

Lab Exercise 7 – Prolog

1) Which of the following are unifiable?

Term 1	Term 2
X	f(a,b)
f(X,a)	g(X,a)
3	2+1
book(X,1)	book(Z)
likes(jax,X)	likes(X,jax)
food(X,Y,Z)	food(M,M,M)
[a,b,c,[d,a],[1,2],list]	[X Y]
[a,b,X]	[Y [3,4]]
X(a,b)	f(Z,Y)
[X [Y T]]	[1,2,3,4]
[X,Y Z]	[a,b,c,d]

2) Define following predicates for list

- sumList(L,N) that holds true iff N is the sum of all elements of L.
- gcd(M,N,X) that holds when X is the greatest common divisor of numbers M and N. For example gcd(15, 25, 5).
- secondlast(L,X) that holds iff X is the second last element of list L.
- dupli(L1,L2) that holds true iff L2 is obtained from L1 by duplicating all elements.
- element_at(X,L,K) holds true iff X is the K'th element of the list L.
- compress(L1,L2) holds true iff the list L2 is obtained from the list L1 by compressing repeated occurrences of elements into a single copy of the element.
- subset(L,K) that holds iff list K is a subset of list L.
- prefixk(P,K,L) that holds true when the list P is the K-length prefix of the list L.
- reverse(L,K) that holds iff list K is the reverse of list L.
- is_palindrome(L) that holds true iff L is a palindrome list

3) Define a predicate merge(L,K,M) which, given two ordered lists of integers L and K, returns an ordered list M containing all the elements of L and K.