

CSE3401 Summer 2009 Assignment #1, Due by July 3rd 2009 11:59PM

Exercise 1 (25 points)

From the appendix of the Wilensky textbook pick 10 functions from Section 1, and 10 functions from Section 2. Then define 20 functions that use the functions you picked. There must be at least 3 of the picked functions in each function you define and you can use more or any function outside the ones you picked if you like.

Following the instruction can get you 20 points, and high quality assignments will get up to 5 additional points.

Exercise 2 (30 points)

Define 3 functions that use mapping functions and do something of practical value. Describe why you think your functions are practical and where they could be used. You can use any function described in the appendix of the Wilensky textbook from Section 4 and Section 5 and you can use more or any function that are available in LISP or that you define.

Following the instruction can get you 15 points, and high quality assignments will get up to 15 additional points.

Exercise 3 (15 points)

Define the following function in your LISP interpreter session:

```
(defun make_atom_or_list (level)
  (if (or (zerop level) (and (< level 2) (zerop (random 2))))
      (random 10)
      (mapcar
        #'(lambda (x) (make_atom_or_list (1- level)))
        (make-list (random 5))
      )
  )
)
```

Then evaluate the following form a few times:

```
(make_atom_or_list 4)
```

This creates a random list of lists. Pick one non-trivial and draw the representation.

Following the instruction can get you 10 points, and high quality assignments will get up to 5 additional points.