UML 2.0   Fan Xu /2019 Summer/ Assignment4 / UML

SimulationManager

- length: int
- width: int
- countOfGrass: int
- countOfCuts: int
- cratePositions: List<Position>
- MowerList: LawnMower[1..*]
- MowerPositions: List<Positions>
- totalNumberofTurns

initilizeLawnMap()
fillGrass()
fillCrate()
initilizeMower()
hitCrate();
hitFence();
DisableMower()
updateLawnMap();
updateCountOfCuts()
isOneMowerActive()
isMaxTurnReached()
isAllGrassCut()

Input

- length: int
- width: int
- countOfGrass: int
- countOfCuts: int
- cratePositions: List<Position>
- MowerList: LawnMower[1..*]
- MowerPositions: List<Positions>
- totalNumberofTurns

Lawn

- length: int
- width: int
- countOfGrass: int
- numberOfCrates: int
- lawnMap: int[][]

updateStatus()

Grid

- position: Position
- gridType: Type

+ chargeable();

MowerKnowledge

MowerMap: HashMap<Position, Grid>

updateMowerMap()
isSafeToMove()
mergeWithOtherMower()

Lawnmower

- id: integer
+ currentPosition: Position
+ currentDirection: Direction
+ energy: int
+ energyCapcity: int
+ mowerKnowledgeMap: MowerKnowledge
+ status: MowerStatus

scan() : String;
Move();
updateMap()
chageDirection()
updatePosition()
updateEnergy()
charge(): Boolean 1.. *
updateStatus()
immobilized(): Boolean

Updates&validateMotion

Tracks

loads

Operates On

Choose Action

Locates On

Updates

1.. *

1

**<<Enumeration>>
Type**

GRASS

EMPTY

CRATE

FENCE

MOWER

CHARGING STATION

**<<Enumeration>>
Direction**

NORTH

NORTHEAST

EAST

SOUNTEAST

SOUTH

SOUTHWEST

WEST

NORTHWEST

**<<Enumeration>>
MowerStatus**

ACTIVE

CRASHED

DISABLED

IMMOBILE