Assignment #3
on Scheme and Common Lisp

Date Due: November 14, 2025

Total: 100 marks

Include for all programs both rules/code and execution (.scm, or .lis souce code, a README and a RUN file for each program).

Include for all programs both rules/code and execution. Don't use code from the internet. Write your own code. Don't use built-in functions that will solve the problem for you; that will defend the purpose of the assignment.

Write the corresponding programs in both languages Common Lisp and Scheme for the following:

1. (15 marks each) Write a function that accepts a list of numbers and two integers as input and and returns the sublist between the leftmost occurence of the first number and the rightmost occurence of the second number.

   Example:

   ```
   >(slist '(10 7 6 5 3 1)  2 3))
   ; Value: ()
   >(slist '(10 7 6 5 3 1 7 6 7 6 8)   6 7))
   ; Value: (6 5 3 1 7 6 7)
   >(slist '(10 7 6 5 3 1)   -1 3))
   ; Value: ()
   ```

2. (15 marks) Write a fuction to interactively guess an even number from 1000 to 3000 in at most k tries. The secret number should be hardcoded. The number k is read from standard input. In case the user types an odd number or the number is out of bounds, the number of tries is reduced by an additional try. After each try, the number of remaining tries should be displayed.

   Output can be obtained with function `(write X)` in clisp and `(display X)` in scheme, and input with the function `(read X)` (in both Scheme and Lisp).

   ```
   (game)
   6
   You have 6 tries to guess a number between 1000 and 3000
   7
   You have 4 tries to guess a number between 1000 and 3000
   2000.
   The number is higher, 3 tries remaining.
   2500.
   You guessed right.
   ```

3. (15 marks) Write a function to interactively guess an element from two lists (stored internally) in at most k tries, where k is also an input (integer) value. The program should precalculate the maximum and minimum number from both lists and should tell the user if the number is out of bounds. Therefore, you input k followed by at most k tries.

   The result of the function will be the secret word if you guess it a message like "you lost" otherwise. To read the number n, you can use the function `(read X)` in both scheme and lisp, and the functions `(write X)` in clisp, respectively `(display X)` in scheme.

4. (15 marks) Write a function to interactively compute the price for a menu. You should have at least 5 questions for menu choices, accept quantities, then compute the total amount and display it. In case the quantity required for a certain item exceeds the amount available, it should be adjusted to the maximum available and the user warned about the adjustment being made. The result of the function should be the total price for that menu.