

CS320- Winter 2021

Prolog- Discussion

Some useful hints

- trace. %To trace the steps
- No trace. %To close the trace
- No debug. %To close the debug
- [user]. % to move to interpreter mode.
- ^D to go to query mode
- To change prolog to your working directory
 - working_directory(X, '/user/sara.farag/downloads'). % replace /user/... with your own directory where is the prolog files are

```
?- hello :- format('Hello world~n').  
|: ^D
```

- Run a program [program].
- ; to see next match

Question 5:

town1----->-----town2---->----town3---->----town4--->----town5---->---town6

A one-way road links 6 towns. Write a program that can work out if you can travel on that road. For example. Here are two sample program behaviors.

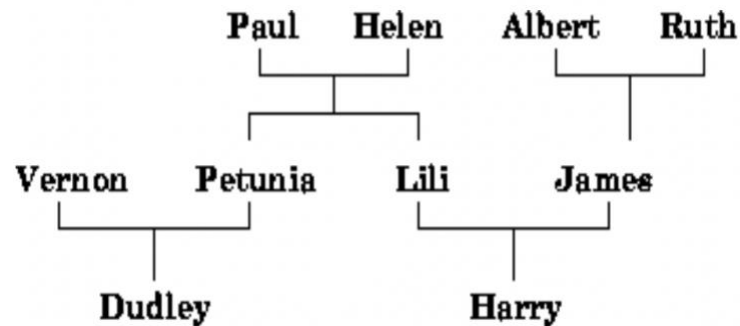
```
?- can_get(town2,town5).  
yes
```

```
?- can_get(town3,town1).
```

No

Question 7: Family Tree.

Using the predicates *male/1*, *female/1*, and *parent_of/2* to represent the following family tree as a Prolog knowledge base. Download from Canvas.



Now, formulate rules to capture the following relationships:

- *father_of*(Father,Child) and *mother_of*(Mother,Child)
- *grandfather_of*(Grandfather,Child) and *grandmother_of*(Grandmother,Child)
- *sister_of*(Sister,Person)
- *aunt_of*(Aunt,Person) and *uncle_of*(Uncle,Person)

To test your knowledgebase, ask all kinds of queries. For example,

- *Does Harry have an aunt? Who?*
- *Who are the grandparents of Harry?*
- *Who are the grandchildren of Paul and Helen?*
- *Does James have a sister?*
- ...

Hint

- *father_of*(Father,Child) and *mother_of*(Mother,Child):
Fathers are male parent and mothers are female parents.
- *grandfather_of*(Grandfather,Child) and *grandmother_of*(Grandmother,Child):
X is a grandfather of Y if X is a father of Z and Z is a parent of Y. X is a grandmother of Y if X is a mother of Z and Z is a parent of Y.
- *sister_of*(Sister,Person) and *brother_of*(Brother,Person):
X is a sister of Y if X is female and Z is a parent of both X and Y.
- *aunt_of*(Aunt,Person) and *uncle_of*(Uncle,Person):
X is an aunt of Y if X is a sister of Z and Z is a parent of Y.