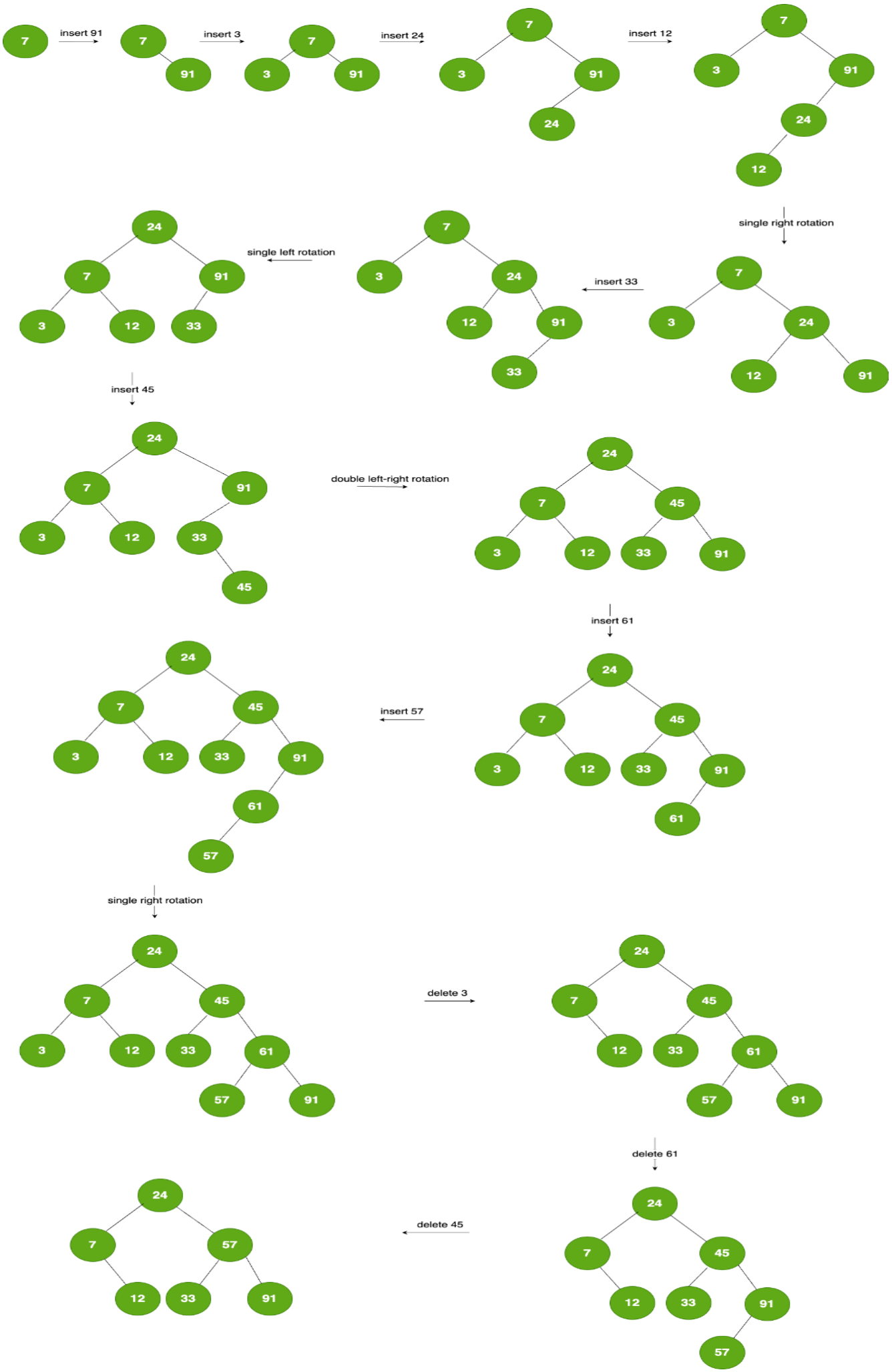
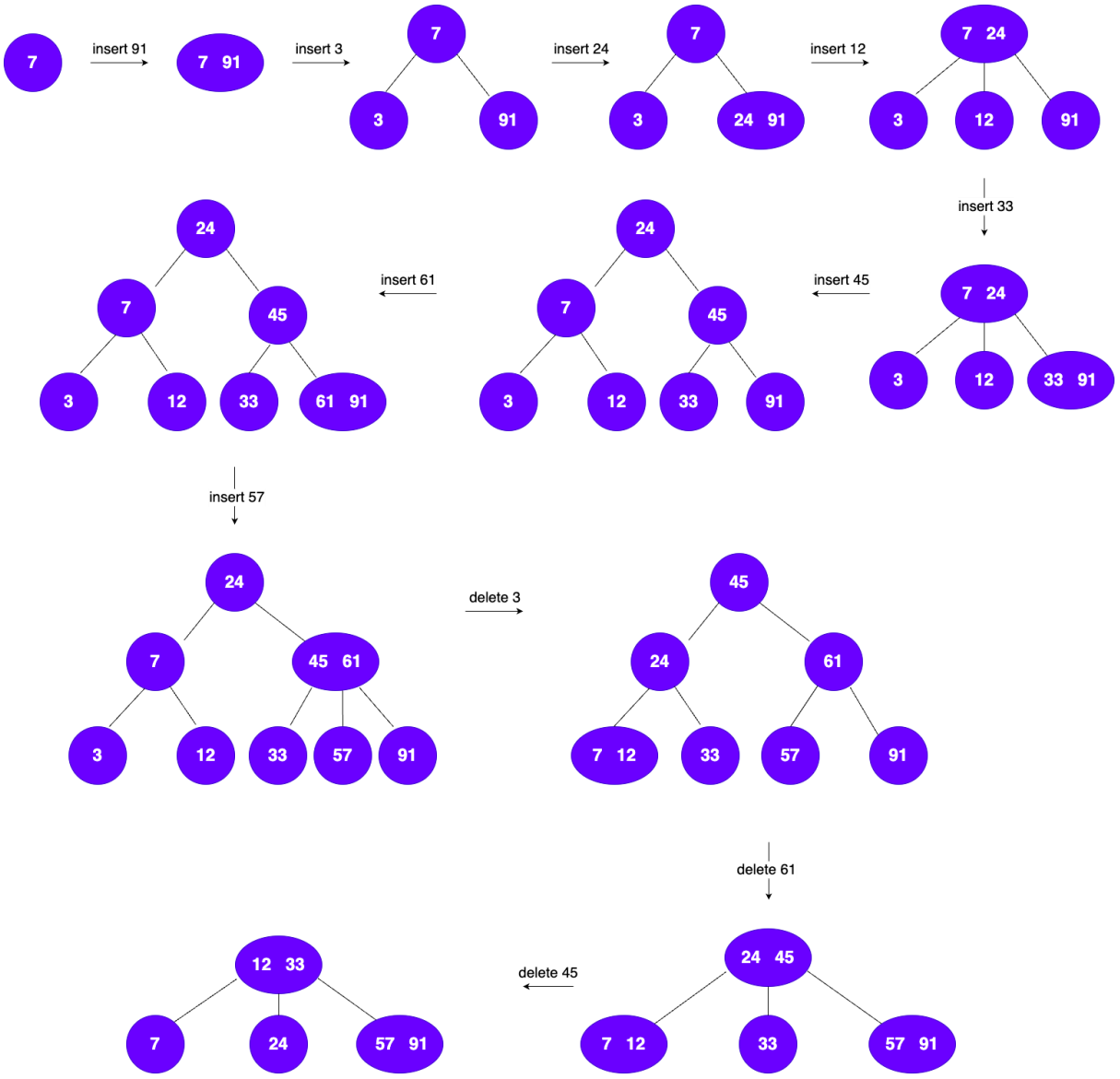
Question1

a) AVL tree


7
insert 91
7
91
insert 3
7
3
91
insert 24
7
3
91
24
insert 12
7
3
91
24
12
single right rotation
7
3
24
12
91
33
insert 33
7
3
24
12
91
single left rotation
24
7
91
3
12
33
insert 45
24
7
91
3
12
33
45
double left-right rotation
24
7
45
3
12
33
91
insert 61
24
7
45
3
12
33
91
61
insert 57
24
7
45
3
12
33
91
61
57
single right rotation
24
7
45
3
12
33
61
57
91
delete 3
24
7
45
12
33
61
57
91
delete 61
24
7
45
12
33
91
57
delete 45
24
7
57
12
33
91

b) 2-3 tree


7
insert 91
7 91
insert 3
7
3
91
insert 24
7
3
24 91
insert 12
7 24
3
12
91
insert 33
7 24
3
12
33 91
insert 45
24
7
45
3
12
33
91
insert 61
24
7
45
3
12
33
61 91
insert 57
24
7
45 61
3
12
33
57
91
delete 3
45
24
61
7 12
33
57
91
delete 61
24 45
7 12
33
57 91
delete 45
12 33
7
24
57 91

c) 2-3-4 tree