Subject: Data Structures and its Applications:

Code: UE20CS202

Assignment 1

In the given assignment we are supposed to find the path from starting point to the end point in the form of coordinates and store the path in an output text file. In case path is not found, -1 is to be stored in the text file.

Using the input.txt provided we make our multi list. The function outline() provides a skeleton to our multilist by defining the list of header nodes. The readMap() function opens the input.txt and passes the coordinates of possible path to the link() function.

Once we make the multi list we move on the finding path. In the function findPath() we get the source and destination coordinates and start traversing. In this code we give preference to right over down. The function will check if right path is present else will check for down path. If at any point we do not have a right or a down path, it will backtrack to its previous location. At that point it will see if both right and down path has been explored. If one of them hasn't been explored, it will take that path and proceed. However if we encounter a point where we do not have right or down path to be explored we return -1 indicating no path or blocked path. If we do find path, we return the list of coordinates from source to destination stored in a queue.

Once we exit the findPath() function, we enter the storePath() function. This is where findPath() function is originally called. Here it checks if -1 is returned from the function or not. If -1 is returned we conclude that path is not found and store -1 in the output file. If its not -1, the function will store the path in form of coordinates in output.txt.