Project Two - Karel the Robot
Traveling Through a Maze

## Project Two: Final Due Date -- Monday April 6th[th] no later than midnight.

You are expected to submit your programs to your TAs while in lab. If you choose not to be in lab and are accessing Karel elsewhere, the program must be received by the TAs no later than midnight on Monday April 6th.

Problem Statement:

Karel has been assigned the task of planting a single beeper on each intersection throughout a maze.   Unfortunately, over the years some beepers have gotten planted in random places and in odd numbers throughout the maze. Karel must ensure that there is exactly one beeper on each intersection in the maze. Karel knows that there will <u>never</u> be more than 3 beepers <u>accidently</u> planted at any intersection. When the beeper planting is completed Karel must come home to the origin and face North.

NOTE: You cannot assume that the beepers will always be exactly as pictured. Your code should be general enough to solve this problem even if the location of the random beepers is changed.

Clearly the problem statement is not sufficiently detailed to be able to write a program. Writing the program is your job. Below is a picture of the World Karel will be working with for this Project. You can try downloading it from the Web, or simply recreate it on your own in the lab (recreating it is easier).
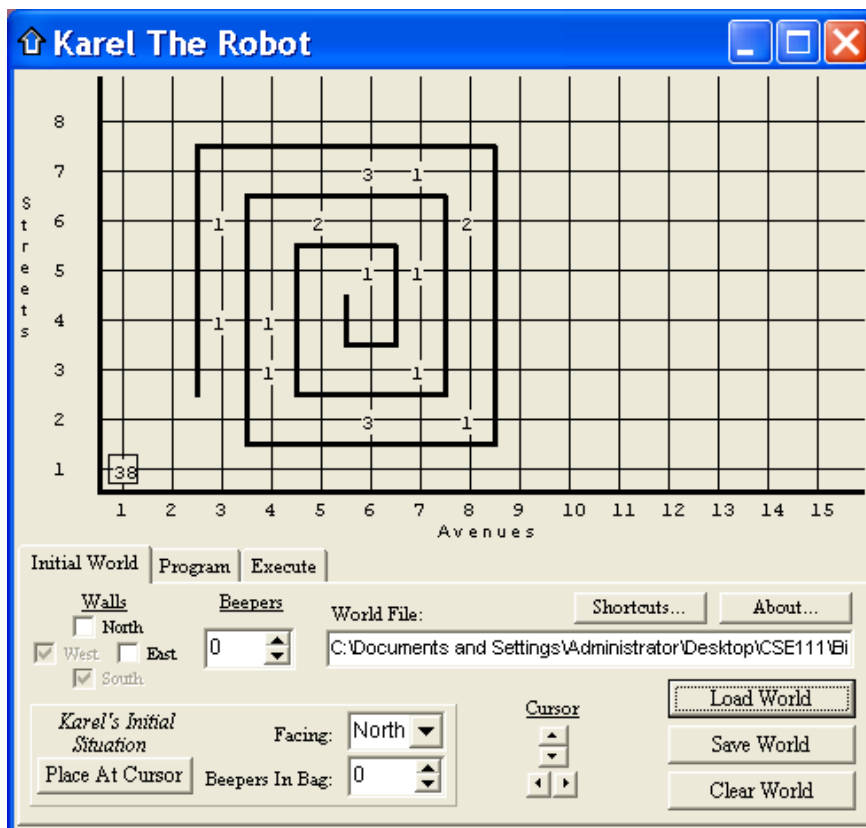
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The purpose of this project is to demonstrate that you understand all of the programming concepts learned this semester. In particular, this project requires the use of IF statements and WHILE statements. Textbook chapters 1-5 are important to this project.

Project One is worth 100 points.

1. Your program must solve the problem stated above. It must work properly. It must compile correctly and end with a turnoff command and not an error message. (**30 points**)
2. You must use two (2) WHILE statements in this program. One While statement is needed to get to the center of the maze and the other is used to get out of the maze. (15 points each = **30 points**)
3. You must use two (2) IF statements in this program. (10 points each = **20 points**)
4. Karel must complete the maze AND return to the origin AND face NORTH at the end. (**15 points**)
5. You must email your TA with your BigMaze.yourlastname.kp Your email message needs to contain your First and Last Name and your Person number as well as your program as an attachment.   **(5 points)**

   Simply printing off your program and handing it to your TA is not sufficient. You will get NO (ZERO) credit for turning in a printed copy. The TAs will Execute your code to see if it works.

Extra Credit (5 points)

1. Submit the program to your TA as specified above.
2. Revise the program, save your program under a slightly different name so the TA knows this version includes the extra credit. Revise the program so that Karel puts down 2 beepers on each location instead of one by adding a beeper to each location on the trip out of the maze.