* Explain goal stack Planning with example.

→ Planning for initial stack stuck to goal state
→ start from goal state find out action for goal state and apply it on initial stat
→ Combination of forward and backend resp.

→ Solve problem block world Problem

R_1 (Rule₁) : Pickup (x)
       Arm empty
       ① ontable (x)
       ② Clear (x)

R_2 : PUTDOWN (x)
       holding (x)

R_3 : STACK(x, y)
       holding (x)

R_4 : UNSTACK(x, y)
       Arm empty
       on (x, y)
       Clean (x)

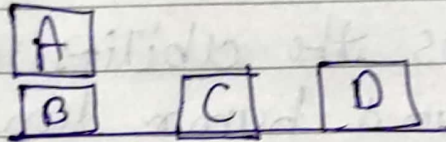1. • ON (C, A)

• ON (C, A) ^ ON (B, D) ^ OTAD

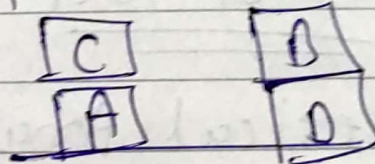Ex • To start with goal stack is simply:

• On (C, A) ^ ON (B, D) ^ ONTABLE(A) ^ ONTABLE (D)

• This problem is separate into four subproblems one for each component of the goal

start

ON (B, A) ^ ONTABLE (A) ^
^ ONTABLE (D)
^ ARMEMPTY

Goal: ON (C, A) ^ ON (B, D) ^
ONTABLE (A) ^ ONTABLE (D)

→ Two of the subproblem ONTABLE (A) & ONTABLE (D) are already true in the Initial state.

- Alternative I : Goal stack
  - ON (C, A)
  - ON (B, 0)
  - ON (C, A) ^ ON (B, D) ^ OTAD

- Alternative : 2 : Goal stack
  - ON (D, 0).
  - ON (C, A)
  - ON (C, A) ^ ON (B, 0) ^ OTAD

* Explain NLP in detail.

→ NLP :-
   It is the ability of computer Program to understand human language as It is spoken.
   → NLP is a component of A.I.

⇒ STEPS OF NLP

1> lexical Analysis & morphological.
   → The first Phase of NLP is the leocical Analysis
   → It divided to cohole text Into Paragraphs, sentences & words.

2.> Syntactic Analysis:
                  It Is used to check

grammar, word arrangements, = shows the relationship among the words.

→ Linear sequences of words are transformed into structures that how the words related to each other.

3> Semantic Analysis:

It is concerned with the meaning representation.

→ It mainly focus on literal meaning of words, phrases, & sentences.

4.> Disclourse Integration:

Disclo It depends upon the sentences that Proceeds It & also involves the meaning of the sentences that follow it.

5.> Pragmatic Analysis:-

It is fifth & least phase of NLP.

→ It theps you to to discover the intended effect by applying use of rules that characterize co-operative dialoge.

→ The final step in Pragmatic Processing is tramslate, from knowledge based representation to command to be executed by the system

Ans. NLP

- Question Answering
- Spam Detection
- Sentiment Analysis
- Chatbot
- Speech recognition

Advantages!

- It is very time efficient
- It helps computer to communicate with humans in their languages.

Disadvantages:-

- NLP may not show context
- NLP is unpredictable.

* Explain the Problem solved by AI techniques.

- Some of the most popularly used problem solving with help of A.I. are:

1. Chess
2. Travelling Salesman Problem
3. Tower of Hanoi Problem
4. Water-Jug Problem
5. N-Queen Problem

Problem :-

Problems are the Issues with comes across any System. A ~A solution is needed to solve that particular problem

Steps → Solve Problem Using A.J.

1. Defining the Problem
2. Analyzing the Problem
3. Identification of Solutions.
4. Choosing the Solution
5. Implementation

⟹ **I> 8 Puzzles Problem :-**

Here, we have 3×3 matrix mo with moveable tiles numbered from 1 to 8 with blank space.
→ The tile adjacent to the blank space. can slide into the space.

2> Water -Jug Problem :-

In this Problem, we Provided with two jugs :- one having capacity of 3 gallon & second is 4 gallon.

→ There is no other measuring equipment available & the jugs also do not have any

kind marked on them

* A * Algorithm

=> It is best known form of best first se
it avoids expanding paths that are alread
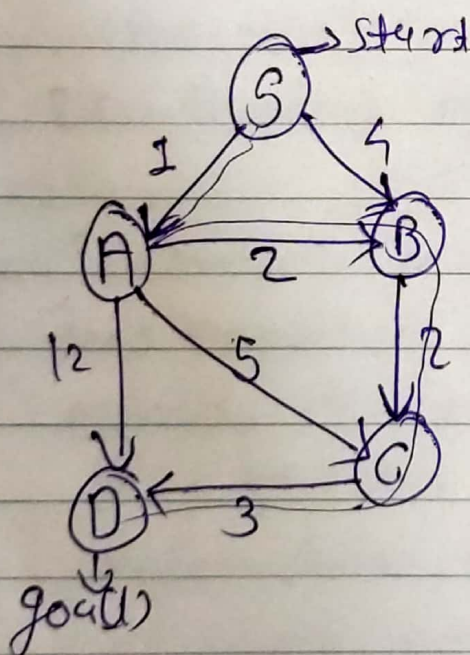expensive, but expands most promising path
first.

=> $f(n) = g(n) + h(n)$

where, $g(n)$ = The cost to reach the nod
$h(n)$ = heuristic value
$f(n)$ = estimimated total path to
reach goal

Ex

> Start

huristic value.

S	- 7
A	- 6
B	- 2
C	- 1
D	- 0

goal)

$S \rightarrow f(n) = 0 + 7 = 7$

$S \rightarrow A = 1 + 6 = 7$

$S \rightarrow B = 4 + 2 = 6$ ↙ (cost low)

$$\frac{S \to B \to C}{g(m)} = 0 + 1 =$$

$$(S+B)+0 \quad 1$$

$$= (4+2) + 1$$

$$= 7$$

$$S \to A = S \to B \to C \quad \text{select any on.}$$

$$\Rightarrow S \to A \to B = 3 + 2 = 5 \quad \checkmark$$

$$S \to A \to C = 6 + 1 = 7$$

$$S \to A \to D = 13 + 0 = 13$$

$$S \to A \to B \to C =$$

$$S \to A \to B \to C = 5 + 1 = 6.$$

$$\boxed{S \to A \to D \to C \to D = 8 + 0 = 8 \quad \smile\checkmark}$$

$$S \to A \to C \to D = 8 + 0 = 8 \quad \checkmark$$

$$S \to B \to C \to D = 9 + 0 = 9$$