Below, draw the binary search tree (BST) that results from inserting the numbers 50, 10, 20, 15, 12, 5 into an initially empty BST.

Below, draw the BST that results from deleting the number 50 from the BST obtained above.
Below, draw the AVL binary search tree (AVL tree) that results from inserting the numbers 50, 10, 20, 15, 12, 5 into an initially empty AVL tree.

Below, draw the AVL tree that results from deleting the number 50 from the AVL tree obtained above.
Give an analysis of the run-time of each of the following program fragments in terms of the parameter n (Big-O will do).

```
for (i=1; i<=n; i++)
    for (j=1; j <= n ; j=j+2)
        sum++;  

for (i=1; i<=n; i++)
    for (j=1; j <= n ; j=j*2)
        sum++;  
```
A vertex in a directed graph $G$ that consists of $n$ vertices is said to be flumbox if it has indegree $(n-1)$ and outdegree 0.

- At most how many flumbox vertices may graph $G$ have?

- Briefly describe efficient algorithms for identifying flumbox vertices in $G$ if $G$ is represented as
  - an adjacency matrix
  - an adjacency list