**Question 1 (30 pts):**

Assume given a set of facts of the form father(name1,name2) (name1 is the father of name2).

1. Define a predicate brother(X,Y) which holds iff X and Y are brothers.
2. Define a predicate cousin(X,Y) which holds iff X and Y are cousins.
3. Define a predicate grandson(X,Y) which holds iff X is a grandson of Y.
4. Define a predicate descendent(X,Y) which holds iff X is a descendent of Y.
5. Consider the following genealogical tree:
6. father(a,b). % 1
7. father(a,c). % 2
8. father(b,d). % 3
9. father(b,e). % 4
10. father(c,f). % 5

whose graphical representation is:

a

/ \

b c

/ \ |

d e f

Say which answers, and in which order, are generated by your definitions for the queries

?- brother(X,Y).

?- cousin(X,Y).

?- grandson(X,Y).

?- descendent(X,Y).

**Question 2 (70 pts):**

Write a Prolog rule “ancestors” that counts how many predecessors two persons are apart. E.g., if Tom is the father of Kevin, and Kevin is the father of Marry, then Tom is two predecessors apart from Marry.