**chap 3 Improving the crab game: more sophisticated programming**

**Objectives**

* Learn how to write method of your own
* Learn how to invoke static method via class name followed by dot notation and the method name
* Learn how to invoke non-static method via object name followed by dot notation and the method name
* Learn how to search for the methods (APIs) of a given class in the Greenfoot family.

**Schedule:** This lesson covers Moodle folder “chap 3”. Please follow the steps below.

1, work on sec 3.1 ~ 3.8, and work on the little-crab game all the way to exercise 3.24. With these exercises, you need to learn how to write method and pass parameter to method. Scenarios covered in this chapter: little-crab-2, little-crab-3, little-crab-4, and stickman.

2, work on sec 3.9 and learn how to use sounds file of your own.

3, work on sec 3.10 and learn how to use the “code completion” feature of the Greenfoot IDE to search for Java APIs, when you are coding.

4, follow the instructions in file “**homework3.docx**”, and work on homework 3. After you finish it, you need to submit the solution zip file to its Moodle drop box. When coding your homework, please follow all the rules in file “RulesForIndentAndAlignCode.docx”.

5, Greenfoot APIs is available in this link: <http://www.greenfoot.org/files/javadoc/> , and package Greenfoot is the only package in Greentfoot environment.

In comparison, the Java Standard Edition (SE) APIs is in this link below, including multiple package, such java.lang, java.util, etc” <https://docs.oracle.com/en/java/javase/12/docs/api/java.base/module-summary.html>,

Now do the following:

* In Java SE APIs webpage, click into java.base package
* click into class package java.lang , and then class String to view its API;
* Or you can type in the class name and “jdk 12 api”, such as “Scanner jdk 12 api” in the search box, and the link pop up as “Oralcle Help Center “will the APIs for this class Scanner. You can see the package this class belongs to, such as java.util package for class Scanner: <https://docs.oracle.com/en/java/javase/12/docs/api/java.base/java/util/Scanner.html>
* In Greentfoot APIs webpage, click into class Actor to view its APIs;
* compare the format of the above two classes’ APIs, you can clearly see that, the formats of their API documents are similar. Therefore, if you can read and understand the APIs of Actor, then you should have no problem read and understand any class’s APIs in Java SE.

6, Download and unzip file “**MemoryManagementForObject.zip**” in this Moodle folder. After unzip this file, you will find this WORD document “**MemoryManagementForObject.docx**” and three java source code files. Read this document carefully and run the example source files provided. Refer to Figure 3 in this WORD document and learn how Java object is handled as reference variable in memory. Understand the memory management model for object is a very important aspect of understanding OOP, so please spend time on this topic, and we will re-visit this topic in test 1.

7. keep working on the questions in file “Test1StudyGuide.docx”, and prepare for test 1. This file is available in Moodle folder “test 1 review lesson”.

8, next lesson, we will be working on Moodle folder “chap 4”, please preview it.