

Task 2

- breadth First Search

$A \rightarrow D \rightarrow E \rightarrow B \rightarrow G$

- Depth First Search

$A \rightarrow D \rightarrow G$

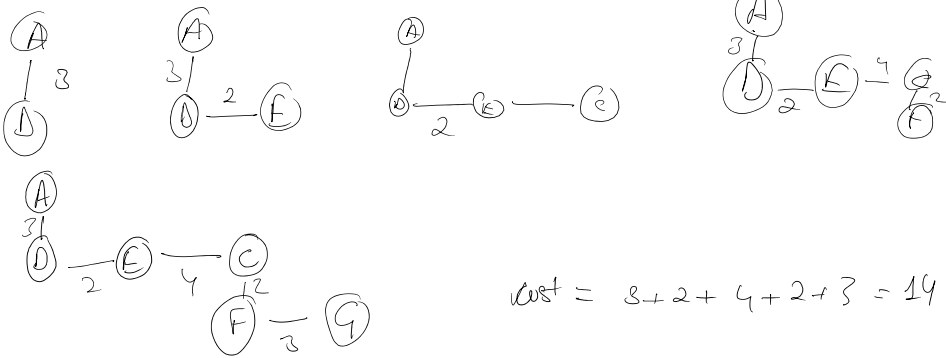
- Iterative depending Search

Limit 0: A

Limit 1: A D E B

Limit 2: A D G

- Uniform Cost Search



$$\text{cost} = 3 + 2 + 4 + 2 + 3 = 14$$

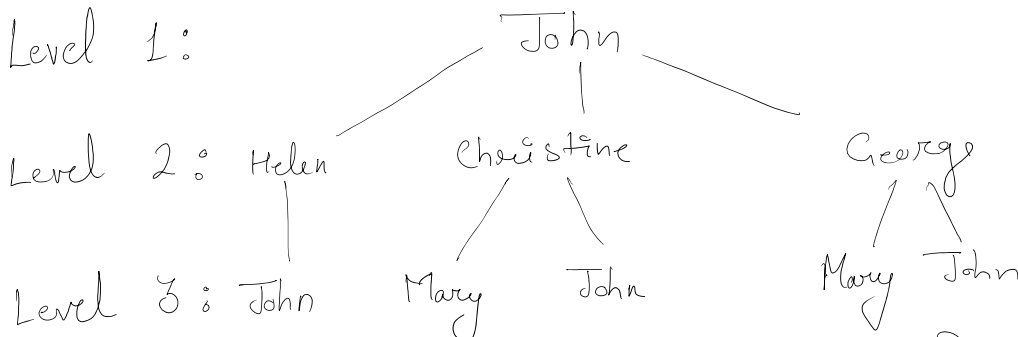
Path = A D E C F G

cost = 14

Task 3 :

i) Iterative depending search, it's organized based on levels

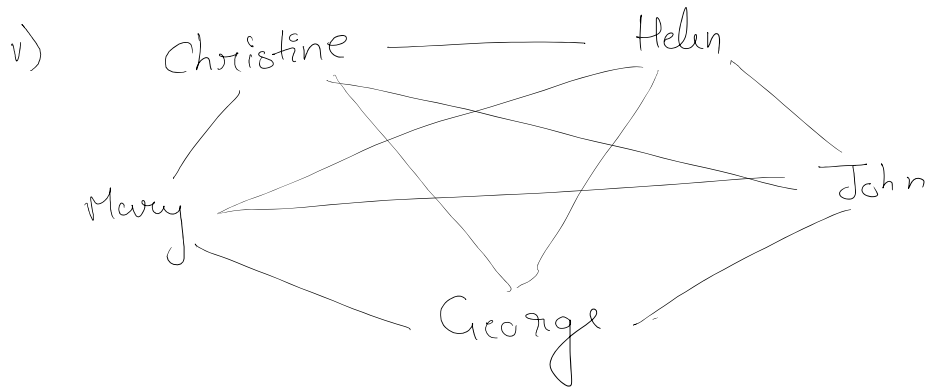
ii) Level 1:



iii) No, one-to-one does not exist. Ex Mary & Peter

iii) No, one-to-one does not exist. Ex Mary & Peter

iv) Christine — 1 — Peter — 2 — John — 3 — George — 4 — Mary



vi) 1 GB = 100000 KB

To prevent from exceeding 1GB, BFS
node it visits and not revisit
marks since revisiting the node

Task 4:

$$\begin{aligned}
 h(A) &= 60 \\
 h(B) &= 45 \\
 h(C) &= 15 \\
 h(D) &= 0 \\
 h(E) &= 55 \\
 h(F) &= 25
 \end{aligned}$$

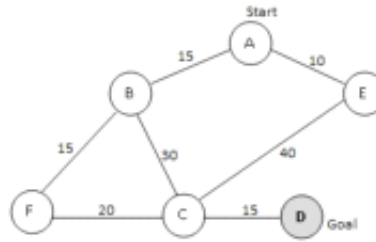


Figure 4: A search graph showing states and costs of moving from one state to another. Costs are undirected.

Consider the search space shown in Figure 4. D is the only goal state. Costs are undirected. For each of the following heuristics, determine if it is admissible or not. For non-admissible heuristics, modify their values as needed to make them admissible.

Heuristic 1:

$$\begin{aligned}
 h(A) &= 5 \\
 h(B) &= \cancel{45} \\
 h(C) &= 15 \\
 h(D) &= 0 \\
 h(E) &= 10 \\
 h(F) &= 0
 \end{aligned}$$

Heuristic 2:

$$\begin{aligned}
 h(A) &= \cancel{60} \\
 h(B) &= \cancel{45} \\
 h(C) &= \cancel{15} \\
 h(D) &= \cancel{0} \\
 h(E) &= \cancel{55} \\
 h(F) &= \cancel{35}
 \end{aligned}$$

Heuristic 3:

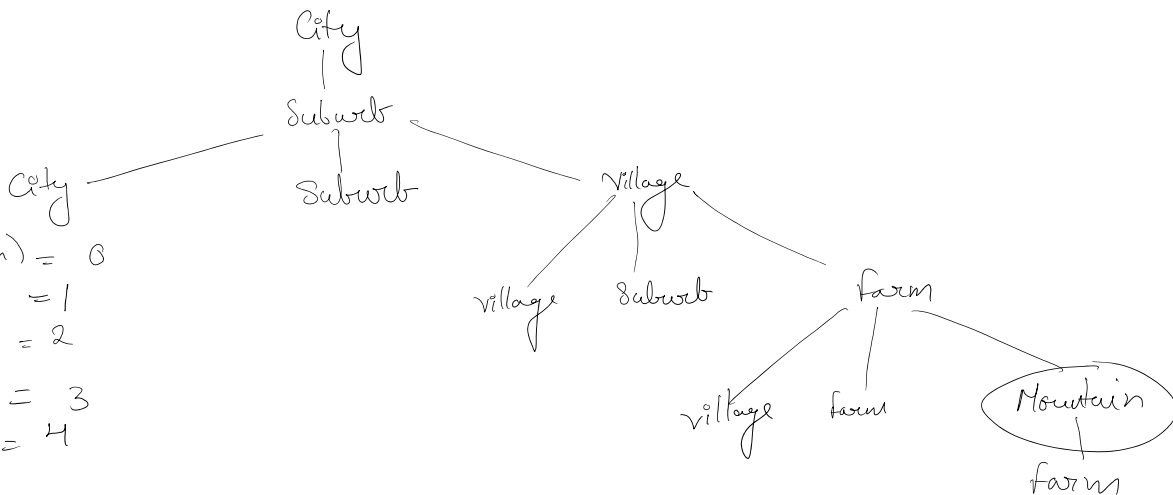
$$\begin{aligned}
 h(A) &= 35 \\
 h(B) &= 30 \\
 h(C) &= \cancel{15} \\
 h(D) &= \cancel{0} \\
 h(E) &= 0 \\
 h(F) &= 30
 \end{aligned}$$

Heuristic 4:

$$\begin{aligned}
 h(A) &= 0 \\
 h(B) &= 0 \\
 h(C) &= 0 \\
 h(D) &= 0 \\
 h(E) &= 0 \\
 h(F) &= 0
 \end{aligned}$$

} All admissible

Task 5:



$$\begin{aligned}
 h(\text{Mountain}) &= 0 \\
 h(\text{Farm}) &= 1 \\
 h(\text{Village}) &= 2 \\
 h(\text{Suburb}) &= 3 \\
 h(\text{City}) &= 4
 \end{aligned}$$