**Project 1: Pathfinding documentation for Robot**

**Algorithm used: Wavefront Pathfinding Algorithm**

Steps for implementing the algorithm.

* The algorithm requires a map of the entire plane the robot will traverse through. The map is usually a grid of different numbers used to depict different entities. For this instance we used these values: 99- Robot, 1- Obstacles, 0-Free space to move in, and 2-Goal/Destination.
  + #define NOTHING 0
  + #define OBSTACLE 1
  + #define GOAL 2
  + #define START 99
* The next part of the algorithm was to form a weight matric of all the free spaces on the map. For this we had to find the goal or destination on the map and then move outward from it by updating each cell with a certain value. The algorithm is called wavefront algorithm since it goes on increasing in value as it moves further thus creating a weight matrix of the free space on the entire map.
* The navigation() method in the code is used to navigate on the map using the weight of the cell states its present in. This work in a very simple way. The robot checks for the least weight value of the cells around it in all 4 directions to choose which path to follow. The least value cell around it is preferred. Once it starts moving it follows to least weight cells until it reaches the goal. This way it can choose the most efficient and the least cost path to reach the destination.