



**INFORMATICS
INSTITUTE OF
TECHNOLOGY**

INFORMATICS INSTITUTE OF TECHNOLOGY
In Collaboration with
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6SENG003C Reasoning About Programs

Coursework

B Structure Diagram of the Spaceship & Asteroid System, Invariants Description

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1.B Specification Structure Diagram

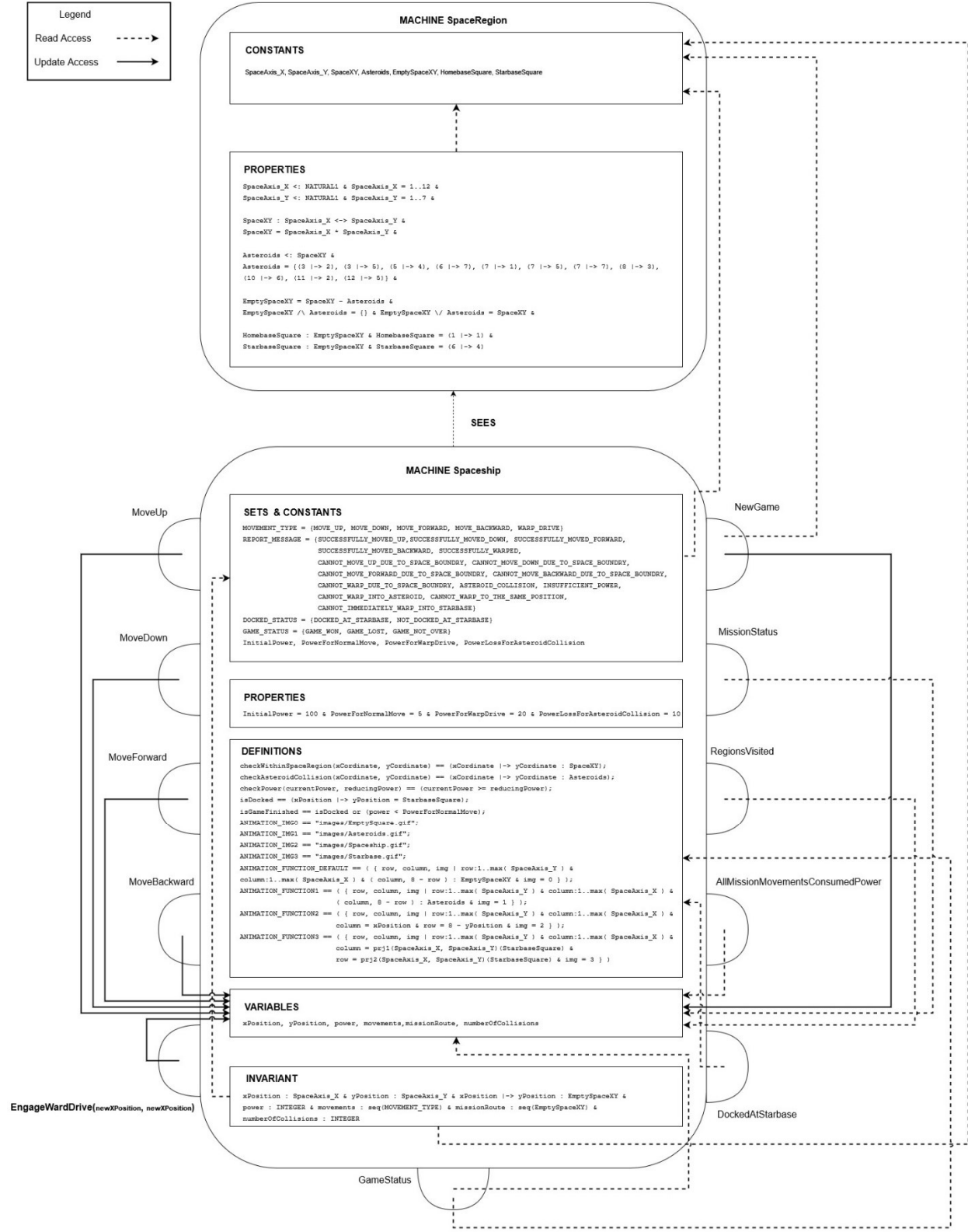


Figure 1: SEES approach for SpaceRegion and Spaceship

2.Explanation of System Invariants

Invariant	Explanation
xPosition : spaceAxisX & yPosition : spaceAxisY & xPosition -> yPosition : EmptySpaceXY	Current coordinates of the Spaceships (x,y) must be always within the SpaceRegion boundary. Coordinates should be NATURAL1. Axis x should be within 1 to 12 and axis y should be within 1 to 7. And current coordinates should be empty spaces without asteroids.
power : INTEGER	Spaceship's current power should be an INTEGER.
movements : seq(MOVEMENT_TYPE) & missionRoute : seq(EmptySpaceXY)	From the beginning, all the movement types performed by spaceship and spaceship's visited regions' coordinates will be recorded.
numberOfCollisions: INTEGER	The number of collisions spaceship had with asteroids should be an INTEGER.