Hallway Traffic Simulator
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Abstract

The purpose of this project is to provide a realistic simulation of traffic flow through a given hallway environment. The simulation is run by a Fortran program, and the results are then displayed by a Java viewer which reads from the main program.
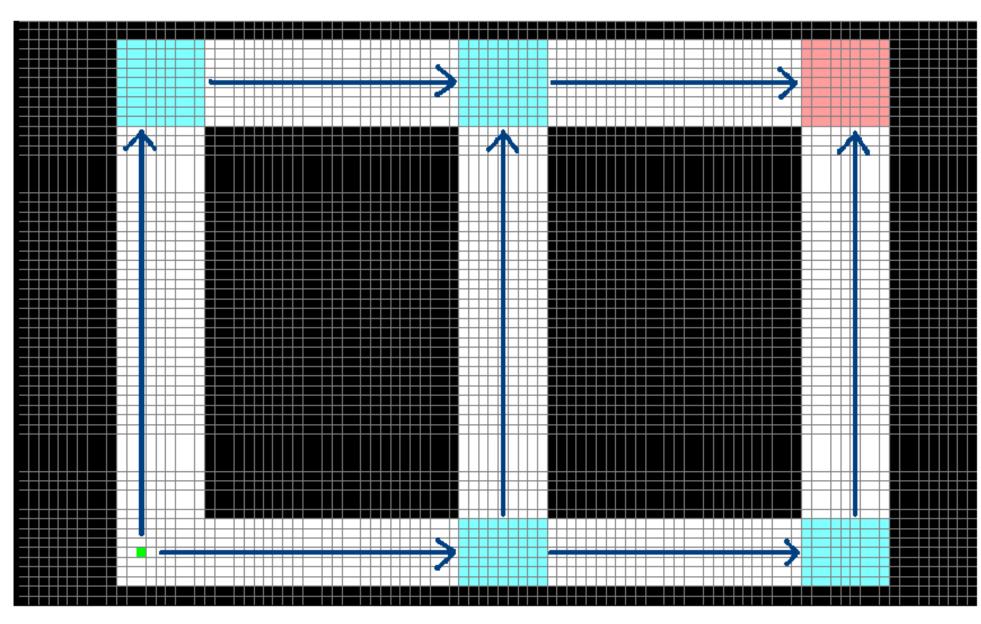
Introduction

Architects can use a traffic simulator to test the effectiveness of a hallway design before building it. With this program the user can input a specific environment and a few initial parameters (e.g. student population), and the program will demonstrate how successful the design is.

Methods

The program stores all students and environment data in a matrix. It also holds an array of students on which it executes a pathfinding algorithm for each time step, and then updates the student locations accordingly. The computer must perform this algorithm efficiently on 1000+ students, so a node graph is used to reduce the processor load. Once calculations are completed, the results are exported to a Java viewer and displayed in real time.

Results

Students behave as realistic individuals, creating accurate traffic patterns. Developers can input their designs into the program for predictions of traffic, and administrators can program set destinations for students to test the efficacy of schedules.

A node graph showing the "guideposts" available to students