EXPERIMENT-8

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Subject Name: DSA Subject Code: CSH-241

1. Aim/Overview of the practical:

   Implement menu driven program in c for the following on binary search tree of integers:

   - Create a binary search tree for integers (6,9,5,2,8,15,24,14,7,8,5,2)
   - Traverse binary search tree in pre-order technique.

2. Task to be done:

   Binary Tree has 0,1 or atmost 2 nodes/branching.
   Traversing in binary tree is as follows:
   - Pre-order – Root, Left Sub tree, Right Sub tree
   - In-order - Left Sub tree, Root, Right Sub tree
   - Post-order- Left Sub tree, Right Sub tree, Root To perform pre-order traversing in binary search tree.

3. Algorithm/Flowchart: Algorithm for preorder traversing:

```
void preorder(struct node* root){ if
(root!=NULL){ printf (“%d”,
    root->data);
```

```
        preorder(root->left);
        preorder(root->right);
    }
    }
```

4. Code and Output:

```
#include <stdio.h>
#include <stdlib.h>
struct BST{
    int data;
    struct BST *left;
    struct BST *right;
};
typedef struct BST NODE;
NODE *node;
NODE *createtree(NODE *node, int data){
    if (node == NULL){
        NODE *temp;
        temp = (NODE *)malloc(sizeof(NODE));
        temp->data = data;
        temp->left = temp->right = NULL;
```

```
        return temp;
    }
    if (data < (node->data)){
        node->left = createtree(node->left, data);
    }
    else if (data > node->data){
        node->right = createtree(node->right, data);
    }
    return node;
}
void preorder(NODE *node)
{
    if (node != NULL){
        printf("%d\t", node->data);
        preorder(node->left);
        preorder(node->right);
    }
}
void main()
{
```

```
int data, ch, i, n;
NODE *root = NULL;
while (1)
{
   printf("\n****Binary Search Tree Operation****\n");
   printf("\n1.Insertion in Binary search tree");
   printf("\n2.preorder");
   printf("\n3. Exit!!");
   printf("\nEnter your choice: ");
   scanf("%d", &ch);

   switch (ch){
   case 1:
      printf("\nEnter N value:");
      scanf("%d", &n);
      printf("\nEnter the values to create BST
like(6,9,5,2,8,15,24,14,7,8,5,2)\n");
      for (i = 0; i < n; i++){
         scanf("%d", &data);
         root = createtree(root, data);
      }
```

```
            break;
        case 2:
            printf("\nPreorder Traversal:\n");
            preorder(root);
            break;
        case 3:
            printf("Exit!!");
            exit(0);
        default:
            printf("\nINVALID CHOICE...TRY AGAIN!!");
            break;
        }
    }
}
```

```
PS E:\DSA> cd "e:\DSA\" ; if ($?) { gcc bst2.c -o bst2 } ; if ($?) { .\bst2 }

****Binary Search Tree Operation****

1.Insertion in Binary search tree
2. preorder
3. Exit!!
Enter your choice: 1

Enter N value:12

Enter the values to create BST like(6,9,5,2,8,15,24,14,7,8,5,2)
6
9
5
2
8
15
24
14
7
8
5
2

****Binary Search Tree Operation****

1.Insertion in Binary search tree
2. preorder
3. Exit!!
Enter your choice: 2

Preorder Traversal:
6       5       2       9       8       7       15      14      24
****Binary Search Tree Operation****

1.Insertion in Binary search tree
2. preorder
3. Exit!!
Enter your choice: 3
Exit!!
PS E:\DSA>
```

Learning outcomes (What I have learnt):

- I have learnt about Data Structures.
- I have learnt about application of Data Structures.
- I have about Tree.
- I have learnt about binary tree and traversing on bst.

Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	PERFORMANCE		12
2.	WORKSHEET		08
3.	VIVA		10