4.4- the base case for binary search is an array with one item,recursive case is split the array in half ,one of the half is thrown away and the other half call by binary search.

4.5- O(n).

4.6- O(n).

4.7- O(1).

4.8- O(n2).

5.1- consistent.

5.2- not consistent.

5.3- not consistent.

5.4- consistent.

5.5- hash function C and D would give a good distribution.

5.6- hash function B and D would give a good distribution.

5.7- hash function B,C and D would give a good distribution.

6.1- the shortest path has length of 2.

6.2- the shortest path has length of 2.(CAB --> CAT --> BAT)

6.3-
A-invalid.
B-valid.
C-invalid.

6.4- wake up --> brush teath --> exercise --> shower --> eat breakfast --> get dressed -->pack lunch.

6.5- A.(tree,graph)
B.(not tree,but graph)
C.(tree,graph)
tree is always a graph , but a graph may or may not be a tree.