



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
DEHRADUN

DAA LAB - 1

Binary Search

MTECH-COMPUTER SCIENCE
ENGINEERING
CYBER SECURITY AND FORENSICS

Name: Jigesh Sheoran
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Title: : Implement an algorithm for Binary Search

Implementation: Language used : Python

```

➊ binary_search.py > ...
1  # Author: Jigesh Sheoran
2  # SAP ID: 590025428
3
4 ˜ class Node:
5  | ˜ def __init__(self, data):
6  |  |  self.data = data
7  |  |  self.left = None
8  |  |  self.right = None
9
10 ˜ def insert(root, data):
11  | ˜ if root is None:
12  |  |  return Node(data)
13  | ˜ if data < root.data:
14  |  |  root.left = insert(root.left, data)
15  | ˜ else:
16  |  |  root.right = insert(root.right, data)
17  | ˜ return root
18
19  # preorder (root → left → right)
20 ˜ def preorder(root):
21  | ˜ if root:
22  |  |  print(root.data, end=" ")
23  |  |  preorder(root.left)
24  |  |  preorder(root.right)
25
26  # inorder (left → root → right)
27 ˜ def inorder(root):
28  | ˜ if root:
29  |  |  inorder(root.left)
30  |  |  print(root.data, end=" ")
31  |  |  inorder(root.right)
32
33  # postorder (left → right → root)
34 ˜ def postorder(root):
35  | ˜ if root:
36  |  |  postorder(root.left)
37  |  |  postorder(root.right)
38  |  |  print(root.data, end=" ")
39
40  values = list(map(int, input("Enter numbers separated by space: ").split()))
41

```

```

41
42     root = None
43     for v in values:
44         root = insert(root, v)
45
46     print("\nPreorder Traversal:", end=" ")
47     preorder(root)
48
49     print("\nInorder Traversal:", end=" ")
50     inorder(root)
51
52     print("\nPostorder Traversal:", end=" ")
53     postorder(root)
54
55

```

Output:

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS Python + ▾

```

/Masters UPES/DAA/Assignemnt 3/binary_search.py"
Enter numbers separated by space: 43 12 1 90 76 54 89 17 6 48 12 37 54 12 32 30 86

Preorder Traversal: 43 12 1 6 17 12 12 37 32 30 90 76 54 48 54 89 86
Inorder Traversal: 1 6 12 12 12 17 30 32 37 43 48 54 54 76 86 89 90
Postorder Traversal: 6 1 12 12 30 32 37 17 12 48 54 54 86 89 76 90 43 %
sheoraninfosec@Jigeshs-MacBook-Air Assignemnt 3 % cleart
zsh: command not found: cleart
sheoraninfosec@Jigeshs-MacBook-Air Assignemnt 3 % cleatr

```

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