

## Sheet2- Logic Programming and Prolog

### Section points:

- DIFFERENCE BETWEEN TERMS IN PROLOG (CONSTANT, VARIABLE, STRUCTURE)

- Anonymous Variable

- `Male(john).`
- `Male(alex).`
- `Female(mary).`

- `?- male(X).`                      `X= john`      `X= alex`
- `?- male(fady).`                   `False`
- `?- male(_).`                      `True`

- Conjunction

- `likes(mary, john).`
- `likes(mary, book).`
- `likes(john, france).`
- `likes(john, book).`
- `likes(john, mary).`

- `?- likes(mary, john) ∧ likes(john, mary).`                      `True`
- `?- likes(mary, X) ∧ likes(john, X).`                              `X= book`
- `?- likes(mary, france) ∧ likes(john, france).`                      `True`
- `?- likes(mary, france) ∧ likes(john, france).`                      `False`

- Rules

- `friend(jin, james).`
- `friend(jin, john).`
- `likes(john, jin).`
- `likes(james, john).`

- `happy(X) :- friend(X,Y), likes(Y,X).`

- `?- happy(X).`                      Question : Who is happy?

`X= jin`

- Example of Conjunction and Rules

**(1) If sky is blue, everyone likes it. - Write this statement as a prolog clause.**

- A) sky(blue) :- everyone(likes).
- B) blue(sky), likes(X).
- C) likes(X, sky) :- blue(sky).
- D) likes(sky, everyone) :- blue(sky).

**(2) ?- owner(jack, cat(X)) :- fur(X),spots(X). - What would be the English meaning for this prolog clause.**

- A) jack is a owner of cat and fur and spots.
- B) jack is the owner of X or jack is the owner of fur and spots .
- C) jack is the owner of some cat if that cat has fur and spots.
- D) B & C both.

(1)C    (2)C