**Mid-Term Exam**

Name: \_\_\_\_\_\_\_\_\_\_\_

**This is an open book exam. You can look at the book and use your favorite IDEs. But you cannot consult with others. You must submit the work within the class time.**

Your programs will be submitted to LiveLab. Creating a LiveLab account is easy. Follow the steps below to create LiveLab accounts.

* Go to <http://livelab.georgiasouthern.edu/JavaLiveLab2020>
* Under the Student tab, click Create Account
* Use Signup Code **coding101** and Course ID **csci6103** to create your account. Use your last name and underscore (\_) and first name for username. For example, my name is Yong Liang, the username is liang\_yong. **Choose a password that is unique to this Website. Don't use this password on other Websites. (THIS IS IMPORTANT FOR SECURITY. PLEASE FOLLOW THIS INSTRUCTION.)**

After you submit your code, log out and log in back to verify your submission.

**Part I: Write Program**

1. (15 pts) Please submit your code to LiveLab (URL: livelab.georgiasouthern.edu/JavaLiveLab2020) under PExam1a

Write a recursive method that computes the sum of the digits in an integer. Use the following method header:

**public static int** sumDigits(**long** n)

For example, **sumDigits(234)** returns 

Write a test program that prompts the user to enter an integer and displays its sum.

Hint:

sumDigits(n) = 0 if n = 0

sumDigits(n) = sumDigits(n / 10) + n % 10, if n > 0

<Sample output>

Enter an integer: 345

The sum of digits in 345 is 12

</Sample output>

2. (15 pts) Please submit your code to LiveLab (URL: livelab.georgiasouthern.edu/JavaLiveLab2020) under PExam1b

Write a program that reads five strings and displays the strings in increasing order of their last character. Strings are separated by spaces. You must use the Comparator interface with the lambda expression to specify a sort criterion.

<Sample output>

Enter five strings: Macon Savannah Atlanta Richmond Chatham

The strings in increasing order of their last character are

Atlanta Richmond Savannah Chatham Macon

</Sample output>