Prolog Problem Sheet #2

1. Write a program that eliminates consecutive duplicates of a number

Sample goal: eliminate_dupli ([1,1,1,2,2,2,2,2,3,3,4] , L).

L=[1,2,3,4]

2. Write a program that duplicates the elements of a list a given number of times.

Sample goal: duplicate([a,b,c] , 3)

L=[a,a,a,b,b,b,c,c,c]

3. Consider the following predicate, mystery(List1,List2,Result).

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mystery([],L2,L2).
mystery(L1,[],L1) :- L1 = [_|_].
mystery([H1|T1],[H2|T2],[H1|T3]) :- mystery(T1,[H2|T2],T3).
mystery([H1|T1],[H2|T2],[H2|T3]) :- mystery([H1|T1],T2,T3).
```

A. What does the following query produce? mystery([1,2],[a,b],R).

B. Give a brief English description of the predicate mystery.

C. Replace the last two rules of the predicate mystery with a single rule.

4. Write a program that calculates the dot products of two vectors

Sample goal : dot([1,2,3] , [4,5,6] , D)

D=32

5. Write a program that calculates the product of two sets

Sample goal : product([a,b],[1,2,3],R).

R = [[a,1],[a,2],[a,3],[b,1],[b,2],[b,3]]