اللَّهُمَّ لا سَهْلَ إلاَّ ما جَعَلْتَهُ سَهْلاً
وأنْتَ تَجْعَلُ الحَزْنَ إذَا شِئْتَ سَهْلاً

IDSS

PART (5)

Blind Search Agent

بسم الله الرحمن الرحيم

4th year - mis track
course package
اونـــــلايـــــن

3 SUBJECTS :
IIS
E-COMMERCE
DSS

الأسعار :
٣ مواد   ١٠٦٠ ج
مادتين   ٨١٠ ج
مــادة   ٤٦٠ ج

→ CONTACT US
0127 187 3664

شبابنا الحلو .. ربنا معاكوا في اخر ترم وفي مشروع التخرج.

حنكون معاكوا ان شاء الله في ٣ مواد ... متشغلوش بالكوا بيهم و ركزوا في مشروعكوا

✉ صلي علي سيدنا محمد

Search

Blind vs. Heuristic Strategies

I)   Heuristic (informed) Search

strategies **exploit such information** to assess that one node is "more promising" than another.

- A heuristic is a strategy for **selectively exploring the search space**.
- It guides the search along lines that have **a high probability of success.**
- It employs knowledge about the nature of a problem to find a solution.
- It does **not guarantee an optimal solution** to the problem but can come close most of the time.
- Human beings use **many heuristics in problem solving.**

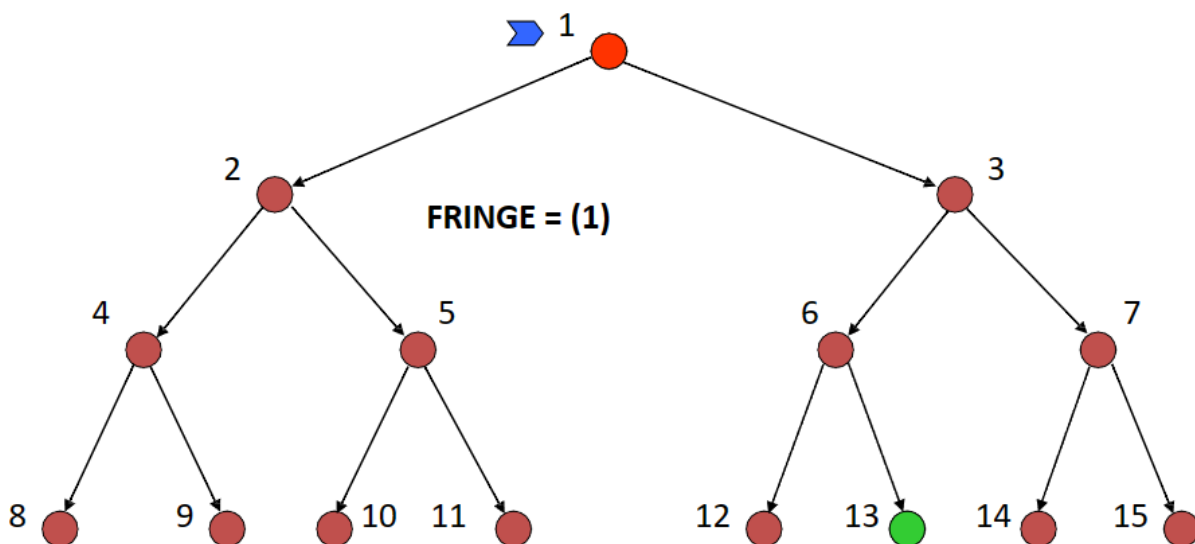### II)   Blind (or Un-Informed/Exhaustive /Brute-Force)

Strategies D**o not exploit any of the information** contained in a state.

Strategies:

1- **Depth-First Search [DFS] :**   New nodes are inserted **at the Front of** the FRINGE.
   -    Depth-Limited Search
   -    Iterative Deepening Search
2- **Breadth-First Search [BFS] :**   New nodes are inserted **at the End of** the FRINGE.
   -    Bidirectional Search
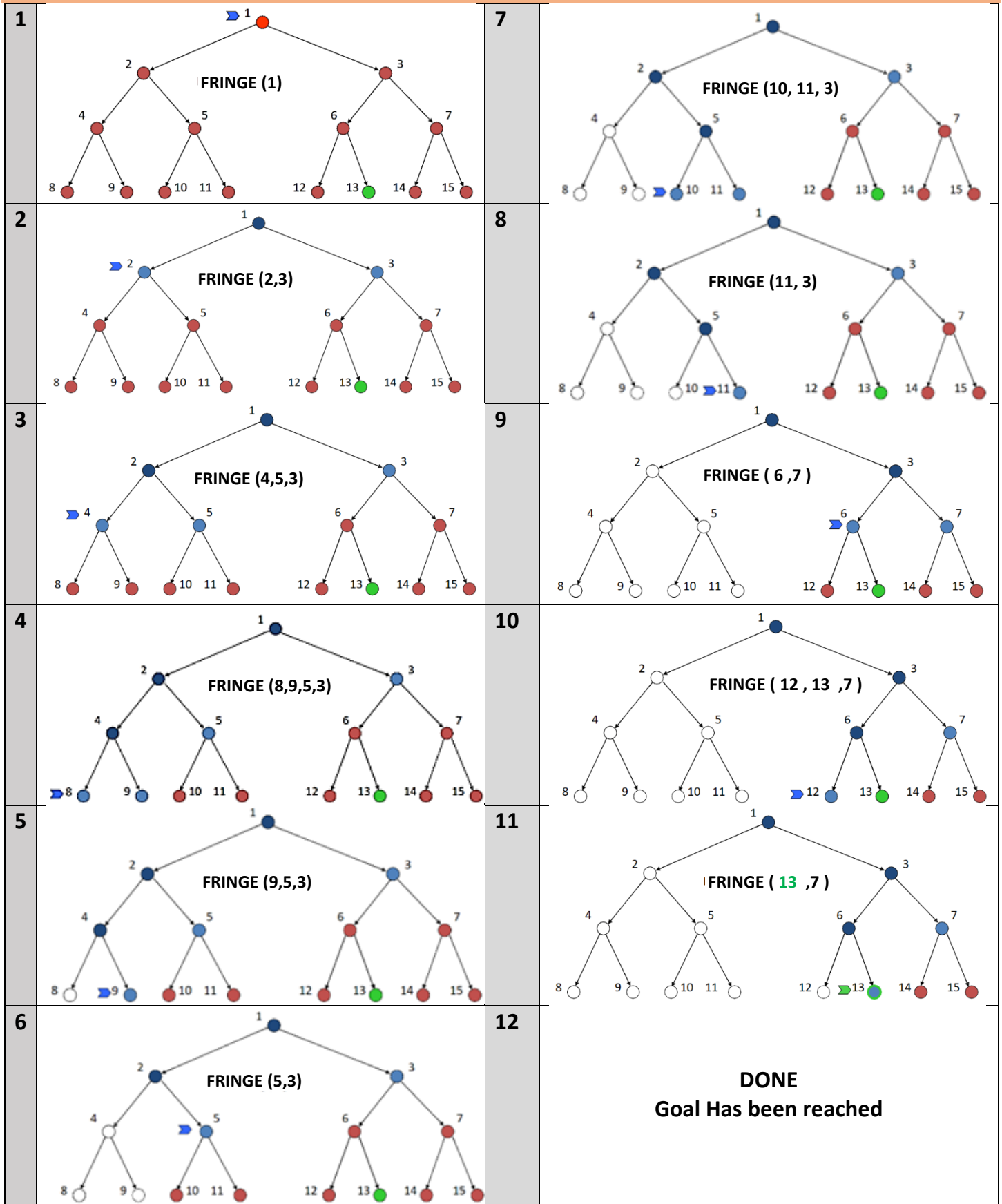3- **Uniform-Cost Search [UCS]**

**Example**

(initial State = 1 , Goal State = 13)

FRINGE = (1)

Depth-First Search [DFS]

1

FRINGE (1)

7

FRINGE (10, 11, 3)

2

FRINGE (2,3)

8

FRINGE (11, 3)

3

FRINGE (4,5,3)

9

FRINGE (6 ,7)

4

FRINGE (8,9,5,3)

10

FRINGE (12 , 13 ,7)

5

FRINGE (9,5,3)

11

FRINGE (13 ,7)

6

FRINGE (5,3)

12

DONE
Goal Has been reached

Depth-Limited Strategy

Depth-first with **depth cutoff *k*** *(maximal depth below which nodes are not expanded)*

Three possible outcomes:

- Solution.
- Failure *(no solution)*. Cutoff *(no solution within cutoff)*.
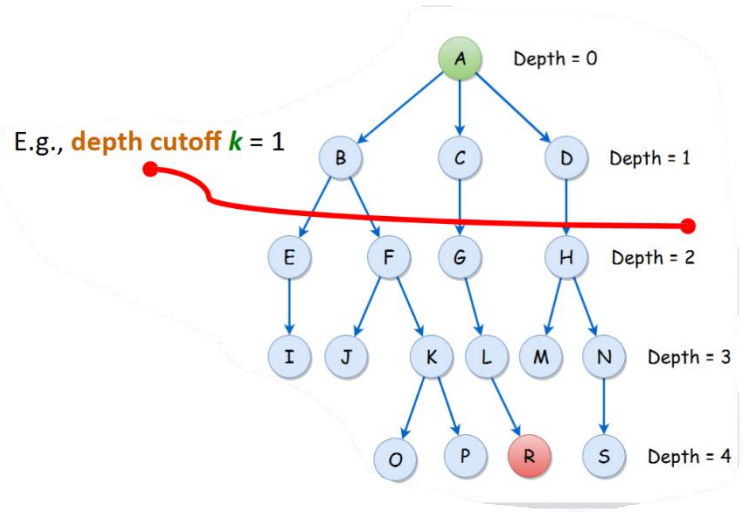
E.g., **depth cutoff *k*** = 1

Iterative-Deepening Strategy

Repeat for *k* = 0, 1, 2, ...:
- Perform depth-first with depth cutoff *k*

E.g., Repeat for *k* = 0 to 4
- Perform depth-first with depth cutoff *k*

الحمد لله ، علي الصحة ، و الاكل و اني بتعلم ، و ان ممكن يكون عندي اب او ام ،
الحمد لله اني ليا صحاب و ناس بتحبني ، الحمد لله علي نعمة الامن و الأمان.

الحمد لله علي كل نعمة فاكرينها و مش فاكرينها.

الحمد لله على نعمة الإسلام.

الحمد لله ان ربنا وفقنا انهاردا نقول "الحمد لله"

الحمد لله اني لسة عايش و اخدت يوم كمان فممكن لسة اتوب عن أي حاجة غلط

Breadth-First Search [BFS]

1

FRINGE (1)

FRINGE (11,12,13,14,15)

7

FRINGE (7,8,9,10,11,12,13)

2

FRINGE (2,3)

8

FRINGE (8,9,10,11,12,13,14,15)

3

FRINGE (3, 4,5)

9

FRINGE (9,10,11,12,13,14,15)

4

FRINGE (4,5,6,7)

10

FRINGE (10,11,12,13,14,15)

5

FRINGE (5,6,7,8,9)

11

FRINGE (11,12,13,14,15)

6

FRINGE (6,7,8,9,10,11)

12

FRINGE (12,13,14,15)

FRINGE (**13**,14,15)
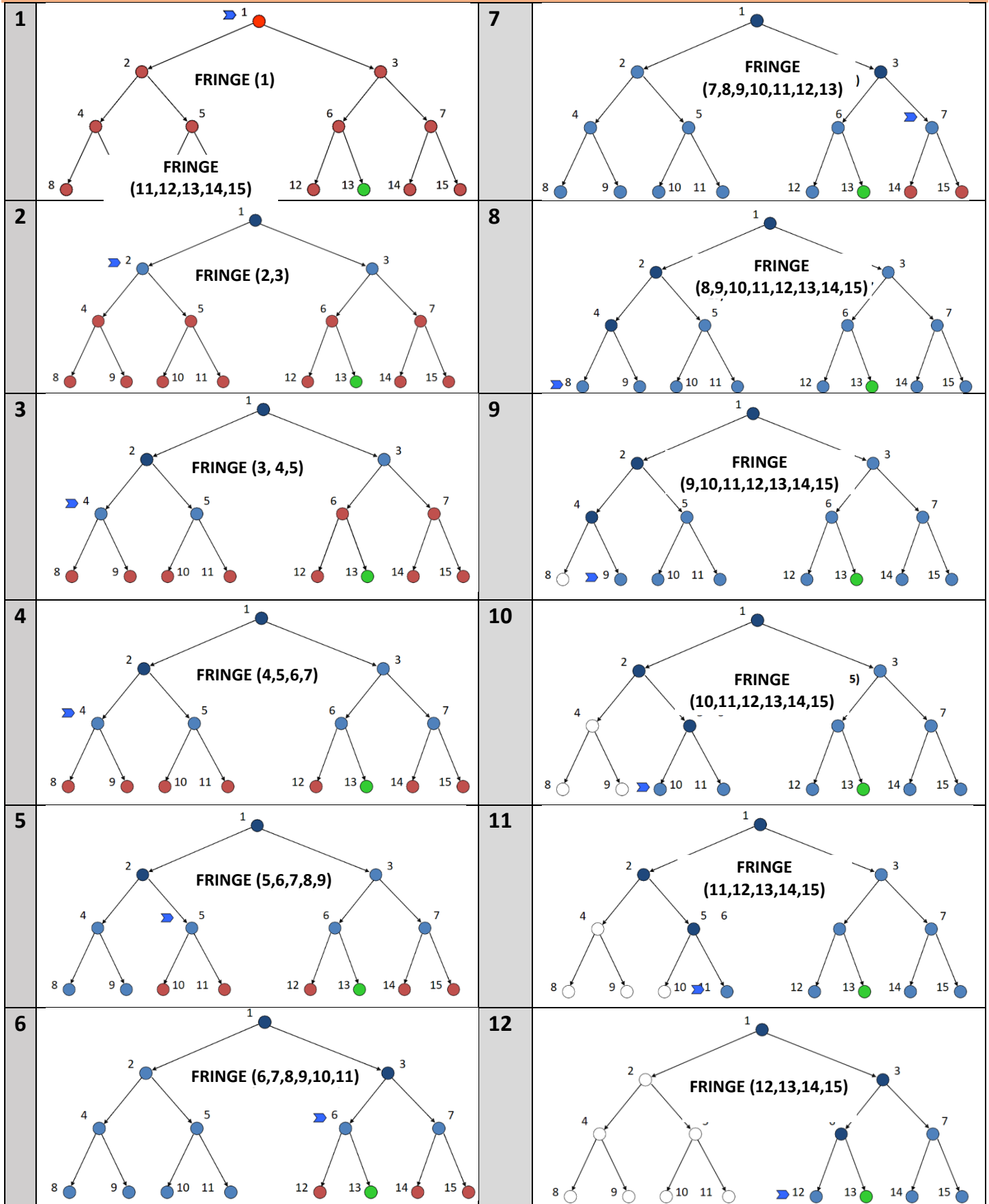
13
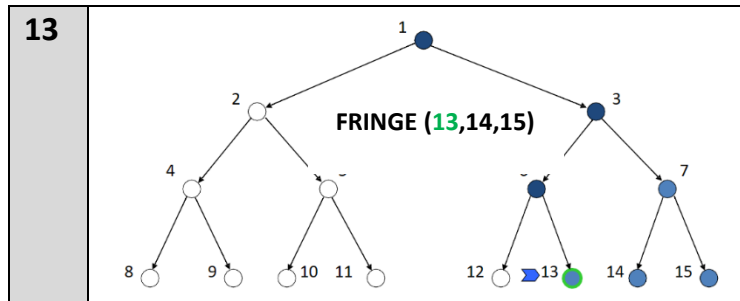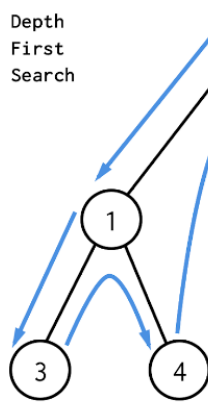
Depth First Search

Breadth First Search
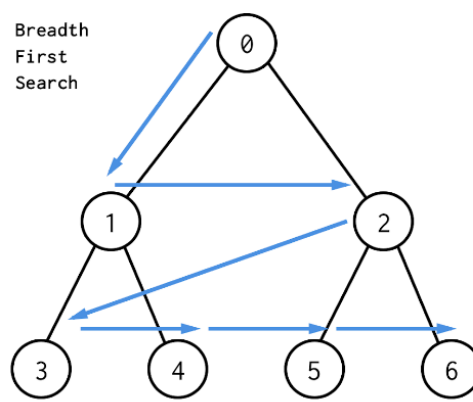
Comparing Depth, Breadth, & Iterative Deepening Search Algorithms:-

o Breadth-first and iterative deepening guarantee shortest

solution.

o Breadth-first: high space complexity.
o Depth-first: low space complexity, but may search well

below solution depth.

o Iterative deepening: best performance in terms of orders

of complexity.

Exercise
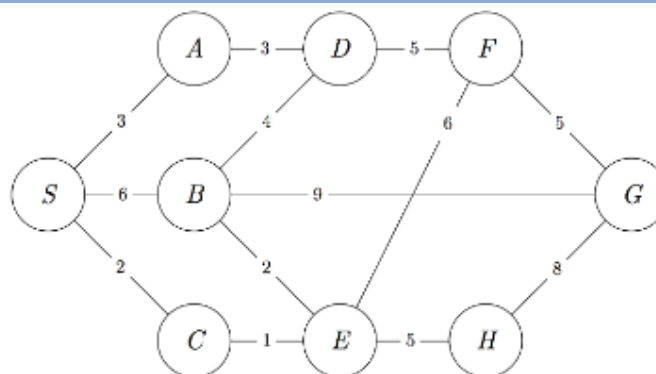
Question: What is the **order** of **visits** of the nodes and the **path** returned by BFS, DFS?

Breadth-First Search [BFS]

1
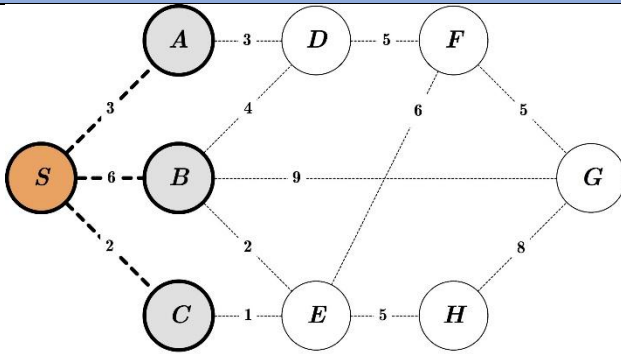
Queue:

S	A	B	C
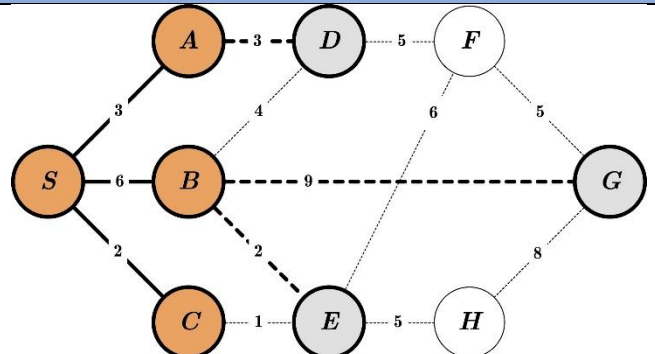
2
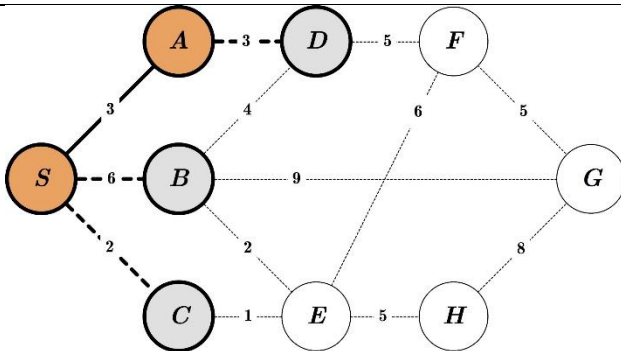
Queue:

S	A	B	C	D

Order of Visit:

S   A

3

Queue:

S	A	B	C	D	E	G

Order of Visit:

S   A   B

4

Queue:

S	A	B	C	D	E	G

5
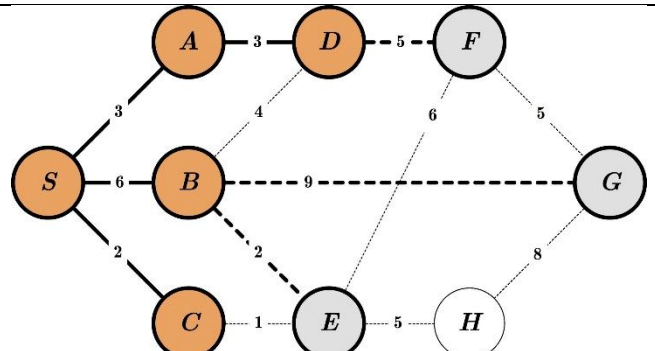
Queue:

S	A	B	C	D	E	G	F

Order of Visit:

S   A   B   C   D

6

Queue:

S	A	B	C	D	E	G	F	H

Order of Visit:

S   A   B   C   D   E

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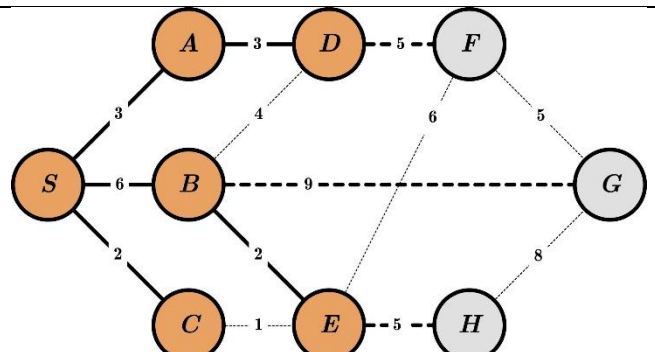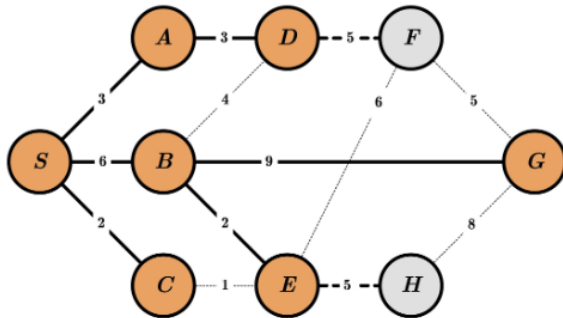
Queue:

S	A	B	C	D	E	G	F	H

Order of Visit:

S   A   B   C   D   E   G

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Depth-First Search [DFS]

1

Stack:

S	C	B	A

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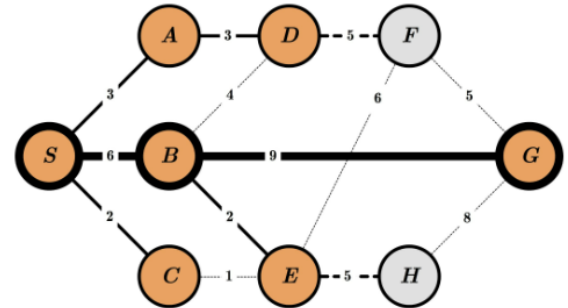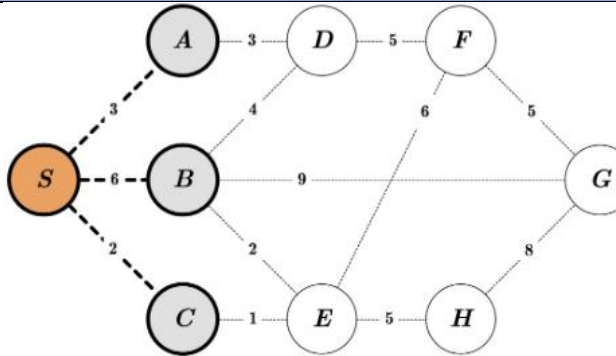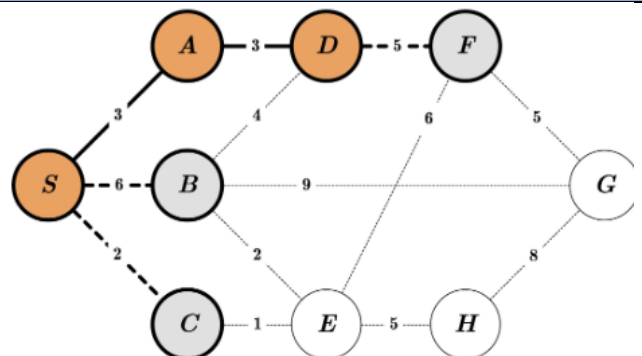
Stack:

S	C	B	A	D	F

2
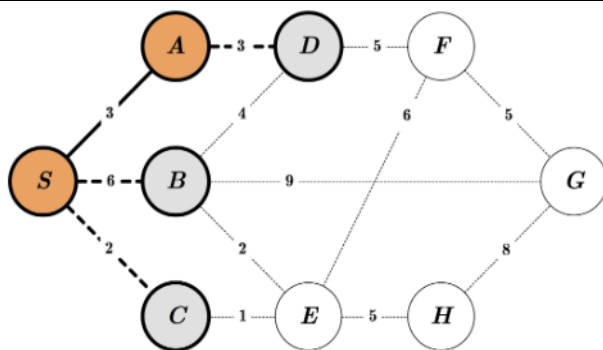
Stack:

S	C	B	A	D

Order of Visit:

S   A

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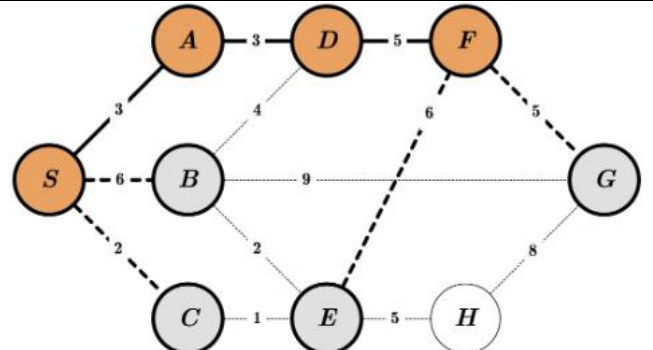
Stack:

S	C	B	A	D	F	G	E

5
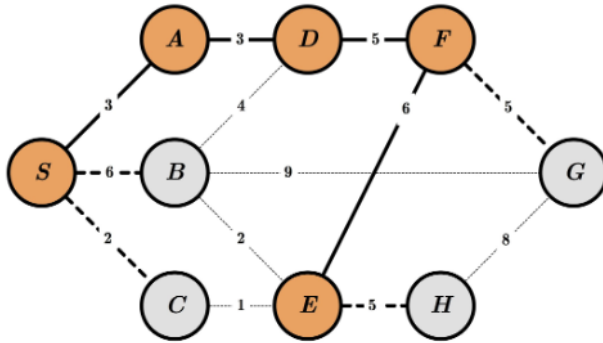
Stack:

S	C	B	A	D	F	G	E	H

Order of Visit:

S   A   D   F   E

6
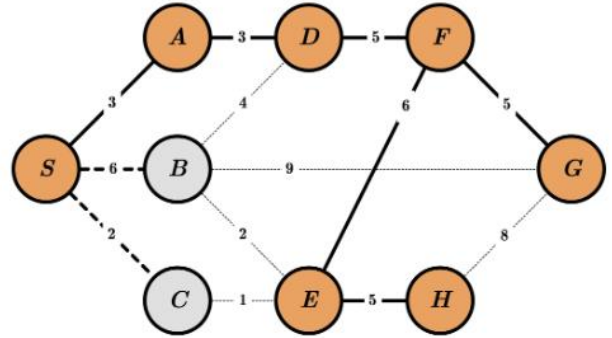
Stack:

S	C	B	A	D	F	G	E	H

Order of Visit:

S   A   D   F   E   H   G

6

Stack:

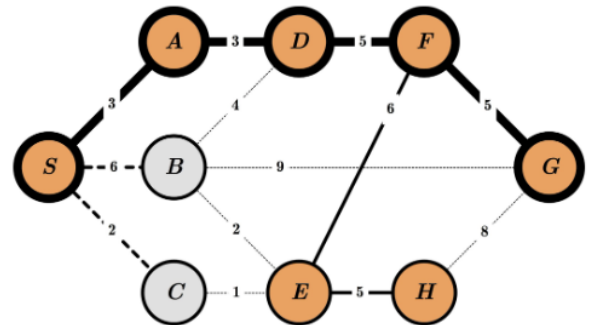| S	C	B	A	D	F	G	E	H

Order of Visit:

S   A   D   F   E   H

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Bye-Bye