EXPERT SYSTEM ASSIGNMENT QUESTION

Write Descriptive Answer any Three questions (3x10 =30)

1. What is an Expert System?

2. Advantages of Expert Systems over Human Experts.

3. Define an Inference Engine used as part of an Expert System.

4. Knowledge Base

5. Forward and Backward Chaining

6. How can Linguists help in the development of Expert Systems?

7. The Turing Test

8. Artificial Intelligence

9. LISP

10. Speech Recognition Software

Answers: (Of course there are other things about the question they could answer, you’ll know if they understand the question correctly or not.)

1. A rule based computer system which simulates a human expert in his/her field of expertise in an attempt to solve a particular problem.  They are Artificial Intelligence applications that use a knowledge base of human expertise for problem solving. Its success is based on the quality of the data and rules obtained from the human expert. In practice, expert systems perform both below and above that of a human.

2. An expert system can operate constantly 24 hours per day.  An expert system can exceed the performance of any human expert, as it can combine knowledge from a number of different experts.

3. An expert system derives its answers by running the knowledge base through an inference engine, which is software that interacts with the user and processes the results from the rules and data in the knowledge base.

4. A knowledge base is a special kind of database for knowledge management, providing the means for the computerized collection, organization, and retrieval of knowledge.

5. Forward chaining starts with the data available and uses the inference rules to conclude more data until a desired goal is reached. An inference engine using forward chaining searches the inference rules until it finds one in which the *if* clause is known to be true. It then concludes the *then* clause and adds this information to its data. It would continue to do this until a goal is reached. Because the data available determines which inference rules are used, this method is also called *data driven*.

Backward chaining starts with a list of goals and works backwards to see if there is data which will allow it to conclude any of these goals. An inference engine using backward chaining would search the inference rules until it finds one which has a *then* clause that matches a desired goal. If the *if* clause of that inference rule is not known to be true, then it is added to the list of goals

6. Teaching Computers and Expert Systems to understand Natural Language requires both computer people and Linguists. Because Linguists understand the theory of various languages they can help programmers set up the rules (knowledge) for the Expert Systems. They can fill a useful place in many areas of the study of Artificial Intelligence also.

7. The Turing test is a proposal for a test of a machine's ability to demonstrate intelligence. It proceeds as follows: a human judge engages in a natural language conversation with one human and one machine, each of which tries to appear human. All participants are placed in isolated locations. If the judge cannot reliably tell the machine from the human, the machine is said to have passed the test. In order to test the machine's intelligence rather than its ability to render words into audio, the conversation is limited to a text-only channel such as a computer keyboard and screen.

8. Artificial Intelligence is the study of training computers to think for themselves. There are many areas of AI that researchers are working on. Neural Networks, Robotics, Expert Systems, and Fuzzy Logic to name a few.

9. LISP – Stands for LISt Proscessing. It is a programming language used in the AI field.

10. Software used on a computer to convert spoken speech into text. An example is Dragon Naturally Speaking.