

# **Grid World Document**

## **How to run**

Compile and execute *GridWorldMain.java*. By default, the program will load *i1.txt*. You can also use `java GridWorldMain <file path>` to take other input files.

## **Output format for Q values**

For any single grid, the Q values are printed in the order [North, East, South, West].

## **Algorithm**

### **Value iteration Q value**

For each grid, compute the expected max utility of each policy/direction.

Repeat until values converge.

### **Value iteration V value**

For each grid, compute the expected max utility.

Repeat until values converge.

### **Policy iteration**

Initial policy: always go north.

Loop start:

Policy evaluation: compute utilities for policy until convergence.

Policy improvement: extract new policy with one-step look-ahead using the converged value.

Repeat until policy converges.