Advanced Placement Computer Science
Unit 8 – Iteration

Each unit, you will have an assignment that includes some reading, some questions from the reading, called Review Exercises, and between one and three programming exercises.

Calendar of Meeting Places for October/November

				11 <u>Class/Lab</u> Lesson 8.1 **Quiz Today!** Unit 8 programs	12	13
14	15 <u>Lab</u> Unit 8 programs	16 <u>Class/Lab</u> Lesson 8.2 and Unit 8 programs	17	18 <u>Lab</u> Unit 8 Programs	19	20
21	22 <u>Lab</u> Unit 8 Programs	23 <u>Lab</u> Complete Unit 8 Programs and Class Writing Tutorial	24	25 <u>Lab</u> Lesson 9.1 Classes	26	27
28	29 <u>Class</u> **Class Writing Boot Camp**	30 <u>Class/Lab</u> **Class Writing Boot Camp and** Unit 9 Programs	31	1 <u>Class</u> **Exam Units 6 - 8**	2 **End of grading period**	3

Assignment Type	Description
Reading	Java Methods – Chapter 8
Homework Exercises	<u>Programming</u> JavaBat Programming Assignments Please see JavaBat schedule for due dates

Program #1
Write an application program using Vics that clears all the slots to the stack for the first sequence of slots then puts those CDs in its last few slots. For instance, if there are 5 slots with 2 CDs in them somewhere, you should end with those CDs only in the fourth and fifth slots. Do not assume that the stack is initially empty or that there are a fixed number of slots.
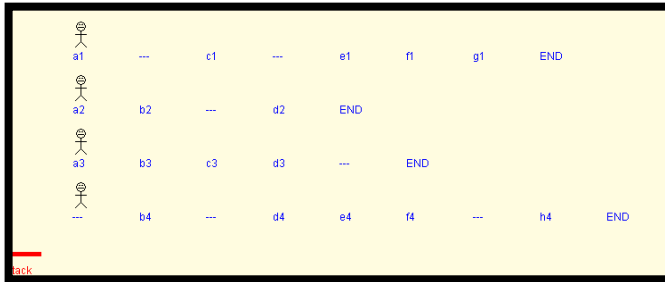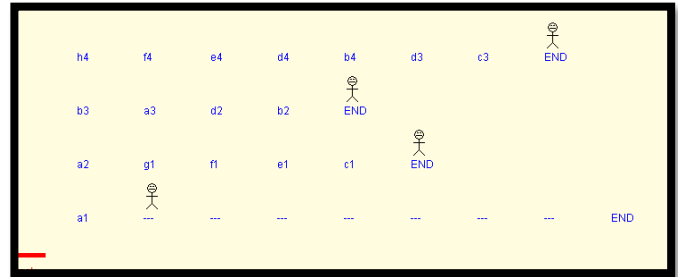
Program #2

Write an application program that uses four Vic objects. The program will simulate a data compression program by moving all CD's from the four Vic objects so that there are no empty slots in between any other slots with CDs.

So, for example, if the original screen looked like this:	After your program runs, it should look like this:

Data Compression is used in many areas of technology…you are implementing a simple version of data compression.

Challenge (*if you are shooting for an A in this class*)

This is a quick little program with some interesting results. It is also the first time you will use events in Java. I am not going to tell you what this program does (you will see yourself!!!), I will just give you an algorithm to follow and you will program it.

Start with creating a new Project. Call it **CoolProgram**. Copy the program code from the file `CoolProgram.java` from my website into your java file and look for the place in the program that it says "TO DO". Replace "TO DO" with the program code to do the following:

1. Click on three points (call them p1, p2, and p3) and draw the triangle that is formed. (already done)
2. Click on a 4th point inside your triangle. (call it p4)
3. Loop on the following for 10000 times (use a "for" loop)
   a. randomly pick one of your points (hint: You need to make a random number from 0 to 2, then select the point based on that number)
   b. Find the midpoint of the random point and p4.
   c. Assign the midpoint to p4.
   d. Set the pixel at point p4 to GREEN. (to do this, you can call `drawLine(x4, y4, x4, y4)` x4 being the x value of point p4, y4 being the y value of point p4.

After you have run the program, you may see some pattern. Change the loop of 1000 times to something larger and see what happens. Eventually make the loop run LOTS of times.

I will check the functionality of your programming exercises as you complete them in the lab.

Note: If you complete these programs you should do more Logic1 JavaBat and start doing Logic2 JavaBat exercises.