

LAB XI

1. Create a data file **stncode.dat** in which each line contains a station name and the corresponding station code.

Copy the given code (omitting the comments) with modifications at appropriate places (see the comment parts of the program). You may define other functions as required.

- (a) After completion of the function **createb**, the binary search tree is created and the variable **bsr** has the address of the root node of the list.
- (b) Functions **preprint**, **inprint** and **postprint** print the contents of the nodes by preorder, inorder and postorder traversal of the tree
- (c) Function **insertnode** is used to insert a given node into the binary search tree.
- (d) Function **deletenode** is used to delete a given node from the binary search tree.

```
#include <stdio.h>
#include<stdlib.h>
#include<string.h>
struct node
{
char name[100];
char code[20];
struct node *left,*right;
};
typedef struct node node;
//write the functions prototype here
int main()
{
int ch,pr;
node *bsr;
bsr=createb("stncode.dat");
printf("The tree made from the data file printed inorder\n");
inprint(bsr);
printf("Enter 1 to insert a node:\n");
printf("Enter 2 to delete a node:\n");
printf("Enter 3 to print the tree:\n");
printf("Enter 0 to stop:\n");
printf("enter your choice:");
scanf("%d",&ch);
while(ch !=0)
{
switch(ch)
{
case 1:
insertnode(&bsr);
break;
case 2:
deletenode(&bsr);
break;
case 3:
printf("Enter 1 for preorder, 2 for inorder, 3 for postorder printing:");
```

```

scanf("%d",&pr);
    if(pr==1)
        preprint(bsr);
    else if(pr==2)
        inprint(bsr);
    else
        postprint(bsr);
    break;
case 0:
    return 0;
default:
    printf("Unknow input: stop\n");
    return 0;
}
printf("Enter 1 to insert a node:\n");
printf("Enter 2 to delete a node:\n");
printf("Enter 3 to print the tree:\n");
printf("Enter 0 to stop:\n");
printf("enter your choice:");
scanf("%d",&ch);
}

return 0;
}

```

```

//Write details of function inprint here
//Write details of function preprint here
//Write details of function postprint here
//Write details of function createb here
//Write details of function insertnode here
//Write details of function deletenode here

```

Expected input and output:

For stncode.dat

```

DURG          DURG
KHARAGPUR JN  KGP
ABU ROAD      ABR
ADILABAD      ADB
ADRA          ADRA
KANPUR CENTRAL  CNB
JALANDHAR CITY  JUC
BANGALORE CITY  SBC
GUNA          GUNA
TATANAGAR      TATA

```

LALGARH LGH
MANGALORE JN MAJN

The tree made from the data file printed inorder

ABU ROAD (ABR)
ADILABAD (ADB)
ADRA (ADRA)
KANPUR CENTRAL (CNB)
DURG (DURG)
GUNA (GUNA)
JALANDHAR CITY (JUC)
KHARAGPUR JN (KGP)
LALGARH (LGH)
MANGALORE JN (MAJN)
BANGALORE CITY (SBC)
TATANAGAR (TATA)

Enter 1 to insert a node:
Enter 2 to delete a node:
Enter 3 to print the tree:
Enter 0 to stop:

enter your choice:2

Enter the stn code to be deleted:KGP

Enter 1 to insert a node:
Enter 2 to delete a node:
Enter 3 to print the tree:
Enter 0 to stop:

enter your choice:3

Enter 1 for preorder, 2 for inorder, 3 for postorder printing:1

DURG (DURG)
ABU ROAD (ABR)
ADILABAD (ADB)
ADRA (ADRA)
KANPUR CENTRAL (CNB)
LALGARH (LGH)
JALANDHAR CITY (JUC)
GUNA (GUNA)
BANGALORE CITY (SBC)
MANGALORE JN (MAJN)
TATANAGAR (TATA)

Enter 1 to insert a node:
Enter 2 to delete a node:
Enter 3 to print the tree:
Enter 0 to stop:

enter your choice:1

Enter the station name followed by stn code:TUNDLA JN TDL

Enter 1 to insert a node:
Enter 2 to delete a node:
Enter 3 to print the tree:
Enter 0 to stop:

enter your choice:3

Enter 1 for preorder, 2 for inorder, 3 for postorder printing:3

KANPUR CENTRAL (CNB)
ADRA (ADRA)
ADILABAD (ADB)
ABU ROAD (ABR)
GUNA (GUNA)
JALANDHAR CITY (JUC)
MANGALORE JN (MAJN)
TUNDLA JN (TDL)
TATANAGAR (TATA)
BANGALORE CITY (SBC)
LALGARH (LGH)
DURG (DURG)
Enter 1 to insert a node:
Enter 2 to delete a node:
Enter 3 to print the tree:
Enter 0 to stop:
enter your choice:0