Study Guide for Test 2 (06 Apr 2016)

\* Read Chapters 1 through 7. Leave out the section on Recursion

in Chapter 5 and 2 or higher dimensional lists from chapter 7.

\* Copy each code example in the chapters and get them to work.

\* Create another account in Coding Bat for practice that you do

not share with us. Redo the Coding Bat exercises and build up

speed.

\* You should be able to evaluate expressions using the Arithmetic,

Comparison, and Boolean operators.

\* You will create truth tables for Boolean expressions that will

involve Boolean operators not, and, or, xor. The Boolean expressions

will involve just two Boolean variables (let us say A and B) and your

truth tables will have all possible permutations of A and B.

\* There will be questions on conditionals. You will either write

conditional statements given a set of criteria or you will

be given a conditional statements and a set of input values and

you should be able to state what the result or output of those

conditionals will be.

\* You are responsible for these built-in functions:

- abs () – finds the absolute value

- chr () – given ASCII, outputs a character

- eval () – used with input for ints

- float () – decimal point

- input (prompt)-

- int ()

- len ()

- max ()

- min ()

- ord ()

- pow ()

- print ()

- round ()

- str (x)

- type (x)

\* You are responsible for these math and random functions:

- math.ceil ()

- math.factorial ()

- math.floor ()

- math.hypot ()

- math.pow ()

- math.sqrt ()

- random.randint(a, b)- Return a randomly selected element such that a<=N<=b

- random.random() – return the next random floating point number in the range [0.0, 1.0)

- random.randrange(start, stop, step) – returns a randomly selected element from range(start, stop, step)

- random.uniform ()

\* There will be questions on while loops and for loops using the

range() function and the use of break and continue.

\* Strings and String Functions

\* Reading and Writing Text Files

\* 1-D Lists and their built-in functions

\* Basic Algorithms on 1-D lists:

- Find max, min, and sum for 1-D lists

- Sorting (Selection Sort)

- Searching (sequential search and binary search)

- Merging

\* The questions will be similar to quiz questions and the

tutorial exercises that you have done on Coding Bat and

simpler versions of your assignment problems.

\* From the Python section of Coding Bat do - String-1, String-2,

Logic-1, Logic-2, List-1, and List-2.

\* From the Java section of Coding Bat do - Logic-1, Logic-2,

String-1, String-2, String-3, Array-1, Array-2, Array-3.

\* Here are some additional String problems that you want to

consider. In all cases you will be asked to write a function.

- Write a function that accepts a String as input parameter

and returns True if it is palindromic and False otherwise

- Write a function that accepts a String and a rotation parameter

and rotates the String by that amount and returns it. For example,

given a String "computer" and a rotation parameter of 2, it will

return "ercomput".

\* Here are some file manipulation problems to look at.

- Write a function that accepts two Strings - the name of an input

file and a target String. It will return the number of occurences

of the target String in the file.

- Write a function that accepts the name of an input file and a list

of forbidden words. If any one of those forbidden words exists in the

file it will return False and True otherwise.

\* Here are some list problems to look at:

- Write a function that takes as input two 1-D list of the same

size and returns a single number that is the sum of the corresponding

products of the elements of the two lists.

a = [1, 2, 3]

b = [4, 5, 6]

Your function should return 1\*4 + 2\*5 + 3\*6 = 32

- Write a function that takes as input a 1-D list and returns True

if it is sorted in ascending order and False otherwise.

- Given a 1-D list of 3 numbers sort the list in ascending order

without using the built-in sort function or loops.

- Given a 1-D list shuffle the contents of the list.

- Given a 1-D list of integers find the largest product of two

adjacent numbers

- Given a 1-D list of integers find the second highest number

without sorting.

- Print a 1-D list of integers 5 to a line.

- Trace Selection Sort and Binary Search.

- Modify the merge algorithm to get the common elements in two

1-D lists of integers.