



INFORMATICS
INSTITUTE OF
TECHNOLOGY

UNIVERSITY OF
WESTMINSTER 

Informatics Institute of Technology

Department of Computing
(B.Eng.) in Software Engineering

Module: 6SENG001W Reasoning About Programs

Module Leader: Klaus Draeger

Coursework 01

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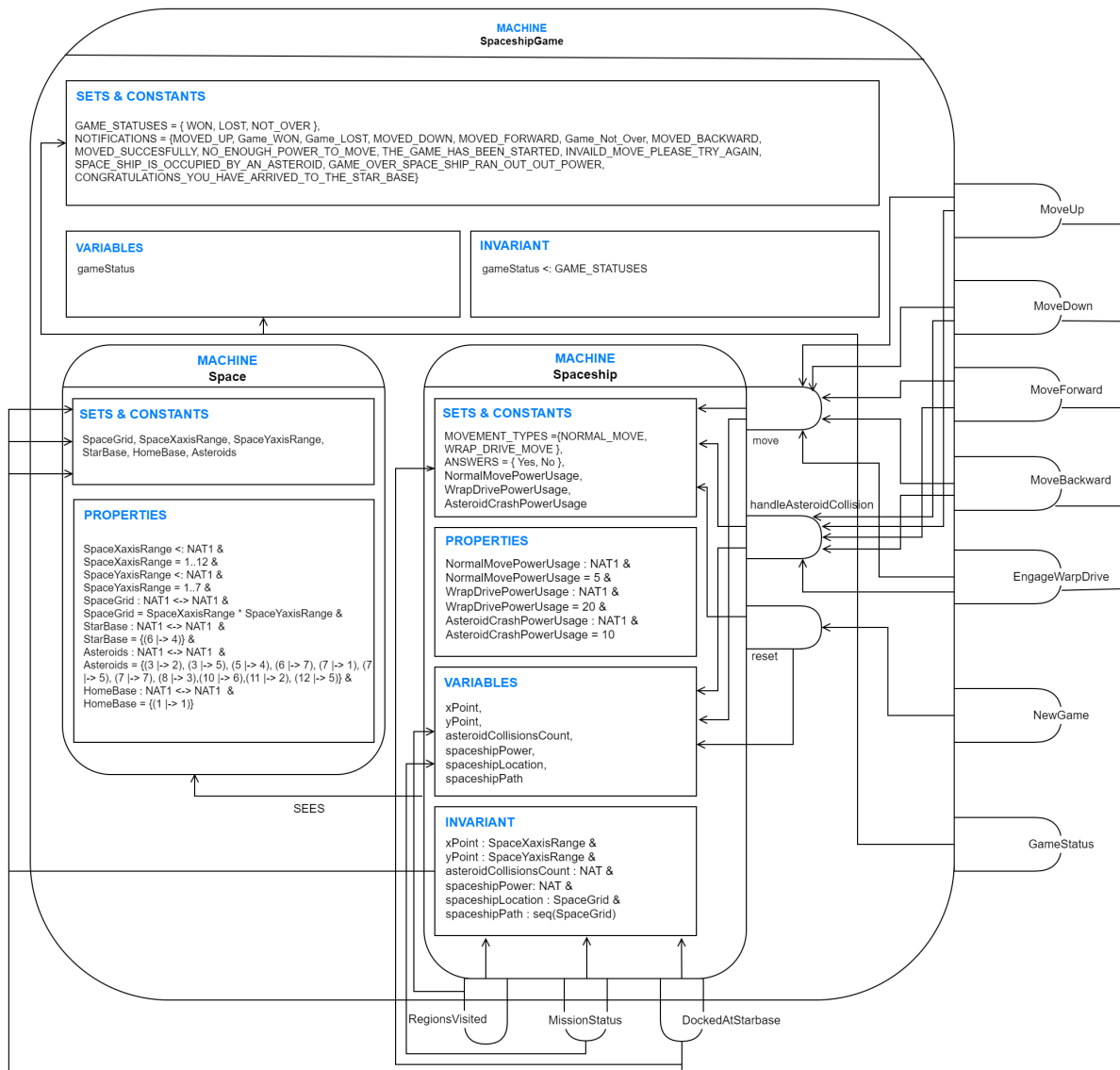
Student ID : 2017304

Student UoW ID : w1698514

Student First Name : Sandaru

Student Surname : Kalapuge

01. Structure Diagram



02. State Invariants

Machine	State	Invariant	Description
Spaceship	xPoint	xPoint : SpaceXaxisRange	xPoint variable is used to keep the current X axis location of the spaceship. This should be an element of the SpaceXaxisRange according to the invariant. Because of that, the x point should be between 1 and 12.
	yPoint	yPoint : SpaceYaxisRange	yPoint variable is used to keep the current Y axis location of the spaceship. This should be an element of the SpaceYaxisRange according to the invariant. Because of that, the x point should be between 1 and 7.
	asteroidCollisionsCount	asteroidCollisionsCount : NAT	asteroidCollisionsCount variable is used to keep track of the count of the asteroid collisions. This should be an element of the natural numbers(NAT) according to the invariant.
	spaceshipPower	spaceshipPower: NAT	spaceshipPower variable is used to keep track of the power of the spaceship. This should be an element of the natural numbers(NAT) according to the invariant.
	spaceshipLocation	spaceshipLocation : SpaceGrid	spaceshipLocation variable is used to keep state of the current location of the spaceship. This should be an element of the SpaceGrid according to the invariant. Because of that, the spaceship's current location should be within the regions of the space.
	spaceshipPath	spaceshipPath : seq(SpaceGrid)	spaceshipPath variable is used to keep track of the visited locations of the spaceship. This should be a sequence of the SpaceGrid according to the invariant.

SpaceshipGame	gameStatus	gameStatus <: GAME_STATUSES	gameStatus variable is used to keep the current status of the game. This should be a subset of the GAME_STATUSES set according to the invariant.
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