



Computer Science 433
Programming Languages
The College of Saint Rose
Fall 2014

Program/Problem Set 5: Scheme
Due: 11:59 PM, Wednesday, October 8, 2014

This week's assignment is the first of two where you will write a collection of Scheme programs to practice your functional programming skills.

You may work alone or in a group of 2 or 3 on this assignment.

Fun with Recursion

Include your code for these functions in a scheme file named `recursion.scm`.

? Question 1:

Write a Scheme function called `equalizer`. It takes two lists as arguments and returns a list of elements that exist in both lists at the same position. (6 points)

Here are some example runs of a working `equalizer` function:

```
1 ]=> (equalizer '(mit scheme is a grumpy language)
          '(strose scheme is a pretend language))

;Value 14: (scheme is a language)

1 ]=> (equalizer '(a b c d) '(a x c e f g))

;Value 15: (a c)
```

? Question 2:

Write a recursive Scheme function called `reverse_parts` which takes an integer n and a list as its arguments. It repeatedly takes n elements from the front of the lists, reverses those elements, and adds them to the list of results. If the length of the original list is not divisible by n , remainder elements are reversed. You will want to write some helper functions (or use some from previous assignments or class examples) to keep `reverse_parts` relatively simple. (12 points)

Here are some example runs of a working `reverse_parts` function:

```
1 ]=> (reverse_parts 2 '(cat the the in hat))
```

```
;Value 20: (the cat in the hat)

1 ]=> (reverse_parts 4 '(was universe whole our dense dark a in state))

;Value 22: (our whole universe was in a dark dense state)

1 ]=> (reverse_parts 3 (reverse_parts 5 '(m e s c h b i s t e e s t h e)))

;Value 25: (s c h e m e i s t h e b e s t)
```

Submission

Before 11:59 PM, Wednesday, October 8, 2014, submit your work for grading. Submit your file using Submission Box at <http://sb.teresco.org> under assignment "PS5".

Grading

This assignment will be graded out of 18 points.

Feature	Value	Score
equalizer	6	
reverse_parts	12	
Total	18	