

Advanced Placement Computer Science

Unit 1 – An Introduction to Hardware, Software, and the Internet

Unit 2 – Your First Java Programs

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 August

			17 <u>Field Day</u>	18 <u>Class</u> Intro to Course and Lesson 1.1	19	20
21	22 <u>Class/Lab</u> Lesson 2.1 & 1 st Programs	23	24 <u>Class/Lab</u> Lesson 2.2 & 1 st Programs	25	26 <u>Lab</u> Complete 1 st Programs	27
28	29 <u>Class</u> Begin Unit 3	30	31			

Assignment Type	Description
Reading	Java Methods – Chapter 1, Chapter 2 Note: Chapter 1 is online at: http://www.skylit.com/javamethods
Homework Exercises	<u>Questions</u> : None <u>Programming</u> None

Your First Java Programs

(keep this for reference!!)

1. Open a new browser tab.
2. Before we do anything, let's try to be organized this year. We are going to be using "the cloud" this year in all that we work on. Navigate to our Integrated Development Environment, repl.it and sign in using your Google HUSD account.
3. On the left-hand side, click on My Repls and then make a New Folder. Let's call the Folder, Unit 1.
4. You are now using **Repl.it**. This is called an Integrated Development Environment (IDE) because you can type in programs, build them so that the program will be converted to binary, run your program, and in case it does not work, debug your program (fix errors).
5. You now want to create a new project. Click on the Unit 1 Folder and then **+New repl**. Select **Java** for a language. Here you need to give your project a name. Let's call it, **HelloWorld**, because you will see what is created for you.
6. You may click on the Run button to see what it does. Change the text to something else and see what it does.
7. You just modified your first Java Program.

Your First Java Programs – Exploring with Turtle Objects

1. Create a new Folder called **ExploreWithTurtle**.
2. Create a new *Repl* called **ExploreWithTurtle**
3. Type in the program as shown below (you can delete what was made for you)

```
// Name: Your name here
// Last Changed: The last day that you made changes

import java.awt.Color;

/**
 * This class is our first attempt at programming. In this area, you should include
 * details as to what this program does.
 */
public class Main
{
    public static void main (String [] args)
    {
        Turtle sam;
        sam = new Turtle();
        sam.paint (90, 12);
        sam.move (-180, 6);
        sam.paint (90, 6);
        sam.move (90, -6);
        sam.paint (0, 12);
        sam.move (150, 6);
        sam.swingAround (25);
    }
}
```

4. You need one more file in your project, *Turtle.java*. You will find this on my web site on the Assignments Link. Please download and then either drag it into your Repl or click on the 3 vertical dots to upload the file.
5. **Run your Program like you did in HelloWorld.**

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

Write an application program that creates one `Turtle` and has it draw a house 200 pixels wide and 150 pixels tall, with a door and four windows. This house should have a 45 degree roof pitch and contain a chimney.

Methods of the Turtle Class

About the nine Turtle methods:

- `new Turtle()` creates a Turtle object in the center of a drawing surface 760 pixels wide and 600 tall. The Turtle initially faces east and carries a black paintbrush. In the following, `sam` is a Turtle variable to which you have assigned a Turtle object.
- `sam.paint(angle, dist)` tells `sam` to turn counterclockwise by `angle` degrees and then go forward by `dist` pixels, leaving a trail of the current drawing color.
- `sam.move(angle, dist)` tells `sam` to turn counterclockwise by `angle` degrees and then go forward by `dist` pixels, without leaving any marks.
- `sam.swingAround(dist)` tells `sam` to draw a circle of radius `dist` pixels with `sam` at the center.
- `sam.fillCircle(dist)` tells `sam` to draw a circle of radius `dist` pixels with `sam` at the center, and fill its interior with the current drawing color.
- `sam.fillBox(width, height)` tells `sam` to draw a rectangle `width` pixels wide and `height` pixels tall, with `sam` at the center, and fill its interior with the current drawing color.
- `sam.switchTo(col)` tells `sam` to change the current drawing color to `col`, which can be any of BLACK, GRAY, BLUE, GREEN, RED, YELLOW, ORANGE, PINK, MAGENTA, and WHITE. Put "Color." in front of the name of a color you use in a program, unless you use it in a subclass of the Turtle class.
- `sam.say("whatever")` tells `sam` to print whatever is within the quotes.
- `sam.sleep(milli)` tells `sam` to suspend action for `milli` milliseconds.