COMP304 Final Tutorial

(6 marks) The in a list:	ne following	Haskell fu	nction finds a	all positions	of a given	value
findAll x w	= map fst	t (filter	c (\(_,v) -	x == v)	(zip [0]] w))
Explain how use use of laz			and how its o	execution is	affected b	y the

Suppose the following data definition is used to represent labelled binary trees:
data BinTree a = Node a (BinTree a) (BinTree a) Empty
(a) (2 marks) Write an expression which constructs a tree consisting of two nodes, with 5 as the label at the root and 8 at its right child.
(b) (6 marks) Write a function height to find the height of a given binary tree where the height of a tree is the number of nodes in the longest path from the root to a leaf.

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(6 marks)	Write a fur	nction sumCos	sts to con	npute the s	um of the	costs on a	11
(6 marks) he edges i	Write a fur n a given tr	nction sumCos ee.	sts to con	npute the s	um of the	costs on a	11
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(6 marks) he edges i	Write a fur n a given tr	ee.		npute the s	um of the	costs on a	111

	Prolog Relations
	ven the following Prolog clauses
	lays(bale, batman). lays(affleck, batman). lays(reeve, superman). lays(downey, ironman). lays(downey, sherlock). lays(cumberbatch, sherlock).
ne actors	(3 marks) Write a query that, whe
	to have played any of the characters
of actors	(4 marks) Write a query that when no have played the same character, n
of ac	(4 marks) Write a query that when

(a) (8 marks) For each of the following unification problems either write down a most general unifier or write "NO" if unification fails.

Terms	Most general unifier
15 = 3*5	
swap(1, Y) = swap(Y, 2)	
[R L]=[B [Q,Z]]	
node(leaf(1), leaf(V)) = node(Z, Z)	
Q = [Z, Z], [a, N, V, N] = [A, b Q]	

(b) The following Prolog clauses provide part of the definition of a finite state automaton:

(i) (4 marks) Complete the definition of the accept/1 and pathToFinal/2 clauses, in the space provided above.