Gebze Institute of Technology
Department of Computer Engineering

CSE 241
Object Oriented Programming
Fall 2011
Homework # 1
Your First C++ Program
Due date Oct 15th 2011

You will write a C++ program that prints a random square maze puzzle of a given size. An example run of your program is below. The maze can be solved by starting from S and following the spaces to reach D. Every time you run your program, there will be a new random maze. Try to make your maze as difficult as possible by using dead ends etc. Test your program with mazes of sizes 20, 30, 40 and different runs.

```
Enter the maze size

11

          S
X X X X X   X X X X X
X   X               X
X   X X X X X X X   X
X   X           X   X
X   X   X   X X X   X
X       X D X   X   X
X   X   X X X   X   X
X   X   X       X   X
X   X X X X X X X   X
X                   X
X X X X X X X X X X X
```
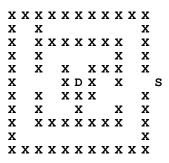
Bonus (100 points)

Ask the user to input a maze and solve the maze puzzle by marking the path with dots. To read the maze from the user, use console input so that the output of your program in the first part can be used as an input. You can use > and < redirection of Linux command line to store mazes to files and read mazes from files as we discussed in the class. One example output for this program would be

```
Enter the maze size

11

Enter the maze


X X X X X X X X X X X
X   X               X
X   X X X X X X   X
X   X           X   X
X   X   X   X X X   X
X       X D X   X     S
X   X   X X X       X
X   X       X     X   X
X   X X X X X X   X
X                   X
X X X X X X X X X X X

The solved maze is

X X X X X X X X X X X
X   X               X
X   X X X X X X   X
X   X . . .     X   X
X   X . X . X X X   X
X . . . X D X   X . . S
X . X   X X X     . X
X . X       X     X . X
X . X X X X X X . X
X . . . . . . . . . X
X X X X X X X X X X X
```

Test this part of the program by using the output of the first part as an input.

Notes:
- Do not use any functions from the standard C library (like **printf**)
- Your program should have only one function (main) and no classes.
- Do not forget to indent your code and provide comments.
- Check the validity of the user input especially for the bonus part.
- Test your programs very carefully and submit the test results too.
- Submit a separate file if you do the bonus part.
- You should email your homework to the TA.