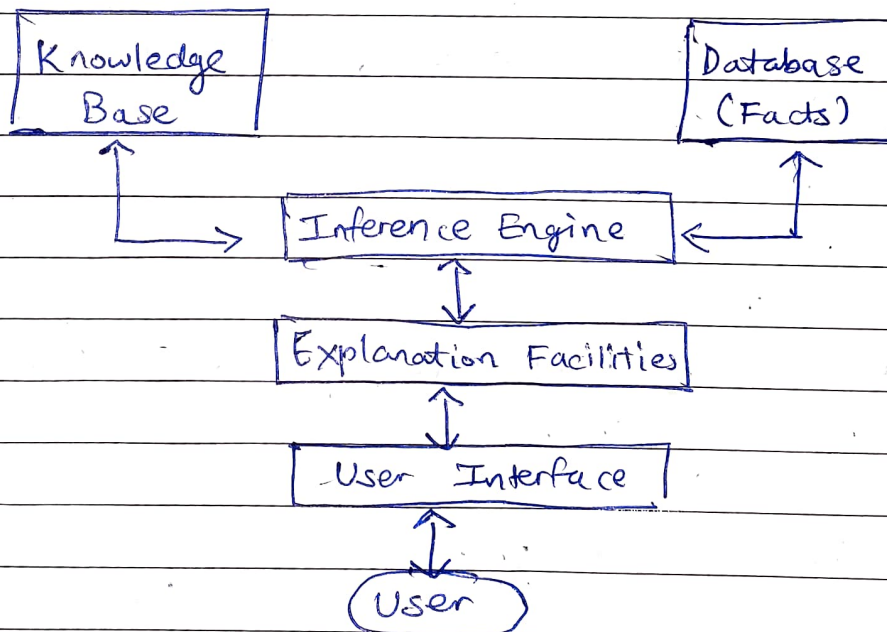Name: Sudesh Pawar
PRIN: F17111037
Class: BE Comp A

1) What is rule based expert system?

Ans. In Computer Science, a rule based system is a set of "IF-THEN" statements that uses a set of assertations, to which rules on how to act upon those assertions are created.

ii) Rule based systems are the simplest form of Artificial Intelligence

iii) The rule based expert system is an artificial intelligence program that has expert level knowledge about a particular domain & knows how to use its knowledge to respond properly.

iv) Stanford University has defined expert system as "an intelligent computer program that uses knowledge, and inference procedures to solve the problems that are difficult enough to require significant human expertise for their solutions."

2) Explain Principal Components of the Expert System.

Structure of Rule Based Expert System.

1) **Knowledge Base:**
   It contains domain knowledge used for problem solving. Here each rule has a IF (condition) THEN (action) structure.

2) **Database:**
   Includes a set of facts used to match against the IF (condition) parts of rules stored in knowledge base.

3) **Inference Engine:**
   Carries out ~~responsibility~~ reasoning whereby the expert system reaches a solution. It links the rules given in knowledge base with facts provided in database.

4) **Explaination Facility:**
   Explains user about reasoning process of the system. By keeping track of rules that are fired, an explanation facility, presents a chain of reasoning that led to a certain conclusion.

5) **User Interface:**
   This is a mechanism to support communication between user & system.
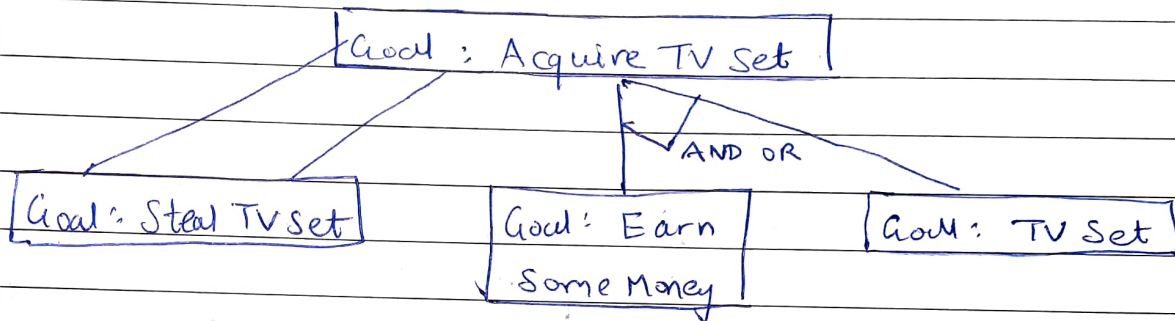
Q.3) Explain in detail problem decomposition?

Ans.
1) Problem decomposition is problem solving strategy of breaking a problem up into a set of subproblems, solving each of the sub problems, & then composing a solution to the original

problem from the solutions to the sub problems.

ii) It plays a crucial role in the field of artificial intelligence because instead of solving the problem entirely all at once it tactically breaks into small sub problems & then solves it.

iii) Consider an example of buying a T.V.

AND - OR Graph

Q.4) How to do analysis of data sets?

Ans.   Step 1: Define your Questions
        Questions should be measurable, clear & concise. Design your questions to either qualify or disqualify potential solutions to your specific problem or opportunity.

        Step 2: Set clear Measurement Priorities
        This step breaks down into two sub steps
        A) Decide what to measure.
        B) Decide how to measure it.

        Step 3: Collect Data
        Keep collected data organized in a log with collection dates & add any sources notes as you go.

Step 4: Analyze Data

After collecting the right data, we begin by manipulating the data in a no. of different ways, such as plotting it out & finding correlation or by creating a pivot table in Excel.

Step 5: Intrepret Result:

After analyzing your data & possibly conducting further research, it is finally time to interpret your results. As you interpret your analysis, keep in mind that you cannot ever prove a hypothesis true rather you can only fail to reject the hypothesis.