

Spaceships & Asteroids Game (AsteroidGame.mch)

Invariant Definitions & Structure Diagram

Invariant Definitions

SpaceshipPosition : GRID

// SpaceshipPosition is a set of points that exist in the grid.

NextPosition : GRID

// NextPosition is a set of points that exist in the grid, used to define where the next position will take the spaceship, to check for asteroids or out of bounds movements.

Asteroids <: ASTEROID_POSITIONS

// Asteroids is the set of grid positions that asteroids are present on

AsteroidCollissions : NAT

// AsteroidCollissions is a natural number starting at 0

PowerAmount : NAT

// PowerAmount is a natural number starting at 0

HorizontalPosition : NAT1 & HorizontalPosition <= 12

// HorizontalPosition is a natural number starting at 1 and must be less than or equal to 12

VerticalPosition : NAT1 & HorizontalPosition <= 7

// VerticalPosition is a natural number starting at 1 and must be less than or equal to 7

RouteTaken : seq(GRID)

// RouteTaken is a sequence of sets of points that exist in the grid

GameActive : NAT & GameActive <= 1

// GameActive is a natural number starting at 0 and must be less than or equal to 1

Structure Diagram

