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Additional PROLOG Assignments I:

1. Write recursive programs in Prolog to
  - a) add two integers.
  - b) subtract two integers.
  - c) multiply two integers.
  - d) divide two integers.
2. Write Prolog programs to
  - a) split a list of integers such that one contains positive integers and other contains negative integers.
  - b) count number of integers  $> 100$  in a list of given integers.
3. Let L and L1 denote two lists of terms. Write Prolog programs to realize the following:
  - a) replace the first occurrence of X in L with Y, giving the result in L1.
  - b) delete  $n^{\text{th}}$  element in L, leaving the rest in L1.
  - c) replace  $n^{\text{th}}$  element in L by X, giving the result in L1.
4. Let L be a list of terms. Write Prolog program for the following definitions.
  - a) **cutlast(L, L1)** that defines L1 to be obtained from L with last element removed.
  - b) **trim(N, L, L1)** that defines L1 to be obtained from L with first N elements removed.
  - c) **trimlast(N, L, L1)** defines that L1 to be obtained from L with last N elements removed.
5. Write Prolog programs to:
  - a) calculate factorial(N) (i) without using accumulator (ii) using accumulator.
  - b) reverse a list (i) without using accumulator (ii) using accumulator.
  - c) remove duplicate elements from a list (i) without using accumulator (ii) using accumulator.
  - d) perform Quick sort (i) without using accumulator (ii) using accumulator.
6. Write Prolog program to perform
  - a) Bubble Sort.
  - b) Tree Sort.
  - c) Heap Sort.