# Function Description

**Function Name:** shortestPath

**Parameter List:**

|  |  |  |
| --- | --- | --- |
| Parameter Name | Type | Description |
| map | const struct Map\* | Pointer of struct “Map” variable containing 3 member variables:   * int squares[MAP\_ROWS][MAP\_COLS] – The squares that are buildings and the squares that are not. * int numRows – The number of rows of the map. * int numCols – The “numCols” variable represents the number of columns of the map. |
| start | const struct Point | The starting coordinate of a square on a map, composing of 2 member variables:   * char row – The n-th row * char col – The n-th column |
| dest | const struct Point | The destination coordinate of a square on a map, composing of 2 member variables:   * char row – The n-th row * char col – The n-th column |

**Returns:** The return type is struct “Route”, which is the route calculated from scratch using A\* algorithm, with routeSymbol “DIVERSION”.

**Description:** This function calculates a struct “Route” from scratch using A\* algorithm recursively test the next possible Point in 8 surrounding squares closest to the destination Point “dest” starting from starting Point “start”. The buildings are automatically avoided and no returning along the calculated route is allowed.