COMP360 INTRODUCTION TO ARTIFICIAL INTELLIGENCE

LAB 6

Group size: 3

Send the Prolog file and screenshots to the course email address:

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Consider the following family tree and its Knowledgebase representation underneath:

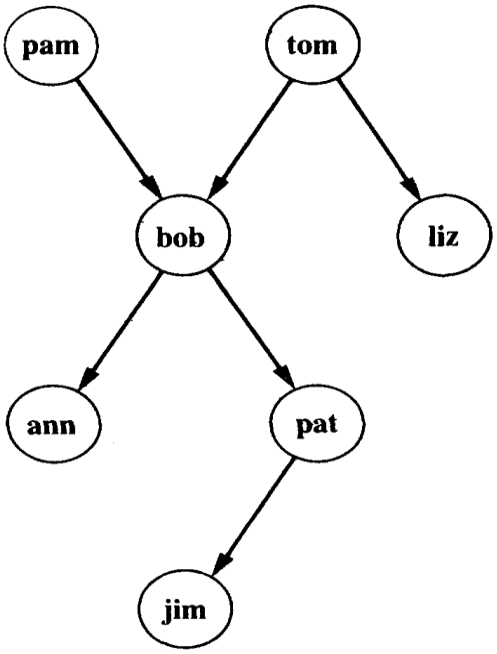

Figure 1.1 A family tree.

```
parent( pam, bob).
parent( tom, bob).
parent( tom, liz).
parent( bob, ann).
parent( bob, pat).
parent( pat, jim).

female( pam).
male( tom).
```

male(bob).
female(liz).
female(pat).
female(ann).
male(jim).

Part 1.

You are required to represent the following queries (without creating new predicates):

(a) Who is a grandparent of Jim?

(b) Who are Tom's grandchildren?

(c) Do Ann and Pat have a common parent?

Part 2.

Now make the following changes to the knowledgebase:

(d) add a rule to determine if X is a child of Y (reverse of parent)

Query the KB to check if bob is a child of tom.

(e) add a rule to determine if X is mother of Y.

Query the KB to determine if pam is mother of bob.

Part 3.

(f) Represent the following definition of a predecessor as a recursive rule:

X is a predecessor of Z if
there is a Y such that
(1) X is a parent of Y and
(2) Y is a predecessor of Z .

Query the KB to determine the predecessors of jim.