

Structure Diagram

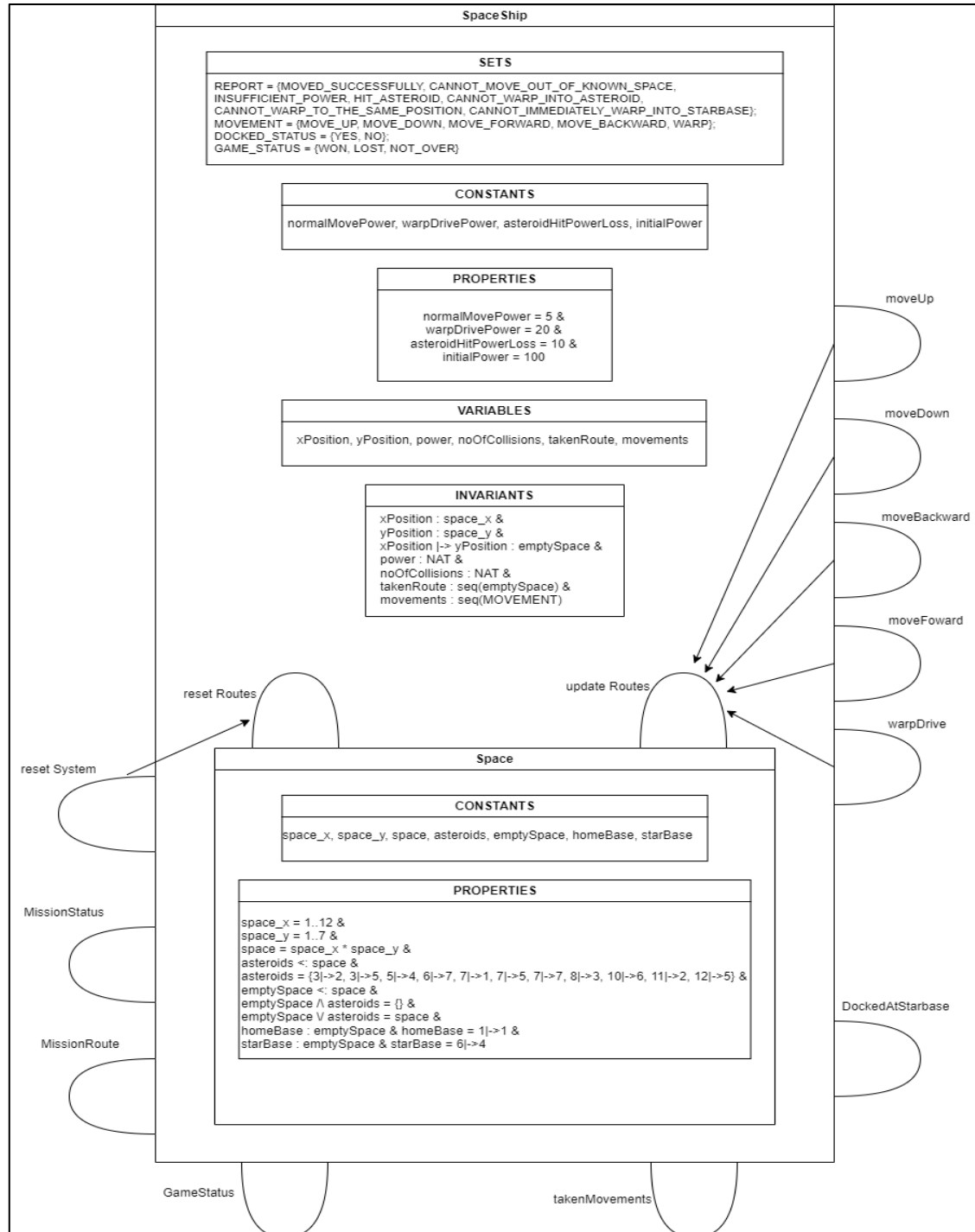


Figure 1 : Structure Diagram

Invariant Explanation

Machine	Invariant	Explanation
SpaceShip	xPosition : space_x	This invariant ensures that the xPosition variable is a valid element in the set space_x, which represents the possible x-coordinates in the space.
	yPosition : space_y	Like the first invariant, this ensures that the yPosition variable is a valid element in the set space_y, representing the possible y-coordinates in the space.
	xPosition $\mid \rightarrow$ yPosition : emptySpace	This checks that the current position of the spaceship (xPosition, yPosition) is within the set emptySpace, indicating that the spaceship is in an empty space.
	power : NAT	This ensures that the power variable is a natural number (non-negative integer).
	noOfCollisions : NAT	Similarly, this ensures that the noOfCollisions variable is a natural number.
	takenRoute : seq(emptySpace)	This ensures that the takenRoute variable is a sequence of elements from the set emptySpace, representing the path the spaceship has taken.
	movements : seq(MOVEMENT)	Similar to the previous invariant, this ensures that the movements variable is a sequence of elements from the set MOVEMENT, representing the sequence of movements made by the spaceship.

Table 1 : Invariant Explanation