Makefile for Java

What's the idea with *make*?

The Unix tool *make* is the canonical tool for recompiling a multi-file software project. The interdependencies of the project are captured in a special file called the Makefile. It's partly a tree of dependencies, and partly a build script (usually assumed to be Unix or Linux). When you edit and save your fiiles, the timestamps on the file change, and *make* looks at the timestamps to decide what parts must be recompiled. There is more to the story, and you'll learn more about *make* in CS 352. The basic idea is that your development process goes like this (on a Unix or Linux system):

1. Edit your code and save.

2. Type "make" to compile.

3. If the compiler hits errors, go back to step 1 to fix them.

4. Otherwise test and look for bugs. When you find them, go back to step 1 to fix them.

The above is an illustration, not a requirement. You don't have to develop your code on a Unix or Linux command line -- use any environment you like.

Basic Makefile for use in this class

For your Java projects, a simple Makefile like the one below will be good enough. Note well: when you indent in a Makefile, you must use a TAB character! It's a ridiculous rule but it's still a rule. Also, you must test out your Makefile on lectura to assure that it really does compile your program correctly, and you should test your program on lectura to make sure it produces correct output. The Makefile must be in the same directory as your *.java source files.

```
######## start of Makefile #########
# Adapted from Dr. Tia Newhall, Swarthmore College.


CLASSES = $(wildcard *.java)

.PHONY: all classes clean
.SUFFIXES: .java .class
.java.class:
        javac $(JFLAGS) $*.java

all: classes

classes: $(CLASSES:.java=.class)

clean:
        $(RM) *.class

####### end of Makefile #######
```

Again, you must use TAB characters two places above (the indented lines).

Credit: the above Makefile is adapated from here:
https://www.cs.swarthmore.edu/~newhall/unixhelp/javamakefiles.html
That link has a decent explanation of what is going on in the Makefile.

If you are curious to learn more about make and Makefiles, there are tons of introductions on the internet. Maybe start a Piazza discussion if you find a good tutorial.