CSC 231 Programming Languages Spring 2017

Programming in Scheme

Write a scheme function (or set of functions) to solve each of the following problems. All problems should be solved in the functional style, i.e., use recursion and no looping constructs. Bonus Challenge: Do these problems without any local variables; function parameters and function calls only.

For each list problem, use the following input:

```
( define a ( list 90   81   97   54   55   53   30   80   59
                  98   10   92   26   12   25   77   20   39
                  69   83   79   54   16   15   87  ) )
```

1. Write a function named **listmin** to find the smallest element on a list.
2. Write a function (using your result from problem 1) named **ssort** to sort a list using selection sort.
3. Write a function named **nchoosek** which accepts two parameters n and k and computes the binomial coefficient $\binom{n}{k}$. You should assume: $n \geq 0$, $k \geq 0$, and $n \geq k$.
4. Write a function named **fib** that accepts a number n and returns a list of the first n Fibonnaci numbers. You may assume that $n \geq 1$. Assume the Fibonnacci numbers begin `1 1 2 3 5 8 13 ...`

Turn In: Keep your answers in four separate files. Be sure to put your name and the problem that it solves in each file at the top using scheme comments. Make a tar file named **scheme.tar** containing your solution files. Upload your tar file to your account on **telesto**.