Answer question 0 (1 point)
In one short paragraph, describe what you consider the most interesting feature for each of the Scala and Swift programming languages.

Answer 2 out of the following 3 questions, for 12 points each.

Question 1 (12 points)
Write a Haskell or Prolog program that closes a list of open parentheses, with 0 denoting '(' and 1 denoting ')'.

For instance, if the input is [0,0,0,1,0,1] the output should be [0,0,0,1,0,1,1,1]. If the input is [0,0] the output should be [0,0,1,1]. If the input is [0,0,0,1,1,0,1,1]. If the input is not well balanced like [1,0] or [1,1,0] the result should be error in Haskell or failure in Prolog as the problem has no solution in this case.

Question 2 (12 points)
Write a Scala program that defines a binary tree with generic leaf nodes as if defined by the Haskell declaration

```
data BinTree a = Leaf a | Branch (BinTree a) (BinTree a)
```

and write a method that counts its leaves.

Question 3 (12 points)
Write a Swift program that generates the list of the first 100 integers starting with 1 and then extracts from it the list of those that are primes.