GWV – Grundlagen der Wissensverarbeitung
Tutorial 3 : Searching

Exercise 1.1 : (Blind Search)

```
xxxxxxxxxxxxxxxxxxxx
x                  x
x       xxx        x
x        x xxxxx   x
x   s     x        x
x         x x   xxxxxxx
x   xx xxxxx       x
x        x     g   x
x        x         x
xxxxxxxxxxxxxxxxxxxx
```

The above figure shows an environment for a robot in an ASCII-Art representation. The robot starts in the field s (start) and wants to get to the field g (goal). The robot can move one field at a time in any of the four directions (up, down, left, right). The fields with an x denote a blocked field that the robot can not enter.

This assignment teaches the basics of blind search strategies and should also familiarize you with the practical aspect of artificial intelligence, that is you get to write a small program.

1. Build up an internal representation of the environment that is suitable for searching. *Hint: It's easier if your program can read the environment from the ASCII files provided in the nats wiki (`http://nats-www.informatik.uni-hamburg.de/GWV1415/`).*

2. Implement the blind search strategy "breadth first" to find a path for the robot. (4 Pt.)

3. Implement the blind search strategy "depth first" to find a path for the robot. (4 Pt.)

4. Describe problems of the search strategies you encounter. (1 Pt.)

5. What other problems could your search strategies encounter in other environments? Provide example environments. (2 Pt.)

6. Can you think of possible ways to cope with the problems you identified? (1 Pt.)

Hand in the documented program code and a suitable human-readable output of the search process.

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Achievable score on this sheet: 12