**60-100 Group Assignment #2 September 18th 2014**

Work **as a group** answer as many questions on paper that you can in 30 minutes. Start by trying to answer the questions without referring to your notes or to the course website. Test your answers on a laptop or go to the Computer lab. Correct and submit your answers. Include your lab. and group numbers and all names with your answers.
(These are the first five questions from CLASS TEST # 1 – Fall 2005 **ODD SEATS)**

1.1. Write Miranda programs to do the following:

a) A program called `p1` which outputs the string `"hello"`

b) A program called `p2` **which uses p1** to output the string `"hello hello"`

1.2. Write Miranda programs to do the following:

a) A program called `p3` which takes a list of numbers as input and outputs a list containing all of the numbers on the input with `3` added to them. **You must use the built-in `map` function** . An example of executing `p3` is:

```
p3 [3, 5, 2] => [6, 8, 5]
```

b) A program called `p4` which takes a list of numbers as input and which outputs their product. **You must use the built-in `foldr` function** . An example of executing `p4` is: `p4 [3, 5, 2] => 30`

1.3. Write programs to do the following. (Hint: they are both **conditional programs**):

a) A program called `p5` which takes two numbers as input and outputs the largest number. An example of executing `p5` is: `p5 3 5 => 5`

b) A program called `p6` which takes two lists as input and which outputs the longest list. An example of executing `p6` is:`p6 [3,5,2][4,5]=>[3,5,2]`

1.4. Write Miranda programs to do the following:

a) **A recursive program** called `p7` which takes a number `n` as input and returns the sum of all numbers from 1 to `n`. Examples of executing `p6` are:

```
p7   3 => 6
p7   5 => 15
```

b) **A recursive program** called `p8` which takes a list as input and which returns the length of the list as result. (Do not use the built-in operator **#)**. An example of executing `p8` is: `p8 [12, 4, 7] => 3`

1.5. Write Miranda programs to do the following:

a) A program called `p9` which takes a list of lists as input and which returns the product of the length of the lists as output. **You must use p4 and p8 and program composition (the `.` operator)** in your answer. An example of executing `p9` is:

```
p9 [[2,3,4],[4,3],[6,7]] => 12 (i.e. 3 * 2 * 2)
```

b) A program called p10 which takes a list of numbers as input and which outputs a list with all of the input numbers squared. **You must use a list comprehension in your answer.** (you need to read next weeks lectures)

eg of p10: `p10 [3, 2, 5] => [9, 4, 25]`