# chap 9 Collision Detection : Asteroids

**Objectives**

* Understand how to determine an intersecting object, by using the API in class Actor.
* Understand how to display the score board after the game is over
* Understand how to use loop to generate stars on the space background
* Understand how to interact with objects within a certain range
* Understand type cast and superclass variable pointing to subclass object

**Schedule:** This lesson covers Moodle folder “chap 9”. Please follow the steps below.

1, work on sec 9.1 ~ 9.9 that covers scenario asteroids-1, 2 and 3. In section 9.10, the textbook lists some ideas that we can use to further develop this asteroids game.

2, notice that we use loop to generate the proton wave, and the proton wave interact with asteroids within the range of the wave circle.

3, another context of polymorphism is type cast with superclass type reference pointing to its child object. Please refer to file “chap1-schedule.docx”, the last page, where we summarize the context of polymorphism.

4, practice textbook exercises 9.75, 9.76, 9.77 and 9.79. You need to first open the existing scenario “loop-practice” in this chapter, then start working on exercise 9.75. The method you need to work on is **practice()** , which is in class **ChalkBoard .**

5, follow the instructions in file “**homework9.docx**”, and work on homework 9. 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”.

6, we also release the bonus project, the greeps project, as illustrated in textbook section “Interlude 2” (Interlude 2 is right after textbook chapter 9). You need to work on this project independently.

After you finish the greeps project, you need to zip the “greeps” scenario folder, and then rename the zip file as ***JohnDoeGreeps.zip*** (where JohnDoe should be replaced by your name), and submit this zip file into the “Greeps project drop box” in Moodle folder “chapter 9”.

**Grading criteria for the greeps project:**

For the current timer constrains in the three maps, your program should achieve at least 15 tomatoes carried back by the greeps in each map, to reach the full score of 6 points for each map. Thus the bonus project has 18 points in total. You need to read the required rules of the greeps project, and you cannot break these rules. Read textbook “Interlude 2” carefully and learn about these rules. It is not allowed to increase the timer duration in each map.

For both on-campus and online students: each student who submits the greeps bonus project **MUST** do a project presentation in class.

* **In the presentation, if a student cannot explain the source code of the project he/she submitted, no points will be given on the bonus project**.
* **If a student does not wish to do presentation, then no points will be given on the bonus project**.

There is no need to create any ppt slides for the presentation, and what I am looking at from the presentation is that the student is able to explain his/her algorithms in the source code. If a student cannot explain the source that he/she submitted, then I am not convinced that the source code is his/her own work. The time spent for the bonus project presentation is around 5 minutes, including the question and answer section from instructor.

For on-campus students, the bonus project presentation needs to be done during class meeting time in or before week 15.

For online student, the bonus project presentation can be done together with his/her final project presentation in the last week of the semester. I will notify the classroom information in the last week. Students need to come to campus to do the presentation.

* Thursday, July 25, 5:30pm to 8pm

7, keep working on the questions in file “Test2StudyGuide.docx”, and prepare for test 2. This file is available in Moodle folder “test 2 review lesson”.

8, next lesson we will work on Moodle folder “test 2 review lesson”, and you need to finish the exercises in file “***Test2StudyGuide.docx”*** to prepare for test 2. After “test 2 review lesson”, we will be working on Moodle folder “chap 10”, please study it in advance.