

# Logic Programming

برمجة المنطق

الفصل الدراسي خريف 2024/2025م

# البحث الراجع : Backtracking :

- ▶ تتميز لغة البرولوج بإمكانية البحث الراجع Backtracking ، وهي طريقة من طرق البحث عن معلومات معينة داخل قاعدة المعرفة . والمثال التالي يوضح أهمية وجود هذه الخاصية .
- ▶ إذا زودنا البرولوج بقاعدة المعرفة التالية :

likes ( ahmad , rami ).

likes ( ahmad , sami ).

likes ( ahmad , omar ).

likes ( ahmad , reem).

likes ( ahmad , samir ). ▶

▶ فإذا أردنا الاستفسار عن الأشخاص الذين يحبهم "أحمد" نكتب السؤال التالي :

likes ( ahmad , People\_Ahmad\_Likes ).

وللإجابة على هذا السؤال :

People\_Ahmad\_Like = sami

People\_Ahmad\_Like= rami

People\_Ahmad\_Like = omar

People\_Ahmad\_Like = reem

# Exampale

► إذا أردنا البحث عن شخص ما person 1 والذى يكون أخا لشخص معرف person 2 نكتب القاعدة التالية :

brother\_of (Person1 , Person2):-

parent(X,Person 1).

parent(X,Person 2).

sex(Person1,male).

diff(Person 1, Person 2).

diff (X , Y):- X/==Y.

parent (ali,ahmad).

parent (ali , mohammad).

parent (ali , khalid).

parent (ali , mona).

parent (fatima , mona).

parent (fatima , mohammad).

parent (fatima , khalid).

parent (fatima , ahmad).

sex (ali , male).

sex (fatima , female).

sex (mona , female).

sex (ahmad , male).

sex (mohammad , male).

sex (khalid , male).

brother\_of(khalid , mohammad) .

brother\_of( X , ahmad ).

# Example

لنفرض أن لدينا الحقائق ( facts ) الآتية:

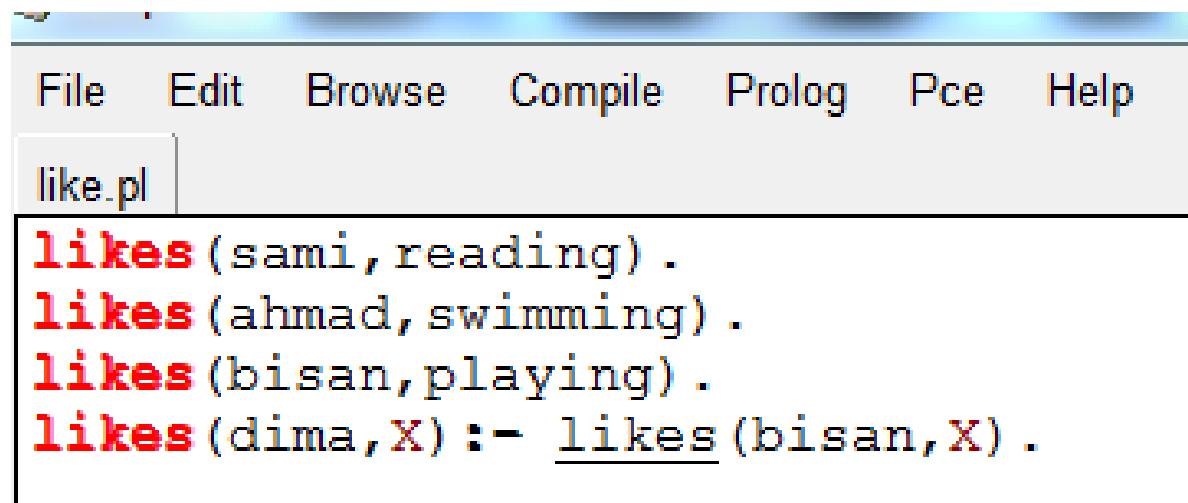
Sami likes reading

Ahmad likes swimming

Bisan likes playing

Dima likes what Bisan likes.

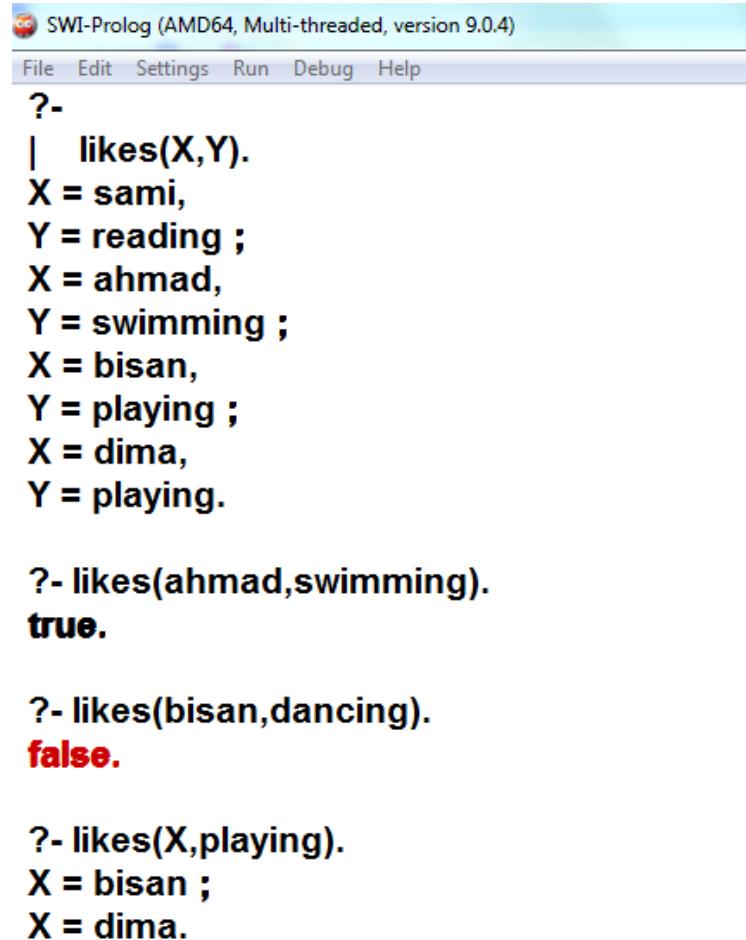
لتمثيل هذه الحقائق بلغة برولوج :



The screenshot shows a window of a Prolog development environment. The menu bar includes File, Edit, Browse, Compile, Prolog, Pce, and Help. Below the menu is a tab labeled 'like.pl'. The main area contains the following Prolog code:

```
likes(sami, reading) .  
likes(ahmad, swimming) .  
likes(bisan, playing) .  
likes(dima, X) :- likes(bisan, X) .
```

# عند إجراء استفسارات



The screenshot shows the SWI-Prolog IDE interface. The title bar reads "SWI-Prolog (AMD64, Multi-threaded, version 9.0.4)". The menu bar includes "File", "Edit", "Settings", "Run", "Debug", and "Help". The main window displays the following Prolog code and its execution results:

```
?-  
| likes(X,Y).  
X = sami,  
Y = reading ;  
X = ahmad,  
Y = swimming ;  
X = bisan,  
Y = playing ;  
X = dima,  
Y = playing.  
  
?- likes(ahmad,swimming).  
true.  
  
?- likes(bisan,dancing).  
false.  
  
?- likes(X,playing).  
X = bisan ;  
X = dima.
```

AUY QUESTION ? ▶