run() IntersectionInstance Object Sensor sense() I guess pointer to all world objects is required + world intersect method LidarSensor Robot BumperSensor essentially a light beam rotating at an detects at a hit upon intersection, does Brain brain x-y plane and measuring distance with evolve(delta-t) not involved in shape surrounding objects Call sensors if any Call brain.stateTranform() VaccumCleaner Brain brain Sensor laser Sensor bumper Wheel wheelRight Wheel wheelLeft Wheel

World Object objects[] WorldState lastWorldState constructor(map, initial state) parsing and interpreting a chosen map format done in this function? evolve(delta-t) For object i in objects: offspringObjects=objects[i].evolve(delta-t, intersectionResult[i])) self.addObject(offspringObjects) intersectionResult=worldClass.intersect() t=t+delta_t worldClass.evolve(intersectionResult) lastWorldState.recordState(objects) InIn intersectionResult[] = intersect() intersectionResult is an array of array of InIn, where IntersectionResult[i] is an array of InIn pertaining to object i for every object i: for every other object j: if not cubesIntersect(objects[i].boundingBox() ,objects[j].boundingBox()): intersectionResult[i]=empty intersectionResult[i]=no idea what to do, an instance of InIn #they still might have no intersection. #But if they do we need some details

every object needs an ID to be tracable in

offspringObjects=evolve(delta-t)

needs shape, we can omit this anyway

model a wheel much. Just an object

which evolves in its position

objectID

map and in state shapeClass shape

positionClass position

changes the state

architectural concern

evolve()? visualize()

boundingBox()

dumpState()

values. All textual

angularSpeed evolve(delta-t)

WorldState

use: e.g. debug

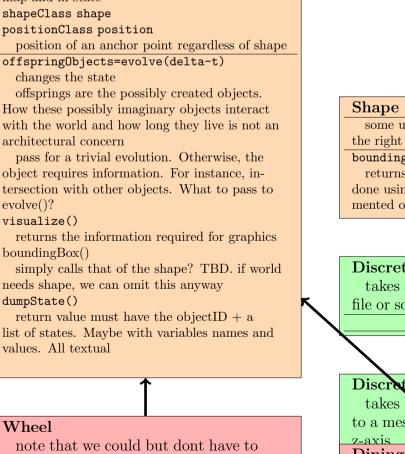
the simulator works in delta-t steps. A worldState can be recorded either before or after evolution of all the objects. A partial worldState is invalid unless every object state is flagged as completed or not. The reason is that the world cannot be initialized with a snapshot of a partially completed worldState without knowing which objects have already evolved in that snapshot.

A data structure which keeps a set of states for every objectID

load(file) dump(file) extractState(objectID) recordState(objects[]) For object in objects:

Get and record object.dumpState()

Map XMLmap



Cube topSurface

some uniform definition? See the comment on Position position and orientation boundingBox() x,y,z returns a x-y plane bounding box. Can be phi, theta done using a generalized algorithm, no implemented only in the parent class. DiscretizedShape Disk takes a mesh as input. Mesh given in a axis1 file or something? xis2 Coordinate center Cylinder DiscretizedShape2D takes by map and if required extends it Disk disk1 Disk disk2 to a mesh of infinitely long pieces along DiningTable Cylinder legs[]