Workshop 3: Uniformed Search

CITS3001 Algorithms, Agents and Artificial Intelligence

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What Search and Why?

- Of the search strategies: *breadth first, depth first, uniform cost, depth limited, iterative deepening* and *bidirectional* is best suited to the following problems:
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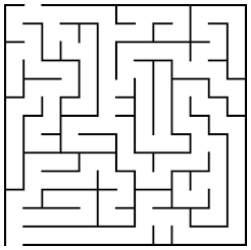
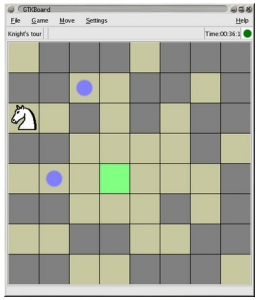
5	3			7				
6			1	9	5			
	9	8					6	
8				6				3
4			8		3			1
7				2				6
	6					2	8	
			4	1	9			5
				8			7	9



  - Solve a maze.
  - Solve a sudoko puzzle.
  - Find the fastest way to get from UWA to Ellenbrook on public transport.

  - Find $\int \frac{1}{2x^2 - 4x + 20}\, dx.$
  - Four people come to a narrow bridge, that can only hold two people at a time. They have one torch and, the torch has to be used when crossing the bridge. A can cross the bridge in 1 minute, B in 2 minutes, C in 5 minutes, and D in 8 minutes. When two people cross together, they must move at the slower person's pace. Can they all get across the bridge if the torch lasts only 15 minutes?

  - In chess, a knight can move 2 squares forward, then one square across. It can jump other pieces, but not land on top of them. Given a large chess board, with pieces on the board, is it possible for the knight to reach a given square.



12 “identical” balls and a scale

12 Identical Balls Problem

Question: You are give 12 identical looking balls. One of them is fake (could be heavier or lighter) than the rest of the 11 (all the others weight exactly the same). You a provided with a simple mechanical balance and you are restricted to only 3 uses. Find the fake ball.

How can we represent this as an uninformed search problem?