CS 110 A – Creative Problem Solving in Computer Science

Stevens Institute of Technology © 2014

Practice for Exam 1

Instructor: Adriana Compagnoni

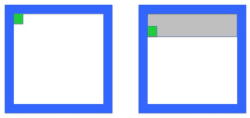
Fall 2016

Remarks that you will find in the exam

- This exam is closed notes, closed books, and closed laptops. The use of any electronic devices is stricktly prohibited.
- Please refrain from communicating with other students during the exam.
- Please do not forget to write your name **on every page** you submit.
- This exam is timed. You have 50 minutes to answer all the questions. Please take a minute to read through the exam and budget your time.

Exercises

1. (25 points) Write a Picobot program that starting from the top left corner of the map covers the first two lines.



2. (25 points) Define a Python function that returns the n_{th} element of a string, if the string is long enough, and an error message: "Error: string not long enough" otherwise.

   Test cases:

```
>>> nth("abcdef",23)
'Error:string not long enough'
```

```
>>> nth("abcdef",3)
'c'
```

3. (25 points) Define a Python function `smaller_than_5_list`(lst), that given a list of numbers lst, it returns a list that contains the numbers in lst that are smaller than 5 and 0 instead of the numbers greater or equal to 5 .

   Test cases:

```
>>> smaller_than_5_list([1,4,5,7,2,44])
[1, 4, 0, 0, 2, 0]
>>> smaller_than_5_list([])
[]
```

4. (25 points) Write a Python function `heads`(lst) that returns the list containing the first elements of the lists of lst.

   Test cases:

```
>>> heads([[1,2,3],[4,5],[7,9]])
[1, 4, 7]
>>> heads([[1,2,3], [], [4,5],[7,9]])
[1, 4, 7]
```