

Project 9: Arcade-Style Space Game

Names: Asaf Ramati, Noam Hasson

RUNI Email: asaf.ramati@post.runi.ac.il , noam.hasson01@post.runi.ac.il

Concept / Idea -

Nand Invaders is an arcade-style space shooter where players pilot a spaceship through a galaxy filled with asteroids and hostile alien invaders. The game consists of five progressively challenging levels, each requiring players to maneuver their spaceship, avoid obstacles, and use projectiles to eliminate enemies. With a scoring system to track performance, Nand Invaders challenges players to test their reflexes and strategic thinking.

Architecture -

The app's architecture consists of several interconnected modules written in Jack.

File Descriptions:

Main.jack:

Acts as the central controller of the app, initializing the game environment, managing game states, and orchestrating interactions between components.

Spaceship.jack:

Implements the player's spaceship, handling its movement and collision detection.

Asteroid.jack:

Manages the generation and behavior of asteroids, including their random positioning and movement.

Alien.jack:

Defines the behavior of alien enemies, their movements, and potential interactions.

AlienManager.jack:

Coordinates multiple alien instances, managing their collective behavior.

Projectile.jack:

Handles the creation and trajectory of projectiles fired by the spaceship.

SingleAsteroid.jack:

Represents an individual asteroid and defines its specific properties.

Graphics.jack:

Renders the visual elements of the game and ensures a smooth user experience.

Random.jack:

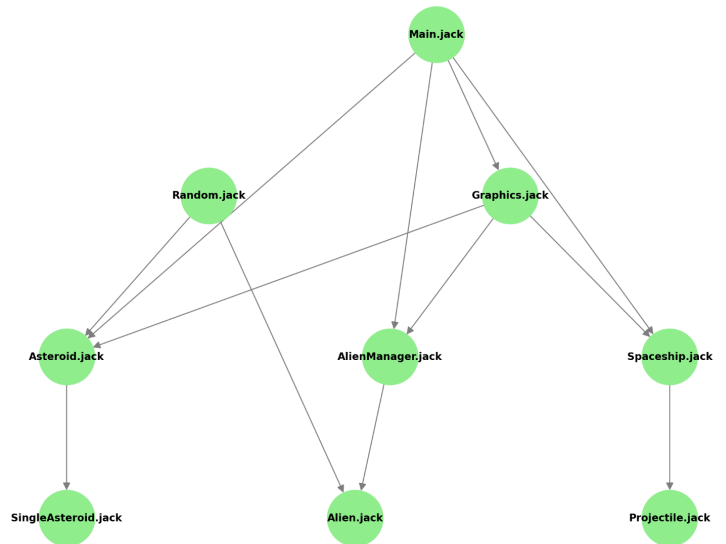
Provides utility functions to generate random values used for placements.

System Architecture Tree Diagram Key:

Nodes: Each labeled node represents a Jack file

Edges: The arrows between nodes indicate dependencies or interactions

Hierarchy: The diagram flows from top to bottom:



Motivation-

We chose to create Nand Invaders to deepen our understanding of programming and computer science principles by developing a multi-level arcade game. Through its design, we explored managing player input, collision detection, and dynamic object behaviors like asteroid and alien movements. Building Nand Invaders pushed us to apply modular design techniques, create reusable components, and optimize real-time performance for an engaging and strategic gameplay experience.

Video Demo-

The video demo highlights the core gameplay mechanics of Nand Invaders. It showcases:

- * How the player controls the spaceship.
- * The interaction with asteroids and alien invaders.
- * The scoring system and level progression.

* [nand invaders demo](#)