**COMP 333**

**Summer 2021**

**Recursive Procedures in Prolog**

1.) A recursive definition of the factorial function is provided below:

Write a recursive procedure named factorial which computes this function. The first parameter to factorial should be n, and the second parameter should be the result. For example, the following queries should succeed:

?- factorial(0, 1).

?- factorial(3, 6).

factorial(0, 1).

factorial(N, Result) :-

N > 0,

MinusOne is N - 1,

factorial(MinusOne, RestResult),

Result is N \* RestResult.

2.) Write a procedure named myBetween (so named to avoid conflict with the predefined between procedure) which nondeterministically produces all the values within a range, inclusive. myBetween should take three parameters, namely:

1. The low end of the range
2. The high end of the range
3. A value within that range

Example queries and output involving myBetween is shown below:

?- myBetween(3, 5, X).

X = 3 ;

X = 4 ;

X = 5.

?- myBetween(2, 2, X).

X = 2.

?- myBetween(3, 2, X).

false.

As a hint, the case where the low end is less than or equal to (=< in Prolog) the high end can serve as a base case.

myBetween(Low, High, Low) :-

Low =< High.

myBetween(Low, High, Result) :-

Low < High,

NewLow is Low + 1,

myBetween(NewLow, High, Result).