Iterium Documentation



Revision: 2

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# Game Description

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| --- | --- |
| Genre | Top-down space shooter |
| Theme | 1980s Arcade |
| Perspective | 2.5D |
| Game engine | Unity (version 2021.3.15f1) |
| Scripting language | C# |
| Build targets | WebGL – Desktop browsers |
| License | Open source |

1. Unity Project Folder Structure

|  |  |
| --- | --- |
| **Assets path sub folders** | **Description** |
| 3DModels | Ship and asteroid models |
| 3DModels/Bullets | Bullet models |
| 3DModels/Crystal | Iterium crystal model |
| 3DModels/Environment | Planet model |
| 3DModels/Materials | All model materials |
| 3DModels/Textures | All model textures |
| Animations | Animator/timeline files |
| Fonts | Font files |
| Images | Sprites for UI |
| Plugins | .wslib JavaScript plugin |
| Prefabs | All prefabs |
| RenderTextures | RenderTextures used to display models and shader graph progress bars |
| Scenes | All Unity scenes |
| ScriptableObjects | Created assets that hold the data |
| ScriptableObjects/Bullets | 3 levels of bullets per faction, Xoid bullet |
| ScriptableObjects/Characters | Faction characters and their ship SO, Xoid character |
| ScriptableObjects/Common | Common data and lists |
| ScriptableObjects/Common/Faction Types | Faction and NPC types |
| ScriptableObjects/Common/Lists | Lists of GameObjects and factions |
| ScriptableObjects/Common/Sound | Lists of sound effects and music |
| ScriptableObjects/Players | Player and AI data, holds the selected faction character SO |
| ScriptableObjects/Ships | Ship data, hold the ship bullet SO. |
| Scripts/ | All C# scripts |
| Scripts/Characters | Player controllers, leaderboard, bullets, iterium |
| Scripts/General | Utility script like rotating an object |
| Scripts/Managers | Game and sound managers, object pooling |
| Scripts/Save System | Save/load system |
| Scripts/ScriptableObjects | ScriptableObject scripts |
| Scripts/Spawning | Player/AI/NPC spawners and de-spawners |
| Scripts/UI | UI scene scripts (UI Toolkit) |
| Settings | URP render pipeline assets |
| Settings/Import | Assets import templates |
| Settings/Input System | Input system asset (New Input System) |
| Settings/Renderer | URP renderers |
| Settings/Sound | Sound/music mixer |
| ShaderGraphs | Effects for ship thrust, progress bars |
| Sounds | All audio files |
| Sounds/Effects | Sound effect files |
| Sounds/Music | Music files |
| UI | UI Toolkit files |
| UI/Documents | UI Toolkit Documents (UXML) |
| Styles | UI Toolkit styles (uss) |
| UI Toolkit | UI Toolkit themes |
| WebGL Templates | WebGL custom loader (HTML) |

# Classes & Assemblies

|  |  |  |  |
| --- | --- | --- | --- |
| **Class Name** | **Description** | **Derived From** | **Assembly** |
| AIController | Controls AI movement, shielding, firing etc. | MonoBehaviour | Assembly-CSharp |
| PlayerController | Controls player movement, shielding, firing etc. | MonoBehaviour | Assembly-CSharp |
| NPCController | Controls movement and firing for Xoid UFO | MonoBehaviour | Assembly-CSharp |
| BulletBase | Bullet base class, asteroid destruction, bullet explosions, iterium drop etc. | MonoBehaviour | Assembly-CSharp |
| Bullet | Player bullet, collision detection | BulletBase | Assembly-CSharp |
| BulletAI | AI bullet, collision detection | BulletBase | Assembly-CSharp |
| BulletNpc | Xoid bullet, collision detection | BulletBase | Assembly-CSharp |
| Iterium | Collision detection, score & xp | MonoBehaviour | Assembly-CSharp |
| SO\_Leaderboard | List<> of LeaderboardItem | ScriptableObject | Assembly-CSharp |
| LeaderboardItem | Leaderboard item fields |  | Assembly-CSharp |
| AsteroidPooling | Asteroid spawn/de-spawn object pooling | MonoBehaviour | Assembly-CSharp |
| BulletPooling | Bullet spawn/de-spawn object pooling | MonoBehaviour | Assembly-CSharp |
| ExplosionPooling | Explosion spawn/de-spawn object pooling | MonoBehaviour | Assembly-CSharp |
| Singleton | Singleton<T> base class | MonoBehaviour | Assembly-CSharp |
| GameManager | Player/AI objects, save/load, xp/level calculation, game settings, leaderboard, etc | Singleton<T> | Assembly-CSharp |
| SoundManager | Playing of sounds and music | Singleton<T> | Assembly-CSharp |
| InputManager | Device input for fire, thrust, rotate, shield etc. | MonoBehaviour | Assembly-CSharp |
| PlayMusic | Play sound effect by index from the SoundManager | MonoBehaviour | Assembly-CSharp |
| FileSaveHandler | Load/save serialized JSON data to a file, 3 files for player/AI/Leaderboard |  | Assembly-CSharp |
| SaveData | Player/AI save data fields |  | Assembly-CSharp |
| AISpawner | Spawn the AI prefab after a set time | MonoBehaviour | Assembly-CSharp |
| AsteroidSpawner | Spawn asteroid prefabs at set intervals | MonoBehaviour | Assembly-CSharp |
| DeSpawnAsteroid | Release asteroid to pool when leaving the screen | MonoBehaviour | Assembly-CSharp |
| DeSpawnExplosion | Release explosion after a set time | MonoBehaviour | Assembly-CSharp |
| GameOverSpawner | Spawn selected ship on the game over scene | MonoBehaviour | Assembly-CSharp |
| NPCSpawner | Spawn xoid UFO at set intervals | MonoBehaviour | Assembly-CSharp |
| PlayerSpawner | Spawn player prefab after a set time | MonoBehaviour | Assembly-CSharp |
| UI\_Button | Generic button script to load a scene | MonoBehaviour | Assembly-CSharp |
| UI\_FactionSelection | UI for the faction selection scene | MonoBehaviour | Assembly-CSharp |
| UI\_Game | UI for gameplay scene | MonoBehaviour | Assembly-CSharp |
| UI\_GameOver | UI for game over scene | MonoBehaviour | Assembly-CSharp |
| UI\_Leaderboard | UI for the leaderboard scene | MonoBehaviour | Assembly-CSharp |
| UI\_LoadUpgradeScene | Button script to load the upgrade scene | MonoBehaviour | Assembly-CSharp |
| UI\_Profile | UI for the player profile scene | MonoBehaviour | Assembly-CSharp |
| UI\_QuitGame | Button script to quit the application | MonoBehaviour | Assembly-CSharp |
| UI\_Settings | UI for the settings scene | MonoBehaviour | Assembly-CSharp |
| UI\_Tutorial | UI for the tutorial scene | MonoBehaviour | Assembly-CSharp |
| UI\_Upgrade | UI for the upgrade scenes | MonoBehaviour | Assembly-CSharp |
| CameraZoom | Zoom camera when starting the play scene | MonoBehaviour | General |
| PlaySFXDelay | Play a AudioSource with a delay | MonoBehaviour | General |
| Rotate | Rotate any GameObject, example asteroids | MonoBehaviour | General |
| SO\_Bullet | Bullet data, speed, firepower, prefab | ScriptableObject | SO |
| SO\_Character | Faction character, SO\_Ship, faction id | ScriptableObject | SO |
| SO\_Factions | List<SO\_Character> of factions | ScriptableObject | SO |
| SO\_GameObjects | List<GameObject> asteroids, explosions, iterium | ScriptableObject | SO |
| SO\_NPC | NPC data, Xoid ship | ScriptableObject | SO |
| SO\_Player | Player/AI data, score, xp, health, lives, upgrades, SO\_Character | ScriptableObject | SO |
| SO\_SFX | List<AudioClip> sound effects | ScriptableObject | SO |

|  |  |  |  |
| --- | --- | --- | --- |
| SO\_Ship | Ship data, SO\_Bullet, speed, shield power, prefab, SO\_Types | ScriptableObject | SO |
| SO\_Types | Generic types or categories | ScriptableObject | SO |