

The pong package

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The `pong` package creates a game of Pong in Java for 4U Assignment #4.

Features:

- Paddles can be controlled the W/S keys for the left paddle, and Up arrow/Down arrow keys for the right paddle.
- A paddle can also be a "CPU player". The "Simple CPU" only follows the ball but the "Smart CPU" tries to calculate where the ball will end up.
- A start menu is available to pick what type each paddle will be.
- Matches are up to 10 rounds.

Details:

- All source files are located in the `pong` directory.
- The main class and entry point of the game is the Main class (Main.java)
- The Constants class holds common constants used by most of the other classes. They include the height and width of the game field, initial speed of a Ball, and size of the ball/paddle.
- The Game class displays the actual game and a start menu built with Swing components. It uses a thread to continuously update the game like the sample code shown in the Pong Assignment file, but with some modifications.
- The Ball class and the Paddle class define both the ball and the paddle and have methods to make them move used by the Game class.
- The CalcObj class provides a way to pass a CPU Paddle angle information of the ball so that the Paddle can calculate where it should go.
- The HorizontalD, VerticalD, and Mode enums allow the other classes to specify horizontal directions, vertical directions, and the mode of a paddle without using strings.

Running the code

To run the program without creating a JAR file, I started in the root directory of the project and compiled the source files into a build directory with [javac](#):

```
mkdir build
javac -d ./build/ ./pong/*.java
```

Then I could run the program from the entry class:

```
cd build
java pong.Main
```

Changing the name of the Main class should not affect anything as long as it remains in the same package:

```
java pong.NewName
```

The manifest.mf file

I found that without a manifest file, my JAR file would not know which initial file to execute. I followed the instructions on [the Java docs](#) to write a manifest file with the single key `Main-class` of value `pong.Main`.

Including this manifest allows the JAR file to execute my Main class when it is first started.

Making a JAR

Go to root directory and make a build subdirectory:

```
mkdir build
```

Compile all source files into build:

```
javac -d ./build/ ./pong/*.java
```

Create a `.jar` with a manifest: I used [this section of the Java docs](#) to learn to use the `jar` command.

```
cd build
jar cfvm Pong.jar ../manifest.mf ./pong/
```

Run:

```
java -jar Pong.jar
```