

Experiment No. 11

Aim: To calculate factorial of a number using Prolog.

Requirements: Compatible version of SWI-Prolog.

Theory:

Formula:

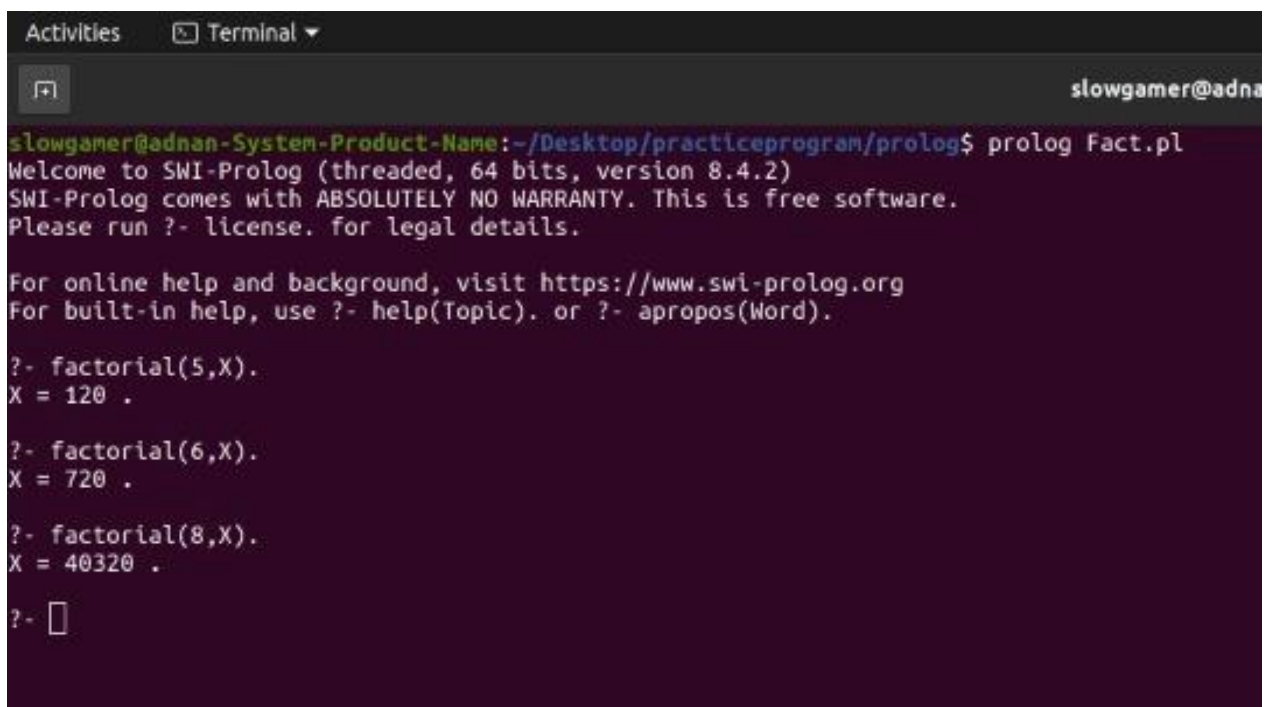
$$F(x) = \begin{cases} 1 & x = 1 \\ x * F(x - 1) & x > 1 \end{cases}$$

Code:

factorial(1,X):- X is 1.

factorial(N,X) :- N1 is N-1, factorial(N1,X1),X is N*X1.

Output:

A screenshot of a terminal window with a dark background. The title bar shows 'Activities' and 'Terminal'. The user is 'slowgamer@adnan'. The prompt is 'slowgamer@adnan-System-Product-Name:~/Desktop/practiceprogram/prolog\$'. The command 'prolog Fact.pl' has been executed. The output shows the SWI-Prolog welcome message and version (8.4.2). It then shows three queries: '?- factorial(5,X).', '?- factorial(6,X).', and '?- factorial(8,X).', each followed by the result 'X = 120 .', 'X = 720 .', and 'X = 40320 .' respectively. The prompt is now '?- ' with a cursor.

```
slowgamer@adnan-System-Product-Name:~/Desktop/practiceprogram/prolog$ prolog Fact.pl
Welcome to SWI-Prolog (threaded, 64 bits, version 8.4.2)
SWI-Prolog comes with ABSOLUTELY NO WARRANTY. This is free software.
Please run ?- license. for legal details.

For online help and background, visit https://www.swi-prolog.org
For built-in help, use ?- help(Topic). or ?- apropos(Word).

?- factorial(5,X).
X = 120 .

?- factorial(6,X).
X = 720 .

?- factorial(8,X).
X = 40320 .

?- 
```

Conclusion: We have successfully calculated factorial of two number using Prolog.