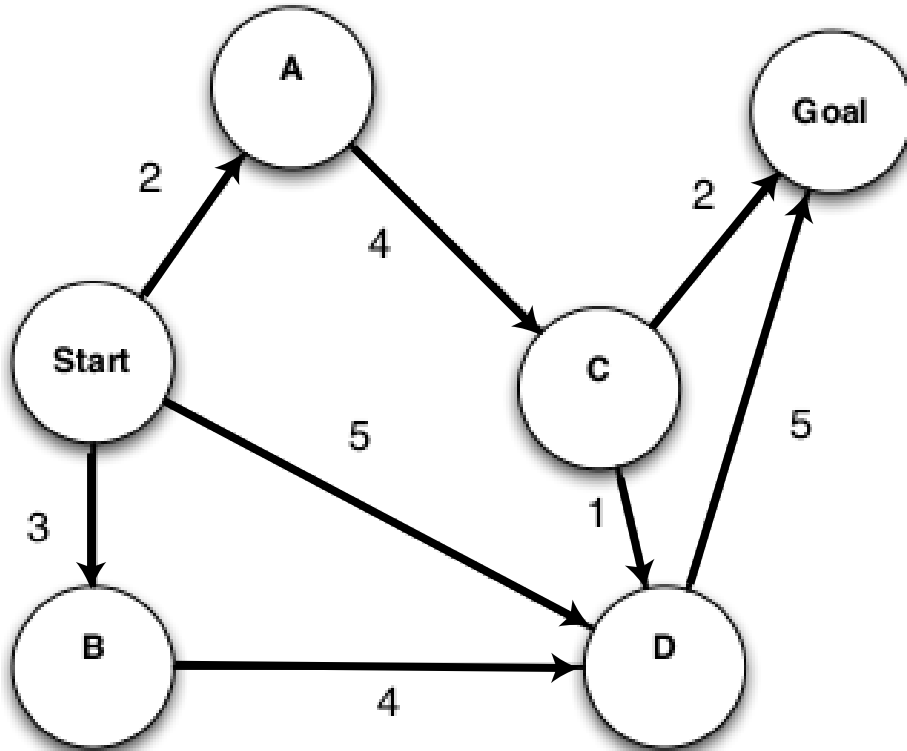


1 Search Algorithms in Action (Uninformed Search Review)



For each of the following graph search strategies, work out the order in which states are expanded, as well as the path returned by graph search. In all cases, assume ties resolve in such a way that states with earlier alphabetical order are expanded first. Remember that in graph search, a state is expanded only once.

- a) Depth-first search.
  
- b) Breadth-first search.
  
- c) Uniform cost search.

## 2 Agents and Environments

(a) Below is a list of task environments. For each of the sub-parts, choose all the environments in the list that falls into the specified type.

**A:** The competitive rock-paper-scissors game

**B:** The classical Pacman game (with ghosts following a fixed path)

**C:** Solving a crossword puzzle

**D:** A robot that removes defective cookies from a cookie conveyor belt

(i) Which of the environments can be formulated as *single-agent*?  A  B  C  D

(ii) Which of the environments are *static*?  A  B  C  D

(iii) Which of the environments are *discrete*?  A  B  C  D

(b) (i)  T  F Reflex agents cannot be rational.

(ii)  T  F There exist task environments in which no pure reflex agent can behave rationally.