**SEARCH(ROOT,LEFT,RIGHT,INFO,ITEM,LOC,PAR)**

1 [Tree Empty]

If ROOT = NULL then:

Set LOC = NULL , PAR = NULL

Return.

2 [ITEM at ROOT]

If ITEM = INFO[ROOT] then:

Set LOC = ROOT , PAR = NULL

Return.

3 [Initialize pointers PTR and SAVE]

Set PTR = ROOT , SAVE = ROOT

Repeat Step 4 While PTR ≠ NULL

4 If ITEM < INFO[PTR] then:

Set SAVE = PTR , PTR = LEFT[PTR].

Else if ITEM > INFO[PTR] then:

Set SAVE = PTR , PTR = RIGHT[PTR].

Else:

Set PAR = SAVE , LOC = PTR

Return.

5 [Search unsuccessful]

Set LOC = NULL and PAR = SAVE.

6 Exit.

**INSBST(ROOT,LEFT,RIGHT,INFO,AVAIL,ITEM,LOC)**

1 [ITEM already in Tree]

Call SEARCH(ROOT,LEFT,RIGHT,INFO,ITEM,LOC,PAR).

If LOC ≠ NULL then Exit.

2 [Copy Item into new node in AVAIL list]

If AVAIL = NULL then:

Write OVERFLOW and Exit.

Else:

Set NEW = AVAIL , LOC = NEW and INFO[NEW] = ITEM.

3 [Tree Empty]

If PAR = NULL then:

Set ROOT = NEW and Return.

4 [Initialize pointers PTR and SAVE]

Set PTR = ROOT

Repeat Step 5 While PTR ≠ NULL

5 If ITEM < INFO[PTR] then:

Set PAR = PTR , PTR = LEFT[PTR].

Else:

Set PAR = PTR , PTR = RIGHT[PTR].

6 If ITEM > INFO[PAR] then:

Set RIGHT[PAR] = NEW.

Else:

Set LEFT[PAR] = NEW.

7 Exit.

CASEA(INFO,LEFT,RIGHT,ROOT,LOC,PAR)

1 If LEFT[PAR] = LOC then:

Set LEFT[PAR] = NULL.

Else:

Set RIGHT[PAR] = NULL.

CASEB(INFO,LEFT,RIGHT,ROOT,LOC,PAR)

1 If LEFT[PAR] = LOC then:

If LEFT[LOC] ≠ NULL then:

Set LEFT[PAR] = LEFT[LEFT[PAR]].

Else:

Set LEFT[PAR] = RIGHT[LEFT[PAR]].

Else:

If LEFT[LOC] ≠ NULL then:

Set RIGHT[PAR] = LEFT[RIGHT[PAR]].

Else:

Set RIGHT[PAR] = RIGHT[RIGHT[PAR]].

CASEC(INFO,LEFT,RIGHT,ROOT,LOC,PAR)

[Find SUC and PARSUC]

1 Set SUC = LOC.

Repeat Step 2 While LEFT[SUC] ≠ NULL

2 Set SAVE = SUC and SUC = LEFT[SUC].

3 Set PARSUC = SAVE.

4 [Delete inorder successor]

If RIGHT[SUC] = NULL and LEFT[SUC] = NULL then:

Call CASEA(INFO,LEFT,RIGHT,ROOT,SUC,PARSUC).

Else

Call CASEB(INFO,LEFT,RIGHT,ROOT,SUC,PARSUC).

5 If LOC = LEFT[PAR] then:

Set LEFT[PAR] = SUC.

Else:

Set RIGHT[PAR] = SUC.

**DELBST(ROOT,INFO,LEFT,RIGHT,AVAIL,ITEM)**

1 Call Search(ROOT,LEFT,RIGHT,INFO,ITEM,LOC,PAR).

If LOC = NULL then:

Write: ITEM not in tree and Exit.

2 Set AVAIL = LOC.

3 [Node containing ITEM is leaf]

If RIGHT[LOC] = NULL and LEFT[LOC] = NULL then:

Call CASEA(INFO,LEFT,RIGHT,ROOT,LOC,PAR).

[Node containing ITEM has only one child]

Else if RIGHT[LOC] ≠ NULL and LEFT[LOC] ≠ NULL

Call CASEB(INFO,LEFT,RIGHT,ROOT,LOC,PAR).

[Node containing ITEM has two children]

Else:

Call CASEC(INFO,LEFT,RIGHT,ROOT,LOC,PAR).

4 Exit.