Programming Languages
Spring Semester, 2019
= Homework No. 1 =

Due: March 25, 2018 11:59PM

** Don't forget to put contracts, purposes, and your own tests. **

1. Define the function "`area-square`", which consumes an integer number denoting the length of two sides and produces the area of the square.

2. Define the function "`volume-cuboid`", which consumes three integer numbers denoting lengths of three sides and produces the volume of the cuboid.

3. Define the function "`is-multiple-of?`", which consumes two integer numbers and returns whether the first number is a multiple of the second one.

4. Define the function "`factorial`", which consumes an integer number and returns the result of the factorial operation.

5. Define the function "`fibonacci`", which consumes an integer number "`n`" and returns the "`n`"-th fibonacci number. The 3rd fibonacci number is 2.

6. Define the type "`COURSE`", which is either "`CS320`", "`CS311`", or "`CS330`". "`CS320`" has two attributes: "`quiz`" for the number of quizzes and "`homework`" for the number of programming assignments. "`CS311`" has one attribute: "`homework`" which is the number too. "`CS330`" has two attributes: "`projects`" for the number of projects and "`homework`".

7. Define the function "`total-assignments`", which consumes a single `course` and produces the total number of `quizzes`, `homework`, and `projects` for the given `course`.

8. Define the function "`total-homework`", which consumes a list of `courses` and produces the total number of `homework` of the `course`s in the given list.

9. Define the function "`my-map`", which consumes a function "`f`" and a list of numbers "`l`", and produces a list of numbers generated by applying the input funciton "`f`" to each element of "`l`". **Do not** use the "`map`" function provided by DrRacket. For example,

```
(my-map (lambda (x) (+ 1 x))
        (cons 1 (cons 2 (cons 3 empty))))
```

produces

```
'(2 3 4)
```