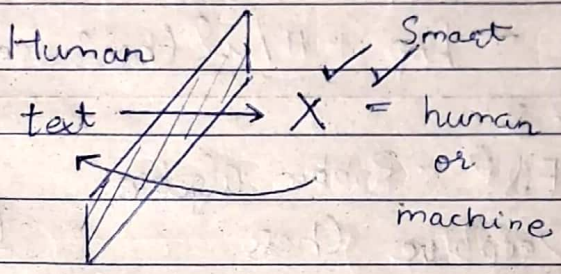
Date : 23/01/2024

Unit - 1

Artificial Intelligence :

Think human X	Think X Rationale
Act X human	Act Rationale

Alan Turing



Weak AI hypothesis

Strong AI hypothesis

Act Rationale

Agent :

Rationalized agent
Ideal Rationalized agent

Goal :

Objective fn ← ele ↓ time ↓ job done cleaning,

Date : 24/01/2024

Himal
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1946 - ENIAC
1950 - Turing
1956 - AI Name
1958 - Mccathy LISP MIT + Minskey
1964 - Eliza
1966 - Shakey
1974-80 - Machine Translation - ve NN
1987-93 - Lisp + H/w (hardware)

Winter # 1

W # 2

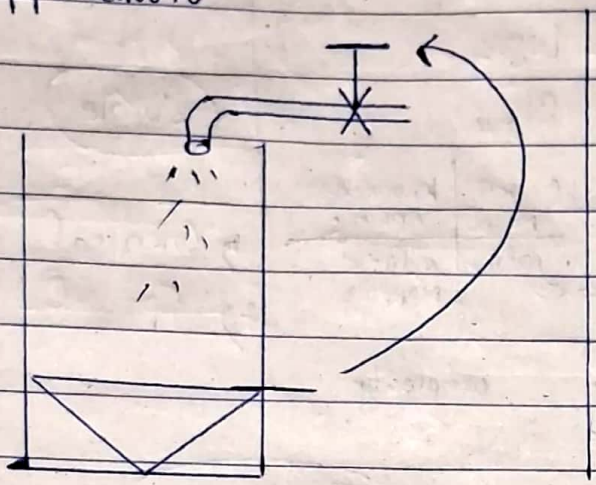
1996 - EQP - Robbin algebra
1997 - Deepblue Chess (X)

NASA & DARPA
1998 - Deep Space Mission
1999 - Remote agent take of

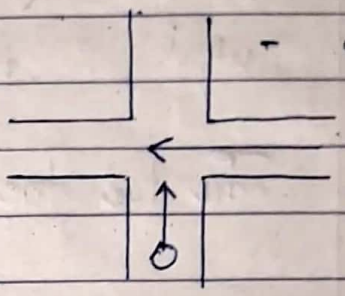
2005 - Car (132 km)
2011 - Apple
2014 - Alexa
2020 - Chat Gpt 3
2022 - Public
2023 - Generative

Omniscience ?

Application



Traffic Signal - Time const.
- changing
- semiautomatic



A.I Technique

Machine learning
- Supervised ip → o/p ✓
- Unsupervised → i/p ✓ → ?
- Reinforcement

Computer vision
Robotics & Auto
NLP.....

Structured	Unstructured
Linear	Non Linear

Search
Knowledge
Abstraction

x ↑ 1 time y ↑ 3 times

x_1 y_1

x_2 ↑ 1 time y_2 ↑ 3 times

2 times 6 times

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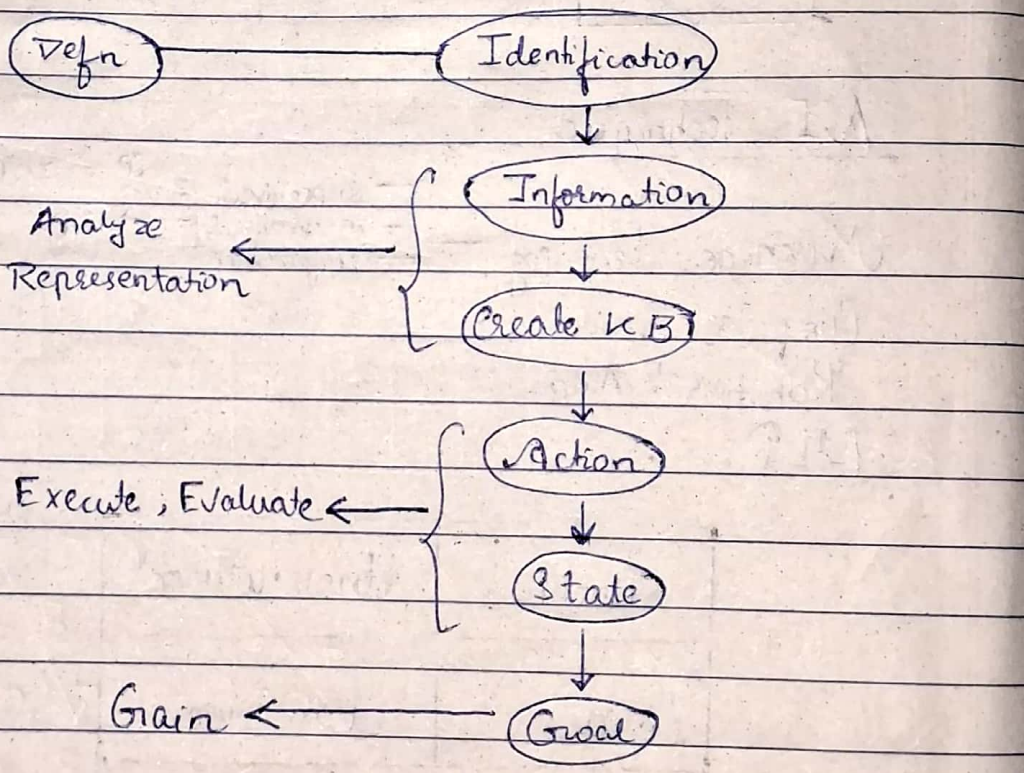
Problem Solving	AI Models	Semiotic
Structured	Maze	Statistical
well / ill	logic	
Tic tac toe	Chess	Simple / Complex
	Model KB / Model Relation / Discover — Knowledge Appln. / Relative Mapping	1) General 2) Special
	complexity	



Expertise
Planning & Decision Making

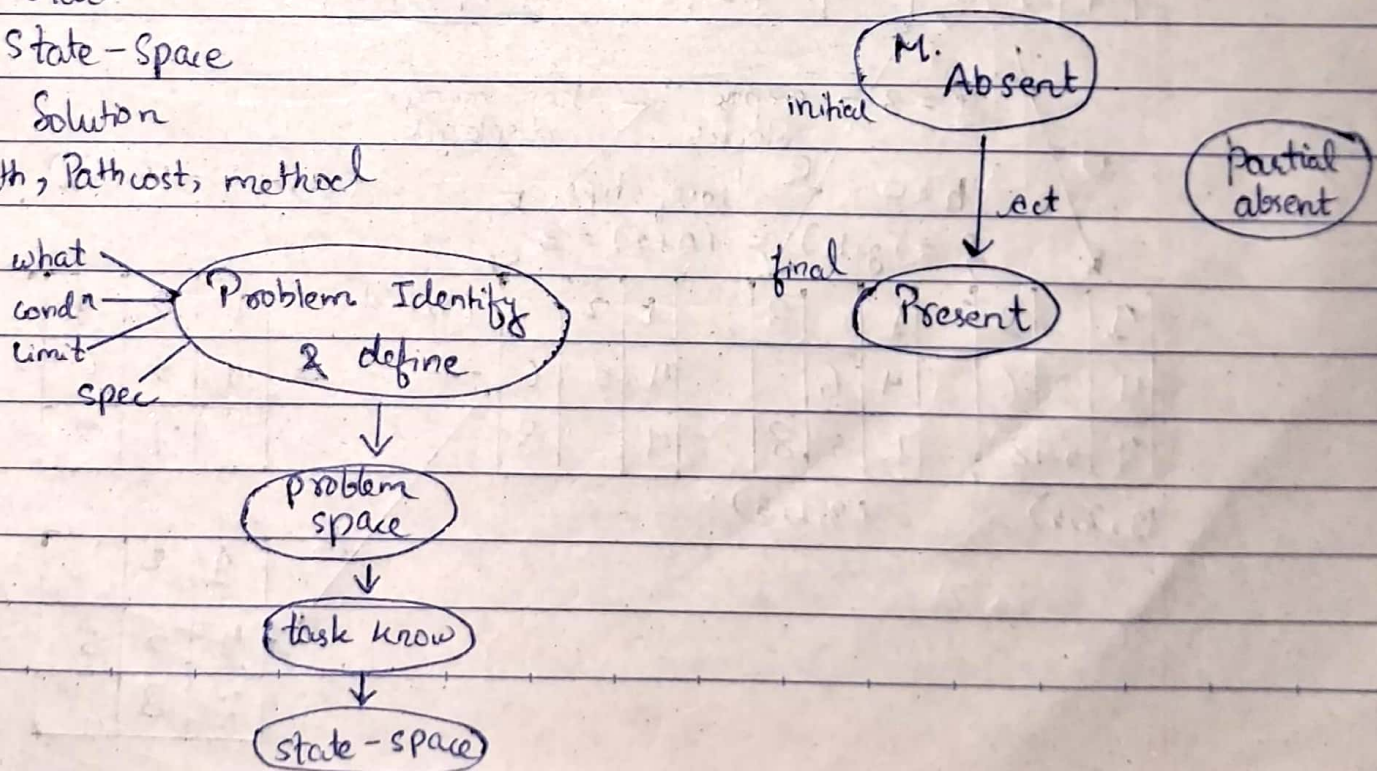
Date : 02/02/2024

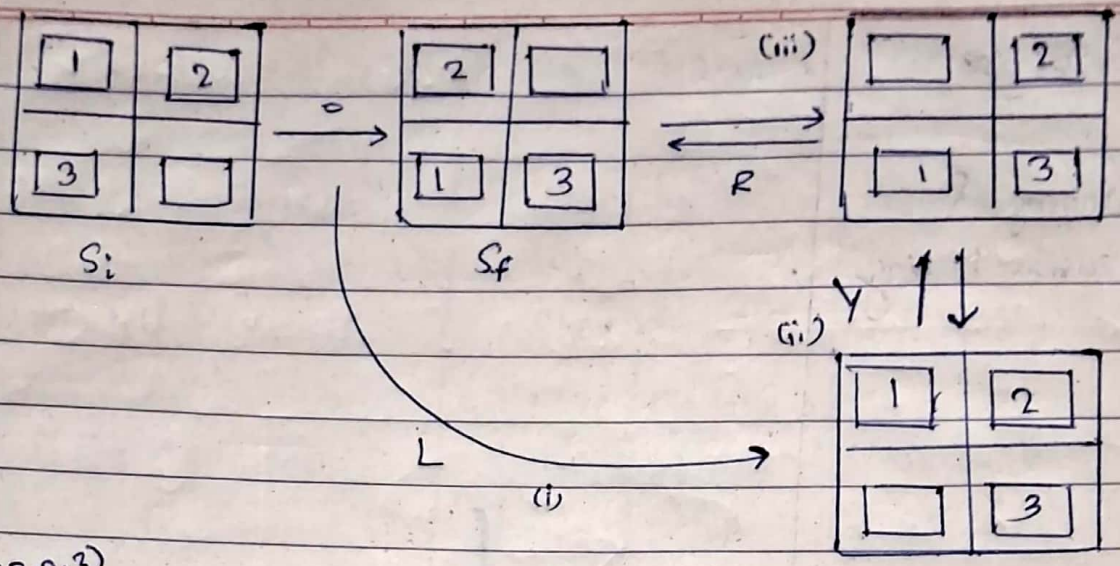
Conditions

1) Context
2) Object
3) Solution
4) Expertize

Formulation

Start
State - Space
Solution
Path, Pathcost, method





(3,0,3)

1	2	3
	4	6
7	5	8

1	2	3
4	5	6
7	8	

R U

(2,1,3) (4,1,5) (4,1,5)

1	2	3
4		6
7	5	8

1	2	3
7	4	6
	5	8

	2	3
1	4	6
7	5	8

U R L

g = 3 – empty blocks

h = 0 – how many displaced

f = (g+h) = (0+3) = 3 No. of steps

(g,h,f) = (3,0,3)

1		3
4	2	6
7	5	8

(3,2,5)

1	2	3
4	6	
7	5	8

(3,2,5)

1	2	3
4	5	6
7		8

(1,2,3)

1	2	3
4	5	6
	7	8

(3,0,3)

||

(0,3,3)

||

0

R

1	2	3
4	5	6
7	8	

1) State = initial state

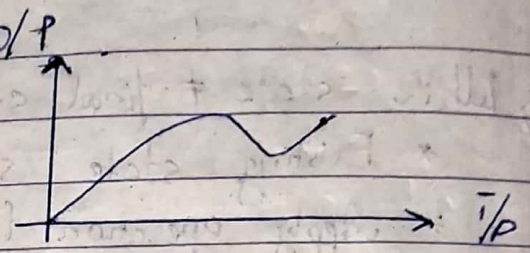
2) While state ≠ final state ≠ 0
   * Existing state = state
   * Apply operation {L, R, U, D} to get new states
   * Exist state to new state = ϕ
   i) Exist state = Exist state. Union state
   ii) State = new state
   End while

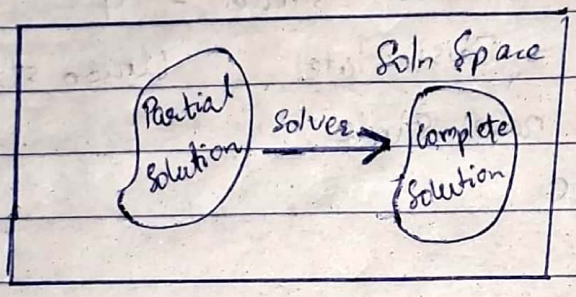
Types :- or char
Deterministic / Observable
Non-observable / Multistate
Non-deterministic / Partially observable
Unknown State - Space

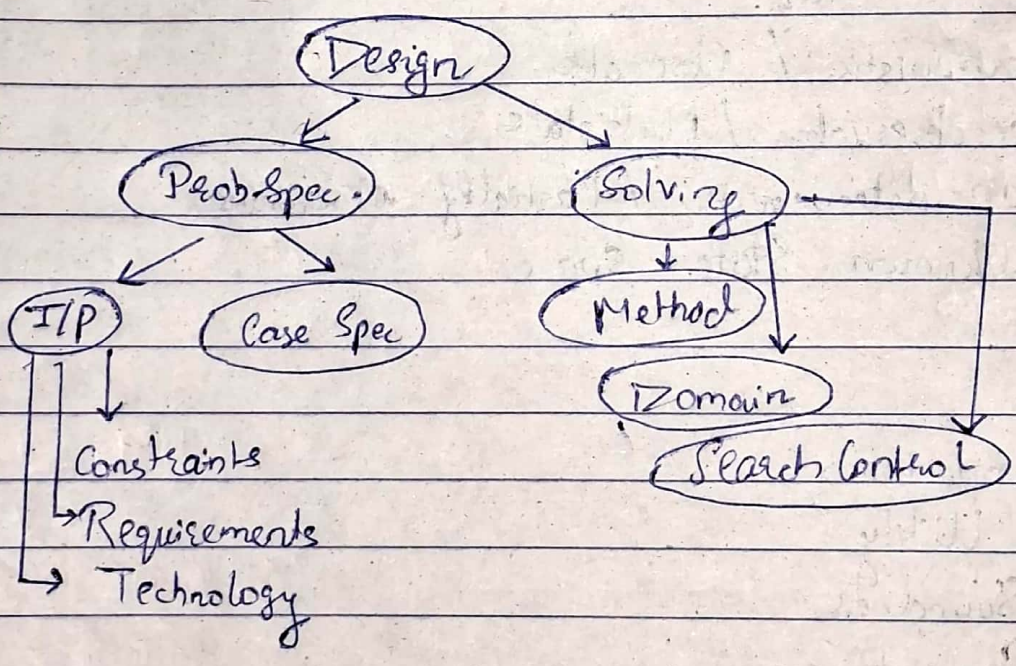
PAR
Compactness
Utility
Soundness
Completeness
Generality
Transparency.

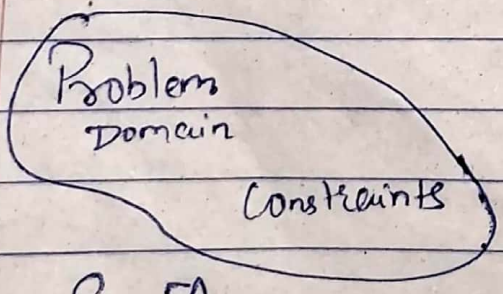
Representation.

- Machine language
- Soln Space
- Data struct. & prog.

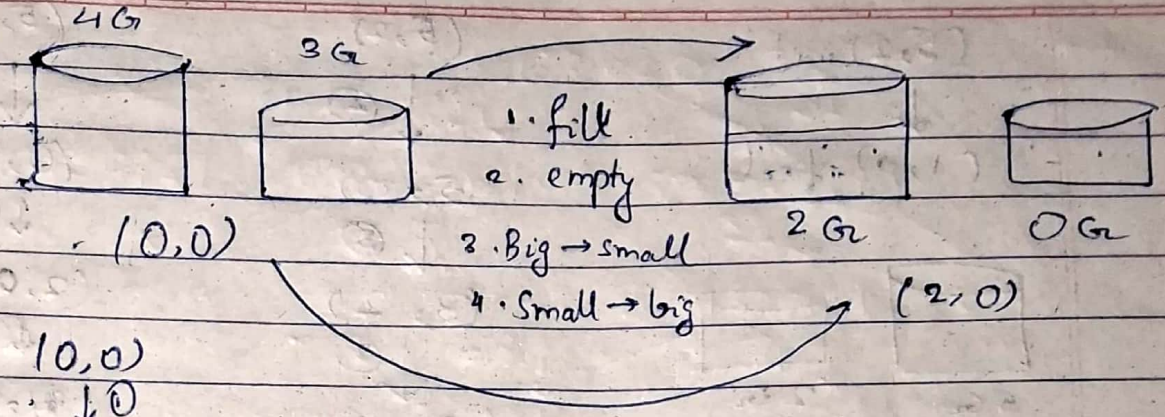








S → FA



(0,0)
↓ ①
(0,3)
↓ ④
(3,0)
↓ ①
(3,3)
↓ ④
(4,2)
↓ ②
(0,2)
↓ ④
(2,0)

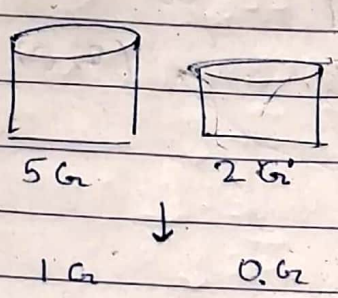
(0,0)
↕ ①
(4,0)
↓ ③
(1,3)
↓ ②
(1,0)
↓ ③
(0,1)
↓ ①
(4,1)
↓ ③
(2,3)
↓ ②
(2,0)

Final
Date
Page

(5,2) init

↓

(1,0) final



(5,2)

↓ ②

(5,0)

↓ ③

(3,2)

↓ ②

(3,0)

↓ ③

(1,2)

↓ ②

(1,0)

(5,2)

↓ ⑤

(0,2)

↓ ④

(2,0) ① → (2,2)

↑ ②

(4,0) ③ ←

↓ ①

(4,2)

↓ ④

(5,1)

↓ ②

(0,1)

↓ ④

(1,0)

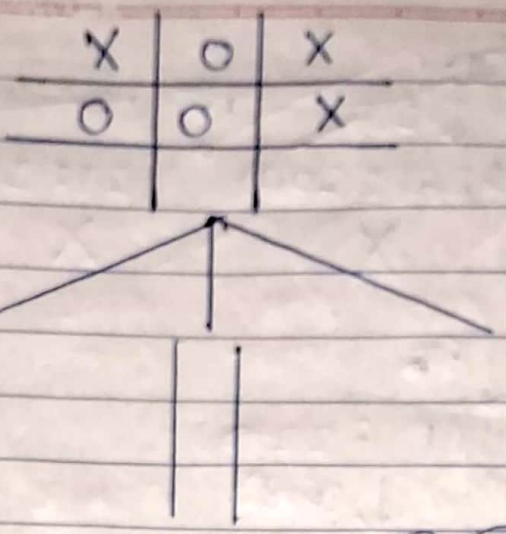
Date: 08/02/2024

2 Fill in the blanks

1 True or False

2 MCQ

1 Match the following



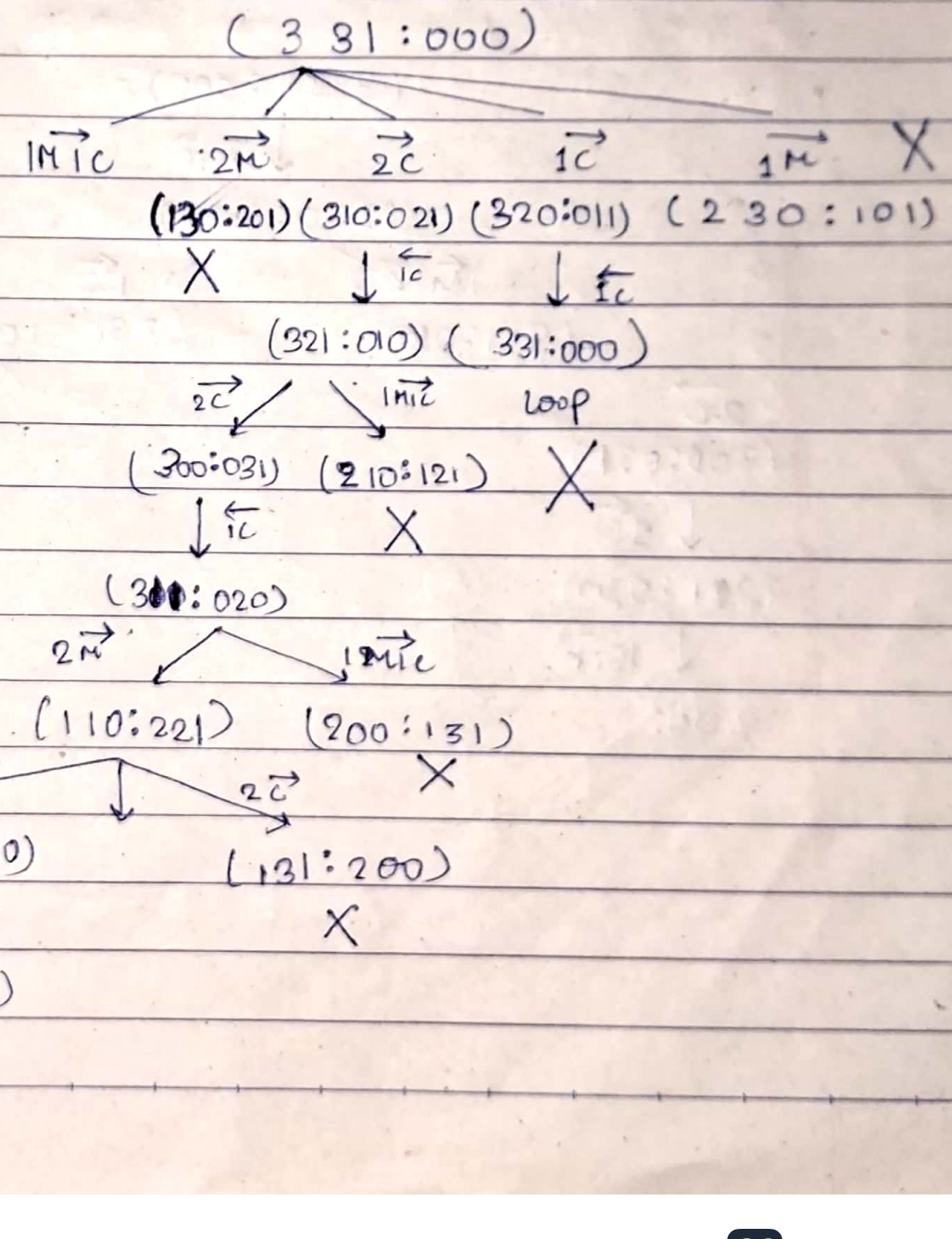
3M 3C B

{M C B}

3 3 1

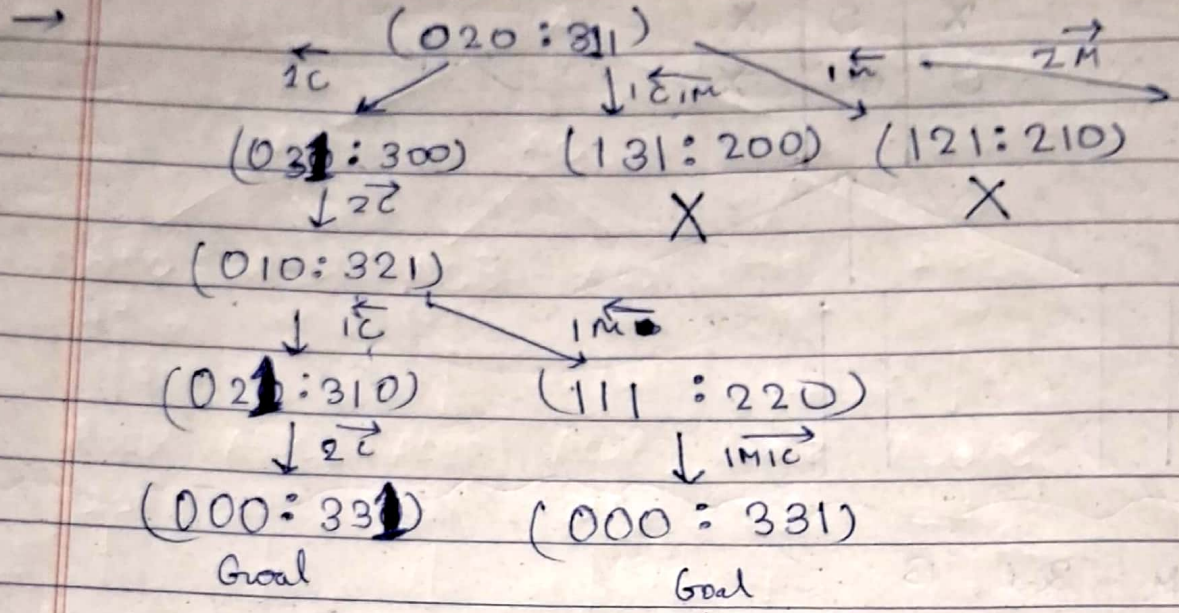
0 0 0

M ≥ C

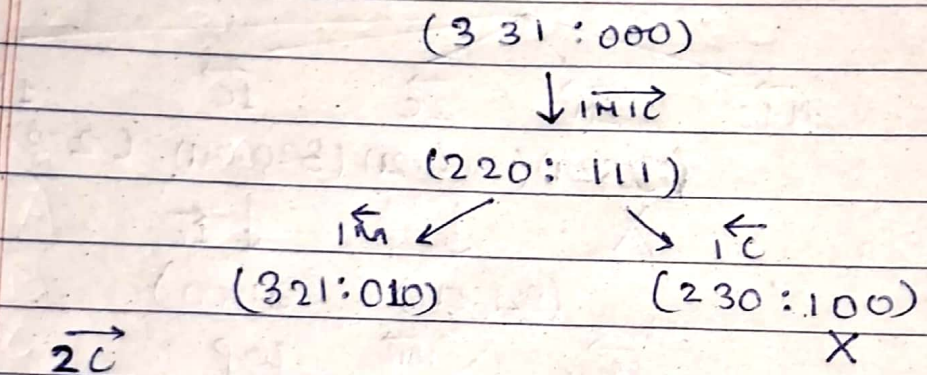


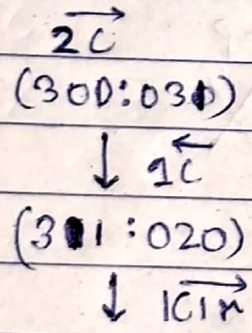
M C B

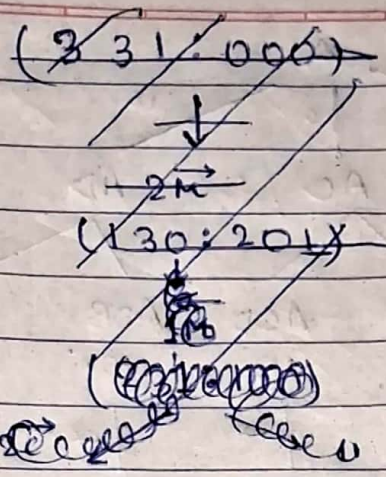
→


(020 : 311)
1C
1C1M
1M
2M
(031 : 300)
(131 : 200)
X
(121 : 210)
X
2C
(010 : 321)
1C
1M
(021 : 310)
(111 : 220)
2C
1M1C
(000 : 331)
Goal
(000 : 331)
Goal

•


(331 : 000)
1M1C
(220 : 111)
1M
1C
(321 : 010)
(230 : 100)
X

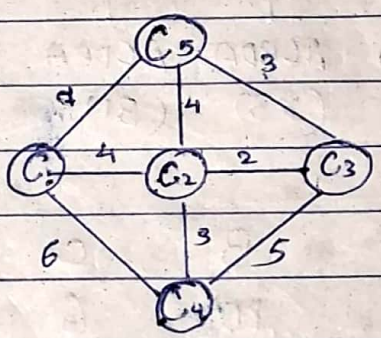

2C
(300 : 031)
1C
(311 : 020)
1C1M
200:

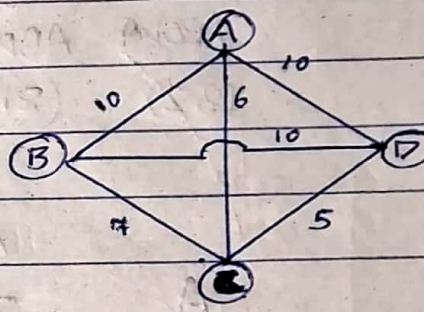


Date : 15/02/2024

Real World

TSP - Route finding
Symmetrical
Unsymmetrical
Directed / Undirected





Init = C 2

Goal = C 2

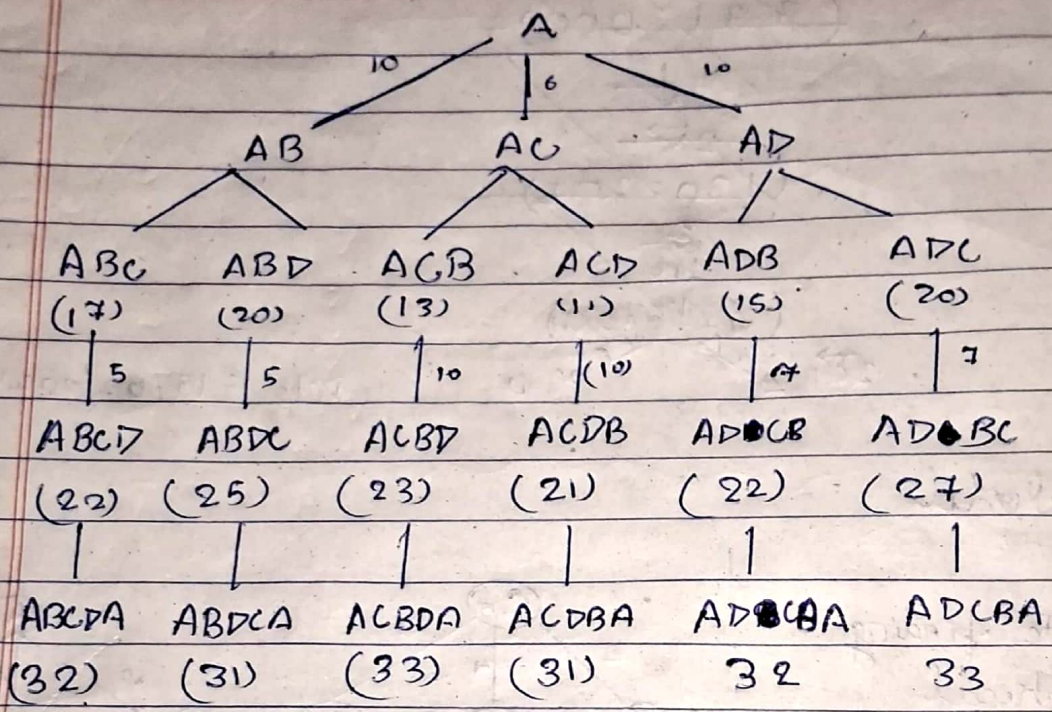
Action/Oper : Travel

Path cost ↓

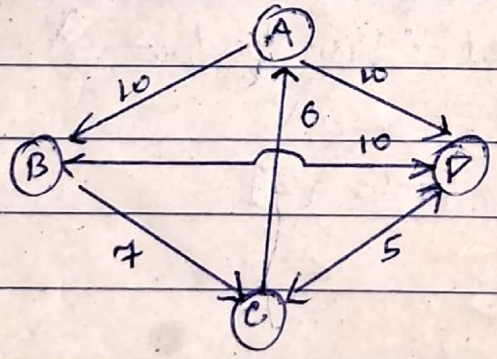
Constraint : Visit city twice X

A - C - D - B - A = 31

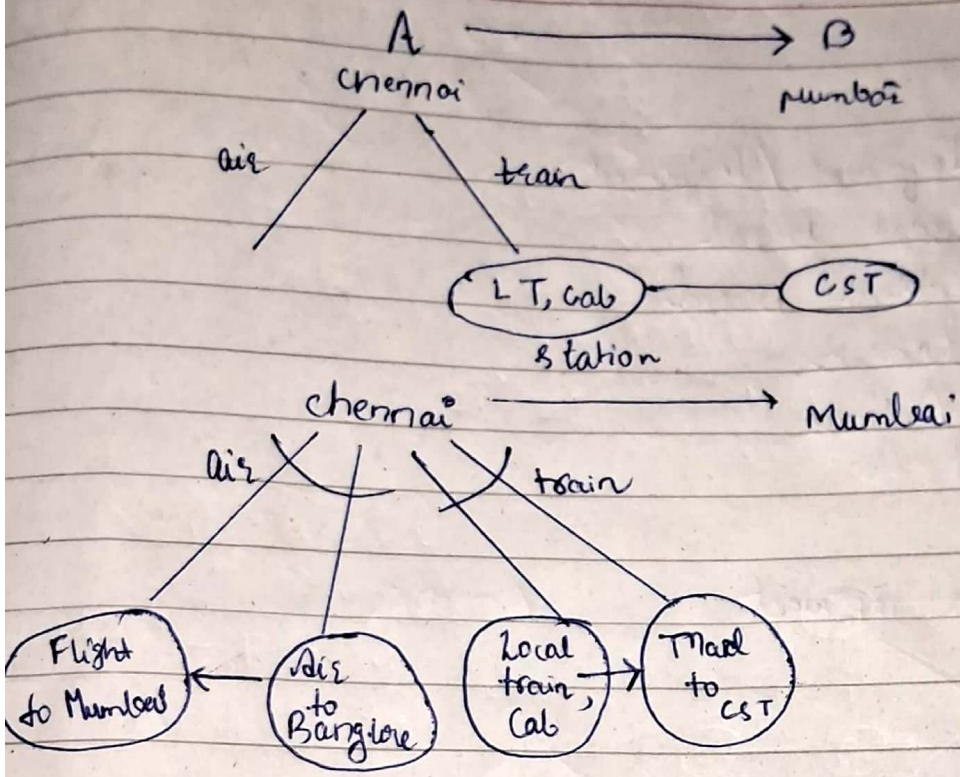
$C_2 - C_3 - C_5 - C_1 - C_4 - C_2 = 21$



	A	B	C	D
A	-	10	6	10
B		-	7	10
C			-	5
D				-



A - B - D - C - A



- KD - DB, ML
  - Cog. Model (Cognitive)
  - NN / Evol. Comp
  - Intelligent (MAS)
  - Multiperspective