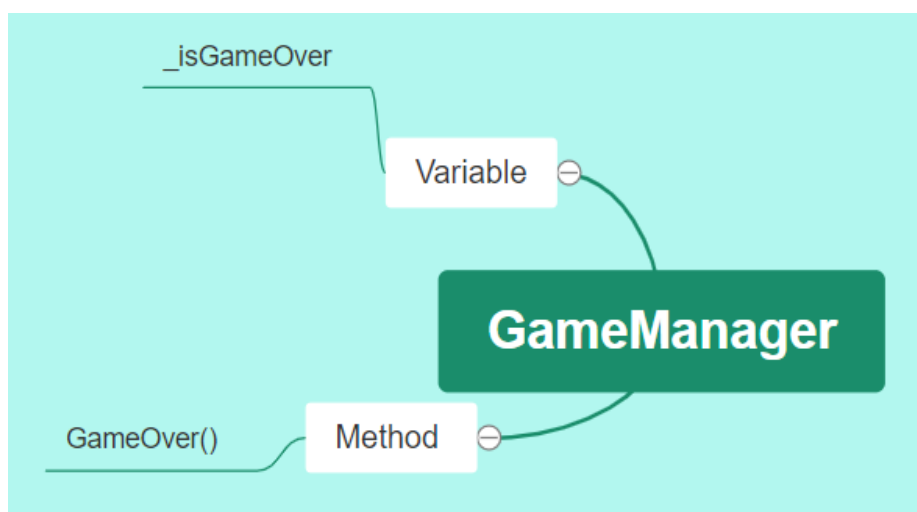
VIII. Explosion behaviour

- Attached to Explosion Prehab.



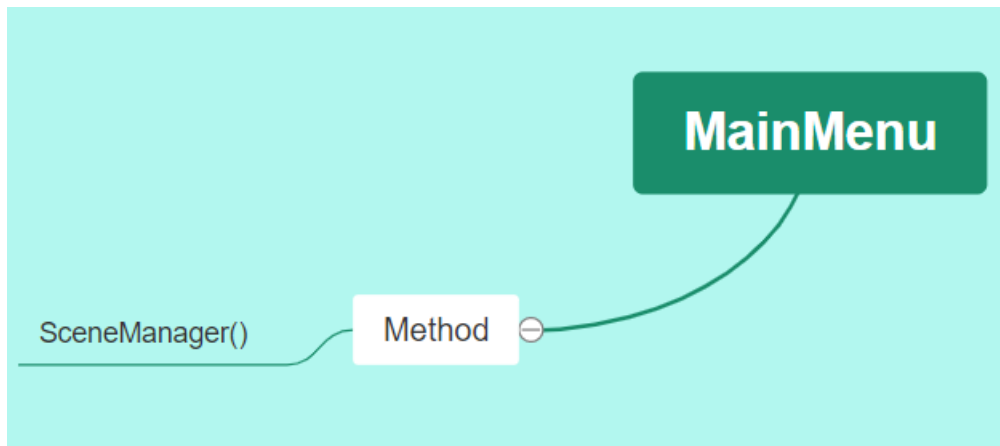
IX. GameManager

- Attached to Canvas of Scene 1 .



X. MainMenu

- Attached to Canvas of Scene 0.



9. References

1. **GameDevHQ Discord Server.**
2. **Unity Documentations.**
3. **Jonathan Weinberger's YouTube Videos and courses.**
4. **Brackeys YouTube videos**