EECS 204002 Data Structures

Project #2: Floor Cleaning Robot

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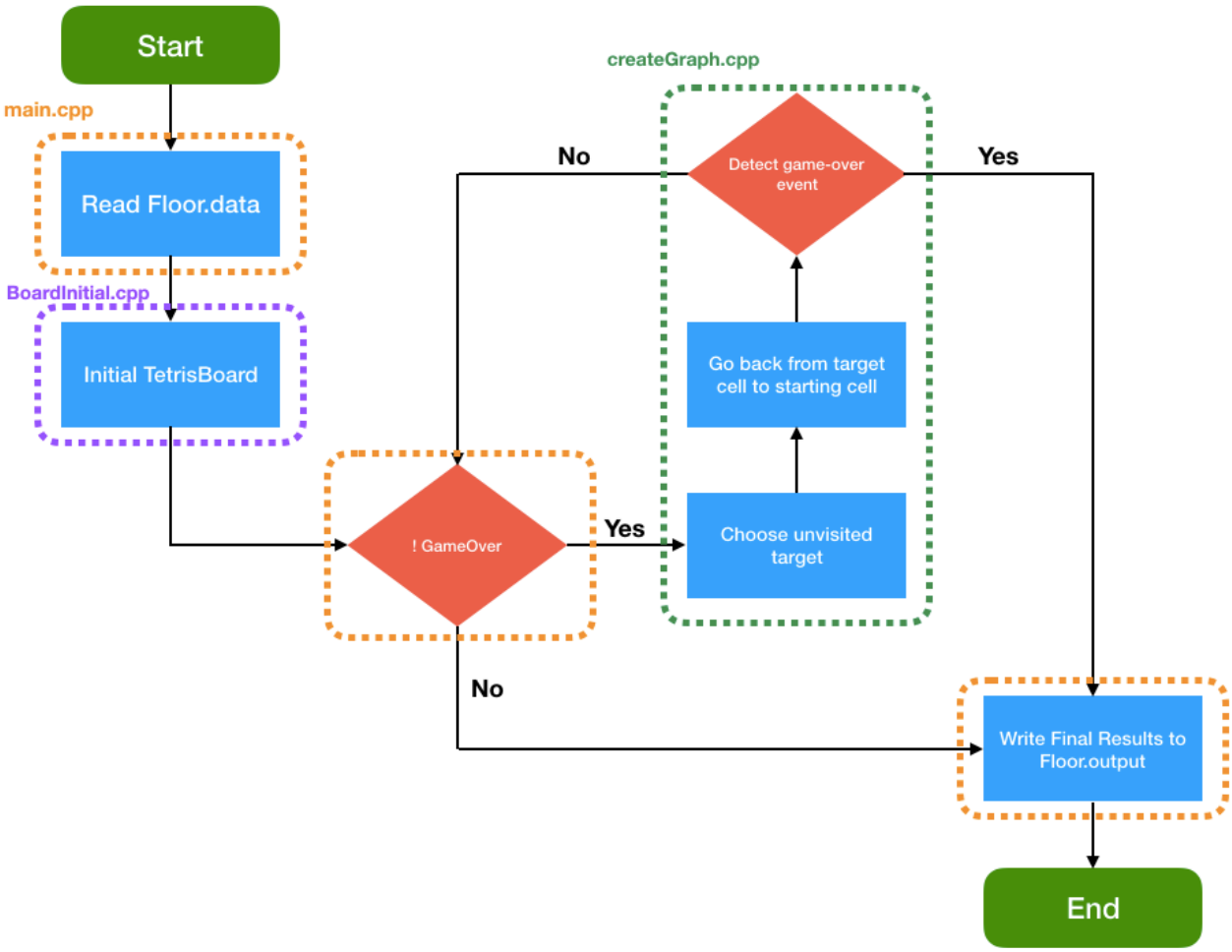
1. Project Description:

   (a) Program Flow chart:



(b) Detailed Description:

I separated my program into four parts:

(1) **main.cpp**

This part is to access the information from the Floor.data file.

(2) **BoardInitial.cpp**

CreateFloorBoard: Creating a board filled with 0 according to given row and column.

PrintCurrentBoard: Print out the current board by double pointer.

(3) **createGraph.cpp**

MapAvaliableNodeCount: Return available cells' count.

MatrixGraph: Initial all parameters of the Graph

ShortestPath: Using Dijkstra algorithm to find the shortest path to the target.

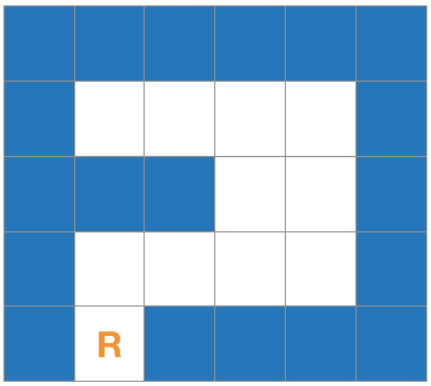
getPath: Return all cells which we passed.

createNodeInfoArray: **Fetch map information**

2. Test case Design

I designed my test case through one main purpose:

I just check whether everyone can reach every valid cell.



3. Experience and Though of the program:

Though I have some projects experience through my jobs developing IOS app since last summer, however, it was my first time to build a project by C++. Hopefully I got some precious experience before, so I could easily build my project without wasting too much time. However, it was still a great experience to build a Tetris game, and what I learned from the project was listed below:

(1) Learning how to efficiently separate my program into different files according to their purpose.

(2) It was my first to time to read file by using C++, so I searched tons of websites to acknowledge the library of "fstream" and knew lots of funny functions from there.

(3) After TA releasing the Tetris.data, I tried lots of test cases and found some of the functions having some logic problems, though they were trivial but so important. If we ignored these small problems, we would cause some unnecessary mistakes.