```
//Output - Binary Seach Tree
//Name - Shubham Yewalekar
//Roll No - 23182

********** CREATE TREE **********

Enter data you want to insert in tree : 35

Do you want to insert another node [Y-1/N-0] :1

Enter data you want to insert in tree : 25

Do you want to insert another node [Y-1/N-0] :1

Enter data you want to insert in tree : 40

Do you want to insert another node [Y-1/N-0] :1

Enter data you want to insert in tree : 10

Do you want to insert another node [Y-1/N-0] :1

Enter data you want to insert in tree : 30

Do you want to insert another node [Y-1/N-0] :1

Enter data you want to insert in tree : 50

Do you want to insert another node [Y-1/N-0] :1

Enter data you want to insert in tree : 5

Do you want to insert another node [Y-1/N-0] :1

Enter data you want to insert in tree : 15

Do you want to insert another node [Y-1/N-0] :1

Enter data you want to insert in tree : 27

Do you want to insert another node [Y-1/N-0] :1

Enter data you want to insert in tree : 45

Do you want to insert another node [Y-1/N-0] :1

Enter data you want to insert in tree : 70

Do you want to insert another node [Y-1/N-0] :1

Enter data you want to insert in tree : 1

Do you want to insert another node [Y-1/N-0] :1

Enter data you want to insert in tree : 17

Do you want to insert another node [Y-1/N-0] :1

Enter data you want to insert in tree : 29

Do you want to insert another node [Y-1/N-0] :1

Enter data you want to insert in tree : 55

Do you want to insert another node [Y-1/N-0] :1
```

```
Enter data you want to insert in tree : 16

Do you want to insert another node [Y-1/N-0] :0

--------------------------------

********** WELCOME TO THE MENU ! **********

Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 11

***** RECURSIVE DISPLAY *****

-----------------------------------------------
In Order Traversal : 1 5 10 15 16 17 25 27 29 30 35 40 45 50 55 70
-----------------------------------------------

-----------------------------------------------
Pre Order Traversal : 35 25 10 5 1 15 17 16 30 27 29 40 50 45 70 55
-----------------------------------------------

-----------------------------------------------
Post Order Traversal : 1 5 16 17 15 10 29 27 30 25 45 55 70 50 40 35
-----------------------------------------------

Do you want to continue [Y-1/N-0] : 1

********** WELCOME TO THE MENU ! **********

Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 1

***** INSERT IN TREE (RECURSIVE) *****

Enter the data you want to insert :72

Data Inserted Successfully !

-------------------------------------

Do you want to continue [Y-1/N-0] : 1

********** WELCOME TO THE MENU ! **********
```

```
Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 11

***** RECURSIVE DISPLAY *****

-----------------------------------------------
In Order Traversal : 1 5 10 15 16 17 25 27 29 30 35 40 45 50 55 70 72
-----------------------------------------------

-----------------------------------------------
Pre Order Traversal : 35 25 10 5 1 15 17 16 30 27 29 40 50 45 70 55 72
-----------------------------------------------

-----------------------------------------------
Post Order Traversal : 1 5 16 17 15 10 29 27 30 25 45 55 72 70 50 40 35
-----------------------------------------------

Do you want to continue [Y-1/N-0] : 1

********** WELCOME TO THE MENU ! **********

Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 2

***** INSERT IN TREE (NON-RECURSIVE) *****

Enter the data you want to insert :43

Data Inserted Successfully !

--------------------------------------

Do you want to continue [Y-1/N-0] : 1

********** WELCOME TO THE MENU ! **********

Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
```

```
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 11

***** RECURSIVE DISPLAY *****

-----------------------------------------------
In Order Traversal : 1 5 10 15 16 17 25 27 29 30 35 40 43 45 50 55 70 72
-----------------------------------------------

-----------------------------------------------
Pre Order Traversal : 35 25 10 5 1 15 17 16 30 27 29 40 50 45 43 70 55 72
-----------------------------------------------

-----------------------------------------------
Post Order Traversal : 1 5 16 17 15 10 29 27 30 25 43 45 55 72 70 50 40 35
-----------------------------------------------

Do you want to continue [Y-1/N-0] : 1

********** WELCOME TO THE MENU ! **********

Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 3

***** SEARCH IN TREE (RECURSIVE) *****

Enter the data you want to search :43

DATA FOUND AT THE ADDRESS : 0x55e7fe4f78d0
--------------------------------------

Do you want to continue [Y-1/N-0] : 1

********** WELCOME TO THE MENU ! **********

Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 4

***** SEARCH IN TREE (NON-RECURSIVE) *****

Enter the data you want to search :70
```

```
DATA FOUND AT THE ADDRESS : 0x55e7fe4f77f0
---------------------------------------

Do you want to continue [Y-1/N-0] : 1

********** WELCOME TO THE MENU ! **********

Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 5

***** DELETE NODE *****

Enter the data you want to delete :25

NODE DELETED SUCCESSFULLY !

---------------------------------------

Do you want to continue [Y-1/N-0] : 1

********** WELCOME TO THE MENU ! **********

Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 11

***** RECURSIVE DISPLAY *****

-----------------------------------------------
In Order Traversal : 1 5 10 15 16 17 27 29 30 35 40 43 45 50 55 70 72
-----------------------------------------------

-----------------------------------------------
Pre Order Traversal : 35 27 10 5 1 15 17 16 30 29 40 50 45 43 70 55 72
-----------------------------------------------

-----------------------------------------------
Post Order Traversal : 1 5 16 17 15 10 29 30 27 43 45 55 72 70 50 40 35
-----------------------------------------------

Do you want to continue [Y-1/N-0] : 1

********** WELCOME TO THE MENU ! **********
```

```
Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 5

***** DELETE NODE *****

Enter the data you want to delete :25

DATA NOT FOUND AND HENCE CANNOT BE DELETED

--------------------------------------

Do you want to continue [Y-1/N-0] : 1

********** WELCOME TO THE MENU ! **********

Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 5

***** DELETE NODE *****

Enter the data you want to delete :40

NODE DELETED SUCCESSFULLY !

--------------------------------------

Do you want to continue [Y-1/N-0] : 1

********** WELCOME TO THE MENU ! **********

Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 11
```

```
***** RECURSIVE DISPLAY *****

-----------------------------------------------
In Order Traversal : 1 5 10 15 16 17 27 29 30 35 43 45 50 55 70 72
-----------------------------------------------

-----------------------------------------------
Pre Order Traversal : 35 27 10 5 1 15 17 16 30 29 50 45 43 70 55 72
-----------------------------------------------

-----------------------------------------------
Post Order Traversal : 1 5 16 17 15 10 29 30 27 43 45 55 72 70 50 35
-----------------------------------------------

Do you want to continue [Y-1/N-0] : 1

********** WELCOME TO THE MENU ! **********

Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 6

***** DELETE NODE *****

Enter the data you want to delete :55

NODE DELETED SUCCESSFULLY !

--------------------------------------

Do you want to continue [Y-1/N-0] : 1

********** WELCOME TO THE MENU ! **********

Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 11

***** RECURSIVE DISPLAY *****

-----------------------------------------------
In Order Traversal : 1 5 10 15 16 17 27 29 30 35 43 45 50 70 72
-----------------------------------------------

-----------------------------------------------
Pre Order Traversal : 35 27 10 5 1 15 17 16 30 29 50 45 43 70 72
```

```
-----------------------------------------------

-----------------------------------------------
Post Order Traversal : 1 5 16 17 15 10 29 30 27 43 45 72 70 50 35
-----------------------------------------------

Do you want to continue [Y-1/N-0] : 1

********** WELCOME TO THE MENU ! **********

Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 6

***** DELETE NODE *****

Enter the data you want to delete :5

NODE DELETED SUCCESSFULLY !

--------------------------------------

Do you want to continue [Y-1/N-0] : 1

********** WELCOME TO THE MENU ! **********

Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 11

***** RECURSIVE DISPLAY *****

-----------------------------------------------
In Order Traversal : 1 10 15 16 17 27 29 30 35 43 45 50 70 72
-----------------------------------------------

-----------------------------------------------
Pre Order Traversal : 35 27 10 1 15 17 16 30 29 50 45 43 70 72
-----------------------------------------------

-----------------------------------------------
Post Order Traversal : 1 16 17 15 10 29 30 27 43 45 72 70 50 35
-----------------------------------------------

Do you want to continue [Y-1/N-0] : 1
```

```
********** WELCOME TO THE MENU ! **********

Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 7

***** DISPLAY LEAF NODE *****

Leaf Nodes : 1  16  29  43  72
---------------------------------------

Do you want to continue [Y-1/N-0] : 1

********** WELCOME TO THE MENU ! **********

Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 8

***** FIND HEIGHT *****

Height : 6
---------------------------------------

Do you want to continue [Y-1/N-0] : 1

********** WELCOME TO THE MENU ! **********

Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 9

***** MIRROR (RECURSIVE) *****

-----ORIGINAL TREE-----
```

```
In-Order Display :1 10 15 16 17 27 29 30 35 43 45 50 70 72

Mirror Tree created successfully !

-----MIRROR TREE-----

In-Order Display :72 70 50 45 43 35 30 29 27 17 16 15 10 1
--------------------------------------

Do you want to continue [Y-1/N-0] : 1

********** WELCOME TO THE MENU ! **********

Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 10

***** MIRROR (NON-RECURSIVE) *****

-----ORIGINAL TREE-----

In-Order Display :1 10 15 16 17 27 29 30 35 43 45 50 70 72

Mirror Tree created successfully !

-----MIRROR TREE-----

In-Order Display :72 70 50 45 43 35 30 29 27 17 16 15 10 1
--------------------------------------

Do you want to continue [Y-1/N-0] : 1

********** WELCOME TO THE MENU ! **********

Which operation do you want to perform :
                1) Insert in Tree Recursive
                2) Insert in Tree Non-Recursive
                3) Search in Tree Recursive
                4) Search in Tree Non-Recursive
                5) Delete Node Recursive
                6) Delete Node Non-Recursive
                7) Display Leaf
                8) Find Height
                9) Mirror Recursive
                10) Mirror Non-Recursive
                11) Display Recursive
Choice : 11

***** RECURSIVE DISPLAY *****

-----------------------------------------------
In Order Traversal : 1 10 15 16 17 27 29 30 35 43 45 50 70 72
-----------------------------------------------

-----------------------------------------------
Pre Order Traversal : 35 27 10 1 15 17 16 30 29 50 45 43 70 72
```

```
-----------------------------------------------

-----------------------------------------------
Post Order Traversal : 1 16 17 15 10 29 30 27 43 45 72 70 50 35
-----------------------------------------------

Do you want to continue [Y-1/N-0] : 0
```