Questions on "Heuristic Programs"

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1. What is a heuristic? When do we use it? Give an example in everyday life. What are the characteristics of heuristic knowledge? Why is it useful? What's the flaw?

2. LT (Logic Theorest) is an AI program developed by Newell and Simon. What problems does LT solve? What kinds of heuristic search did LT use? Why was heuristic search necessary or useful for this class of problems?

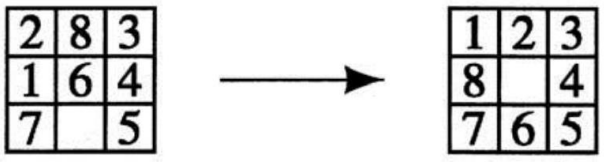
3. Give examples of heuristic programs, such as LT, developed in early days of AI, i.e. 1960s. What problems did they solve? Why was heuristic search necessary or useful?

4. What is a theorem proving program? Give an example and illustrate it. Why is it interesting as an AI problem? Why was it useful for developing AI techniques? How is theorem proving related to the programming language PROLOG?

5. What is the general problem solver or GPS? How does it work? Is it psychologically plausible? Is it universal?

6. One of the earliest learning program is the Samuel's checker player. What is the goal of the game? How does the program represent the problem and solutions? How does it find a solution to the problem? How does it measure the score (goodness) of a move? How does it learn the scoring system?

7. Consider the 8-puzzle problem. Draw a search tree to show how the heuristic program solves the problem. What heuristic function can the program use to guide the search?



8. Chess has been studied by AI researchers for long time and, finally in 1997, the IBM Deep Blue defeated the human champion Garry Kasparov. Why is chess interesting as an AI problem? Why is it hard for machines? What techniques did Deep Blue use? Is the machine really intelligent or in what sense is Deep Blue intelligent?