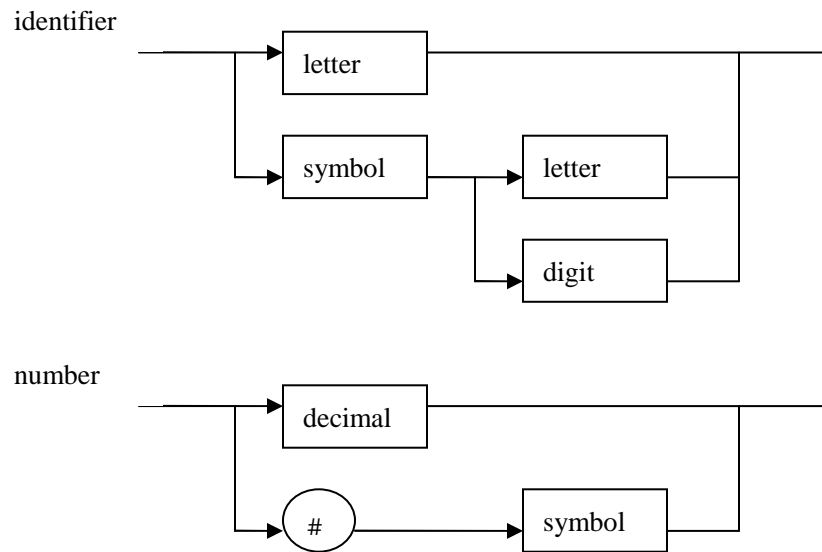


## 22C:050 assignment #1 solution

6. There are  $n-1$  internal vertices in a complete binary tree with  $n$  leaves.
7. The binary search tree requires  $n$  nodes. Each node contains one integer value as key and two pointers to its left and right child respectively..

$$size = n * (sizeof(key) + 2 * sizeof(pointer)) = n * (4 + 2 * 4) = 12n \text{ bytes}$$

8.



9. type lexeme is  
 record  
   start: ...  
   stop: ...  
   typ: ...  
   **value: integer; -- value**  
 end record

```

procedure scan is
begin
  ...
  elseif line(pos) in '0'..'9' then
    next.typ = number;
    next.value = 0;
  loop
  
```

```

        next.value = next.value*10 + line(pos) - '0';
        pos:=pos+1;
        exit when line(pos) not in '0'..'9';
elseif line(pos) = '#' then
    next.typ := number;
    next.value = 0;
    loop
        pos:=pos+1;
        if linebuf(pos) in '0'..'9' then
            next.value = next.value*16 + line(pos) - '0';
        elseif line(pos) in 'A'..'F' then
            next.value = next.value*16 + line(pos) - 'A'+10;
        exit when linebuf(pos) not in '0'..'9'
            and when linebuf[pos] not in 'A'..'F'
        endloop
    ...
end scan;

```

(note: the bold italic are added codes)