ICA 5

In a file called `ica5.sml`, implement the following functions.
Your submission will be graded according to accuracy as well as style. For example, you should be avoiding excessive type annotations and you need to use pattern matching. You should also be avoiding using conditionals when possible and follow any other guidelines mentioned in class. You are also only allowed to use SML features that have been covered in class or in the course materials.

Separate your functions with a comment with the question number and comment out any functions that do not compile or do not work properly.

Submit the file on lectura using the following command:
        `turnin csc372ica5 ica5.sml`

Required Functions

Question #	Name	Type	Description
1	log2	int → int	Compute the floor of the log (base 2) of a number.
2	factorial	int → int	Compute the factorial of an integer. Remember that 0! = 1 and that factorial is not defined for negative numbers.
3	fib	int → int	Return the nth number in the fibonacci sequence where fib 0 = 0 and fib 1 = 1.
4	countZeros	int list → int	Return the number of zeros in a list of integers.
5	orList	bool list → bool	Combine a list of booleans by computing the OR of all of them.
6	andList	bool list → bool	Combine a list of booleans by computing the AND of all of them.
7	addLists	int list * int list → int list	Combine two int lists by adding the corresponding elements. If the lists are not equal in length, ignore the extra elements in the

			longer list.
8	reverseList	`a list → `a list	Reverse a list.
9	removeZeros	int list → int list	Remove all the zeros from a list.
10	combineLists	`a list * `b list * (`a*`b → `c) → `c list	Combine two lists by applying a function to each corresponding pair. This is a more general version of the addLists function. Here, the function is unknown so it is passed in as a parameter. Handle uneven lists the same way you were supposed to in addLists. Examples: -combineLists ([1,2,3,4],[2,3,4,5,6,7],(op *)); val it = [2,6,12,20] : int list -combineLists(["a","b","cde"],["fgh","ijklm"],(op ^)); val it = ["afgh","bijklm"] : string list