

## Cosmic Clash Game Code Documentation

### Overview

This documentation provides an explanation of the JavaScript code used to create "Cosmic Clash", a simple Space Invaders replica game. The code follows Microsoft .NET Standards and is structured into two main sections: the "Game Code" section for the game logic and the "Start and End Menu Code" section for handling start and end menus.

### Game Code

#### Constants

- ◇ **canvas**: A reference to the HTML **canvas** element used for drawing graphics in the game.
- ◇ **tileSize, rows, columns**: Defines the tile size for the game, rows and columns.
- ◇ **board, boardWidth, boardHeight**: Board object. Defined width and height of board.
- ◇ **shipWidth, shipHeight**: Defined ship width and height.
- ◇ **shipX, shipY**: Used to determine where on the board the ship is.
- ◇ **shipImg**: Image place holder for the ship
- ◇ **shipVelocityX**: Defines velocity of ship moving on x axis.
- ◇ **alienArray**: Defines and holds array of aliens.
- ◇ **alienWidth, alienHeight**: Define alien width and height.
- ◇ **alienX, alienY**: Used to determine where on the board the alien is.
- ◇ **alienRows, alienColumns**: Defines how many rows and columns of aliens in the array.
- ◇ **alienCount**: Counts number of aliens
- ◇ **alienVelocityX, alienVelocityY**: Used to determining location of aliens
- ◇ **bulletArray**: Array that contains the bullets shot from the ship.
- ◇ **playerScore**: Player score displayed in corner of screen.

#### Functions

- ◇ **startGame()**: Function called at the beginning of the game to load in aliens and ship.
- ◇ **resetGame()**: Function called to reset board between levels.
- ◇ **restartGame()**: Function called to restart whole game after game over
- ◇ **update()**: Function called to update the game as play.
- ◇ **moveShip(e)**: Function used to move ship side to side using keyboard functions.
- ◇ **moveShipLeft(), moveShipRight()**: Function used to move ship side to side using buttons
- ◇ **createAliens()**: Function used to create and load aliens into an array.
- ◇ **shootBullet()**: Shoots bullet from ship meant to be aimed at the aliens.
- ◇ **shoot(e)**: Button to shoot bullet.
- ◇ **detectCollision(a,b)**: Detects when alien has been hit by bullet.

### Start and End Menu Code

- ◇ The start and end menus are initially hidden (**display: none**) using CSS.
- ◇ **startButton** and **playAgainButton** have click event listeners to handle starting a new game and playing again after a game has ended.
- ◇ **showEndPrompt()**: Displays the end menu, updates the final scores, and hides the game canvas.
- ◇ The game loop is started initially to display the start prompt.
- ◇ **updatePlayerPosition()** is called to enable keyboard controls for the player.

## How to Play

Click “start”. Once the game has begun press the shoot button to shoot all the aliens on the screen. Once all the aliens are killed more will be spawned. Each alien is 100 points. Try to score as high as possible before the aliens reach you. If the aliens reach the ship GAME OVER!