

S.B ARTS AND KCP SCIENCE

COLLEGE, VISAYAPURA

ASSIGNMENT

NAME:- VEERABHADRAIAH.S.B

SUBJECT :- Artificial Intelligence

CLASS :- Misc (cs) IV SEM

REG.NO:- PISKM2150043



STUDENT'S NAME		TOTAL MARKS OBTAINED
CLASS	SUBJECT A.I	
ROLL NO.	DATE	

1) Explain AI & explain the component of AI

→ AI: Artificial Intelligence (AI) is a branch of computer science that focuses on perform task typically required human intelligence. AI system can process large amount of data, learn from it, & make decision based on the patterns & insights they discover.

AI has several components that are

1. ML:- Machine learning is a subset of AI that enables systems to learn from data without explicitly programmed. It involves developing algorithms that can automatically improve their performance through experience.

2. Natural language processing (NLP):-

NLP focuses on enabling computers to understand, interpret & generate human language. It involves tasks such as text processing, sentiment analysis, language translation, speech recognition & chat bots.

3. Computer vision:-

computer vision is the field of AI that enables computers to interpret & understand visual information from images & videos.

It involves task such as object detection, image classification, facial expression recognition & image generation.

2) Explain the application of AI.

It has a wide range of application across various industries & domain. Here are some of the key application of AI in detail.

↳ Natural Language Processing (NLP)

1. AI in Astronomy

Artificial intelligence can be very useful to solve complex universe problems. AI technology can be helpful for understanding the universe such as how it works, origin etc.

2. AI in Gaming

• AI can be used for gaming purpose. The AI machines can play strategic games like chess, where the machine needs to think of a large no of possible plays.

3. AI in Finance

• AI & finance industries are the best matches for each other. The finance industry is implementing automation, chatbot, adaptive intelligence, algorithm trading, & machine learning into financial processes.

4. AI in Automotive Industry

• Various industry are currently working for developing self-driven cars which can make

STUDENT'S NAME

TOTAL MARKS
(OUT OF 100)

CLASS

SUBJECT

ROLL NO.

DATE

Your journey more safe & secure.

5. AI in education:

• AI can automate grading so that the tutor can have more time to teach. AI chatbot can communicate with students as a teaching assistant.

3) What is Intelligent agent? Explain its types & its properties.

* An Intelligent agent is a program that can make decisions or perform a service based on its environment, user input & experiences.

Types of agents.

1. Simple Reflex Agent
2. Model-Based Reflex agent
3. Goal-Based Agents
4. Utility-Based Agents.
5. Learning agent.
6. Multi-agent system
7. Hierarchical agents.

Reflex Agents:

These agents work here & now & ignore the past. They respond using the event condition-action rule. The ECA rule applies when a user initiates an event.

Model-based Agents

These agents choose their actions like reflex agents do, but they have a better comprehensive view of the environment.

Goal-Based agents:

These agents build on the information that a model-based agent stores by augmenting it with goal information or data regarding desirable outcomes & situations.

Learning agents:

These agents employ an additional learning element to gradually improve & become more knowledgeable over time about an environment. The learning element uses feedback to decide how the performance elements should be gradually changed to show improvement.

up) What is the role of search algorithm in AI?
Explain its properties?

→ Solving Problems:

Search algorithms enhance the solving of problems in artificial intelligence through logical search mechanisms such as problem definition, actions & search space.

Model-based Agents:

These agents choose their actions like reflex agents do, but they have a better comprehensive view of the environment.

Goal-based agents:-

These agents build - on the information that a model-based agent stores by augmenting it with goal information or data regarding desirable outcomes & situations.

Learning agents:-

These agents employ an additional learning element to gradually improve & become more knowledgeable over time about an environment. The learning element uses feedback to decide how the program elements should be gradually changed to show improvement.

Q. What is the role of search algorithm?
Explain its properties?

→ * Solving Problems.

Search algorithms enhance the solving of problems in artificial intelligence through logical search mechanisms such as problem definition, actions & search space.

STUDENT'S NAME		TOTAL MARKS OBTAINED
CLASS	SUBJECT	
ROLL NO.	DATE	

1. Goal-based agents:

Search algorithms enhance the effective operation of goal-based agents. These agents solve problems by searching for the most ideal series of actions that can provide the best solution to a problem.

2. Support production systems.

Search algorithm support the operation of production system in AI. These are system that support AI application through the use of rules.

Properties of Search algorithm.

Completeness: Search algorithm is said to be complete if it guarantees to return a solution if at least any solution exists for any random input.

Optimality: If a solution found for an algorithm is guaranteed to be the best solution among all other solutions, then such a solution for is said to be an optimal solution.

Time complexity:

Time complexity is a measure of time for an algorithm to complete its task.

Space complexity:

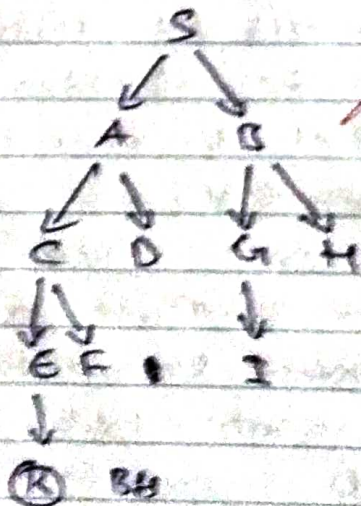
It is the maximum storage space required at any point during the search on the complexity of problem.

5) Explain different types of search algorithm.

Breadth First Search:

Breadth First Search is the most common search strategy for traversing a tree or graph. This algorithm search is breadth wise in a tree or graph. So it is called breadth - first search.

Ex) - $S \rightarrow A \rightarrow B \rightarrow C \rightarrow D \rightarrow G \rightarrow H \rightarrow E$
 $\rightarrow F \rightarrow I \rightarrow K$



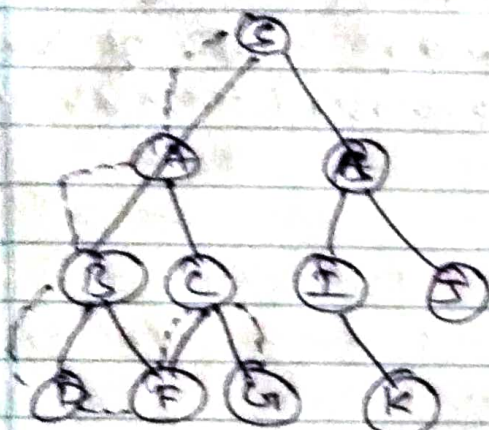
Depth - first Search :-

Depth First Search is a recursive algorithm for traversing a tree or graph data structure. It is called the depth - first search because

STUDENT'S NAME		TOTAL MARKS OBTAINED
CLASS	SUBJECT	
ROLL NO.	DATE	

it starts from the root node & follows each path to its greatest depth node before moving to the next path.

Root node $\rightarrow$ left node $\rightarrow$ right node

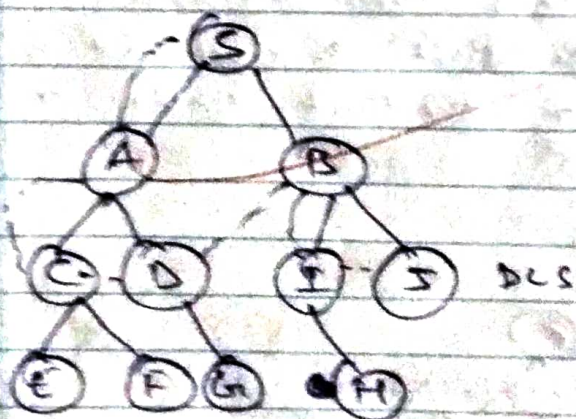


G is the Dfs

3) Depth - limited Search Algorithm:

A depth limited search algorithm is similar to depth first search with a predetermined limit.

Depth - limited search can solve the drawback the infinite path is the Depth - first search.



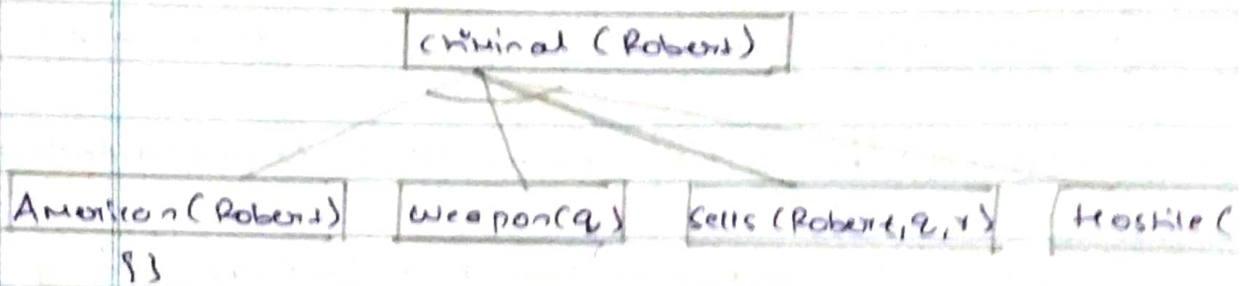
Proof:-

In backward chaining, we will start with our goal predicate, which is criminal (Robert), & then infer further rules.

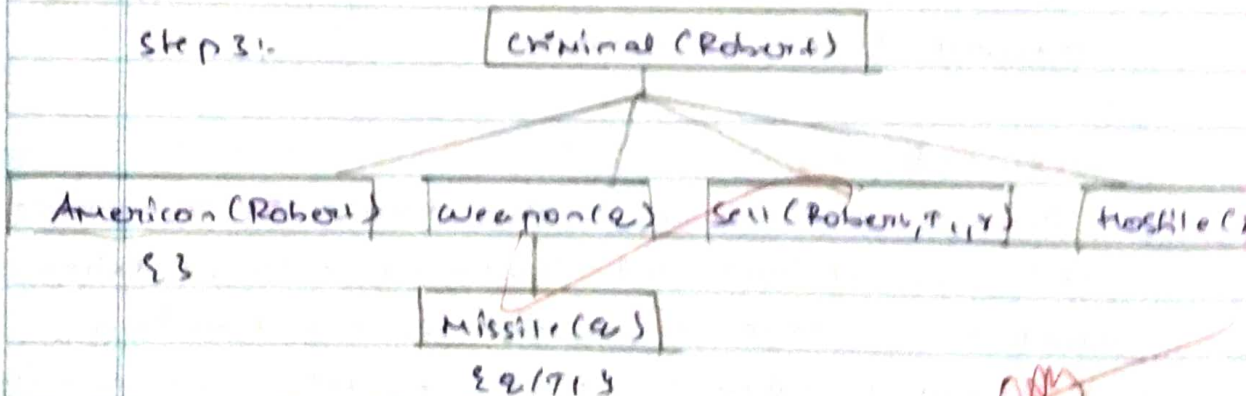
Step 1:

criminal (Robert)

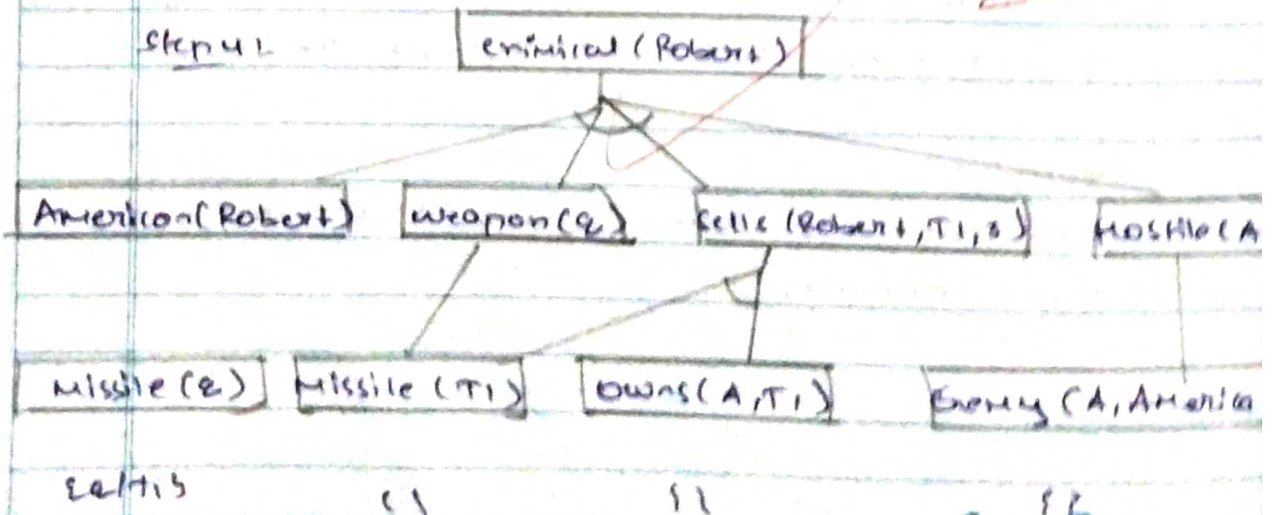
Step 2: Here we can see American (Robert) is a fact so it is proved here



Step 3:-



Step 4:-



Name : Savita Madar

class : Msc [cs]

Reg No : P15KM22S038001

Subject : Data Communication And
Computer Networks



03
03

STUDENT'S NAME		TOTAL MARKS OBTAINED
CLASS	SUBJECT	1
ROLL NO.	DATE	

UNIT-1

(1) what is Data Communication? Briefly Discuss the fundamental characteristics?

* Data Communication:

Data Communications are the exchange data Between two devices while are Same form of transmission media. Such as wire cables.

→ Data Communication to occur the communicating devices must be part of Communication system made up of combination of Hardware and Software.

→ The effectiveness of Data Communication System Depends on four fundamental characteristics.

- ① Delivery
- ② Accuracy
- ③ Timeliness
- ④ Jitter

(i) Delivery:

The system must deliver data on the correct destination. Data must be Received by the Intended device or user and only by that device or user.

→ (ii) Accuracy:

The system must deliver the data accurately. Data that have been altered in transmission and left uncorrected are unusable.

→ Timeliness:

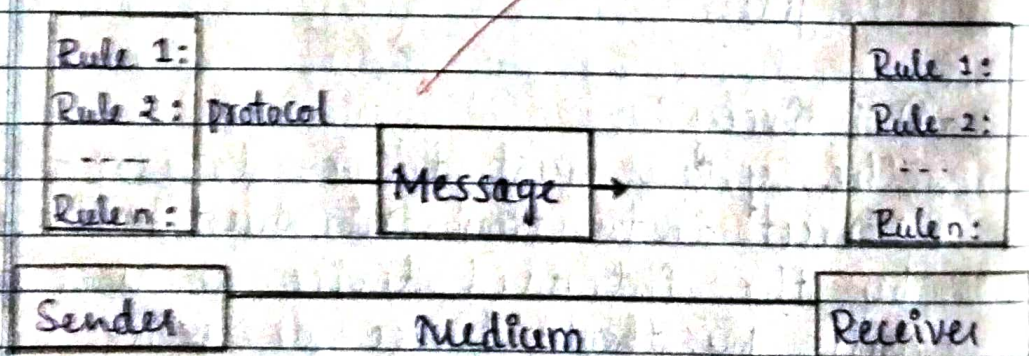
- The system must deliver data in a timely manner. Data delivered late are useless.
- In case of video and audio, timely delivery means delivering data as they are produced. In the same order that they are produced.
- without significant delay. This kind of delivery is called Real-time transmission.

→ Jitter:

- jitter refers to the variation in the packet arrival time. It is the uneven delay in the delivery of audio or video packets.

(2) Discuss the components and Data Representation?

A data communications system has five components.



(1) Message:

- The message is the information (data) to be communicated. popular forms of information include Text, numbers, pictures, audio and video.

STUDENT'S NAME		TOTAL MARKS 3
CLASS	SUBJECT	
ROLL NO.	DATE	

(2) Sender :

→ The Sender is the device that sends the data message. It can be a computer, workstation, telephone handset, videocamera.

(3) Receiver :

→ The Receiver is the device that receives the messages. It can be a computer, workstation, telephone handset, television.

(4) transmission medium :

→ The transmission medium is the physical path by which a message travels from sender to receiver.

Ex: twisted-pair wire, coaxial cable, fibre-optic cable, radio waves.

(5) protocol :

→ A protocol is a set of rules that govern data communications. It represents an agreement between the communicating devices.

→ Without a protocol, two devices may be connected but not communicating. Just as a person speaking French cannot be understood by a person who speaks only Japanese.

* Data Representation:

Information today comes in different forms such as text, numbers, Images, audio and video.

* Text:

- In Data Communications text is Represented as a bit pattern, a sequence of Bits (0s & 1s).
- Different sets of patterns have been designed to Represent text Symbols. Each set is called as code.
- The process of Representing symbols is called coding.
- The prevalent coding system is called Unicode.

* Numbers:

- Numbers are also Represented by bit patterns. However a code such as ASCII is not used to Represent numbers.
- The number is directly converted to a binary number to Simplify mathematical operations.

* Images:

- Images are also Represented by bit patterns. In its simplest form, an Image is composed of a matrix of pixels (picture elements) where pixel is called small dot.
- where the size of pixel depends on Resolution.
- In several methods to Represent color Images, one method is called RGB. Because this color is made up of combination of Red, green and Blue.

STUDENT'S NAME		TOTAL MARKS OBTAINED
CLASS	SUBJECT	5
ROLL NO.	DATE	

- The Intensity of each color is measured, and a Bit pattern is assigned to it. Another method is called YCM.
- In which color is made of a combination of these other primary colors. Yellow, cyan and magenta.

* Audio :

- Audio refers to the Recording or broadcasting of sounds or music.
- Audio is by nature different from text, numbers or Images. It is continuous not discrete. When we use a microphone to change voice or music to an electric signal.

* Video :

- Video refers to the Recording or broadcasting of a picture or movie.
- Video can either be produced as a continuous entity (eg. TV camera)
- It can be combination of Images each of discrete entity, arranged to convey the idea of motion.