Lawrence Ouyang

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50

1.a.

75

35

25

45

30

40

10

80

65

70

60

20

50

1.b.

75

25

45

40

10

80

65

70

60

20

35

50

35

25

75

45

40

10

80

65

70

60

1.c.

Pre Order:

50 20 10 40 30 25 45 35 60 70 65 80 75

In Order:

10 20 25 30 35 40 45 50 60 65 70 75 80

Post Order:

10 25 35 30 45 40 20 65 75 80 70 60 50

2.a.

6

4

1

2

3

5

2.b.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 6 | 3 | 5 | 1 | 2 | 4 |

2.c.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5 | 3 | 4 | 1 | 2 |

3.a.

struct Node

{

int m\_value;

Node\* m\_left;

Node\* m\_right;

Node\* m\_parent;

}

3.b.

If root Node pointer is a null pointer

Create new Node at root with value

Else

Create Node pointer called temp and set to root

Infinite Loop:

If value is greater than m\_value

Set temp to temp’s m\_right node

Else break

If value is less than m\_value

Set temp to temp’s m\_left node

End of Loop

If value is greater than or equal to temp’s m\_value

Create new Node at temp’s m\_right with value

Else

Create new Node at temp’s m\_left with value

4.a.

2D Array

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E | F | G | H | I |
| A | False | True | True | False | False | False | False | False | False |
| B | False | False | False | False | False | False | False | True | False |
| C | False | False | False | True | True | False | False | False | False |
| D | False | True | False | False | False | False | False | True | False |
| E | False | False | False | False | False | False | True | False | False |
| F | False | False | False | False | False | False | True | False | True |
| G | False | False | True | False | False | False | False | True | False |
| H | False | False | False | False | False | False | True | False | False |
| I | False | False | True | False | False | False | False | False | False |

Adjacency List

|  |  |  |
| --- | --- | --- |
| A | B | C |
| B | H |
| C | D | E |
| D | B | H |
| E | G |
| F | G | I |
| G | C | H |
| H | G |
| I | C |

4.b.

|  |  |  |  |
| --- | --- | --- | --- |
| Starting: | 1st Divergence: | 2nd Divergence: | 3rd Divergence: |
| E->G | ->C | ->D | ->B->H |
| ->H |
|
|  | ->H |

In retrospect, the table is slightly confusing, so I’ll just list them...

E->G->H->C->D->B

E->G->C->D->B->H

E->G->C->D->H->B