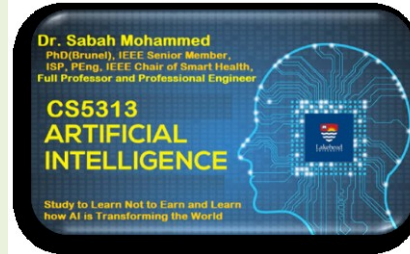




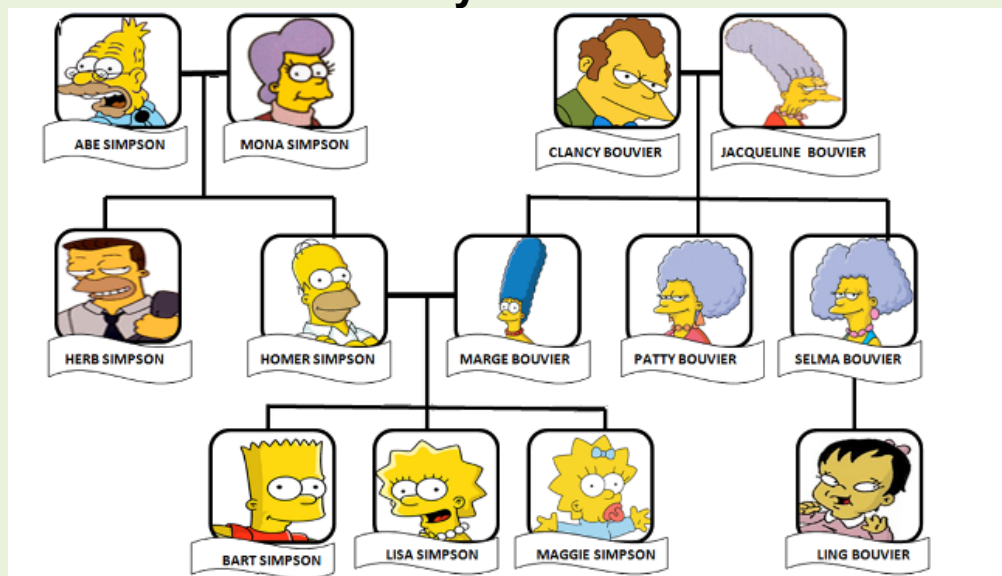
COMP5313 Artificial Intelligence

Department of Computer Science

Lakehead University



Exercise 1: **Symbolic AI:** Representing Family Tree and Inferring Family Relations



Suppose you are asked to use **Pytholog Python API** (<https://github.com/MNoorFawi/pytholog>) and the power of symbolic AI to represent the following primitive family relationships:

- father(X,Y): X is the father of Y
- mother(X,Y): X is the mother of Y
- male(X): X is male
- female(X) : X is female

Note: Use the first name of the person as atom name (e.g. **Homer Simpson** should be represented as **homer**).

Based on these primitive family relations, represent the following composite family relations that will help you find the different relationships available at the represented family tree:

1. parent(X,Y): X is either mother or father of Y
2. brother(X,Y): X is brother to Y
3. sister(X,Y): X is sister to Y
4. grandfather(X,Y): X is grandfather to Y
5. grandmother(X,Y): X is grandmother to Y
6. grandparent(X,Y): X is grandparent to Y
7. uncle(X,Y): X is uncle to Y
8. aunt(X,Y): X is aunt to Y
9. Any Other Relation of Your Choice (e.g. nephew(X,Y), sibling(X,Y)).

You need to demonstrate in your Jupyter how to infer these composite relationships from existing primitive relations.

Submission Details:

1. One ZIP file (Other compression types like RAR are **NOT** Acceptable) containing the source file (YourName_Ex1.py) + **ReadMe.pdf** (MS Word is **NOT** acceptable) describing the idea of your program + Screen Shot of the outputs + the Jupyter File (IPYNB).
2. Submit to D2L only before due date (**One hr delay take 1 Mark up to three hours**).
3. Double submissions are **not** allowed.
4. It must be your individual work.
5. Two bonus marks for using PyGame or Turtle graphics to demonstrate finding the search path.

Important Note: Respecting the student behaviour code is highly appreciated and any submission found with high similarity with other students solutions or from solutions over the Internet will be **rejected**.

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