

Pig

By the time you are done with this activity, you should be able to:

- use Java data types and their operators.
- use Java control structures.

Playing the Game

Included in the Pig module is a file `Pig.jar`. This is a compiled version of the working game. To play it, use a terminal to navigate to the directory containing the file and type this on the command line:

```
java -jar Pig.jar
```

This is a two-player game. Play once or twice with another student so that you understand the rules.

Implementing Pig

Write a program `Pig.java` that behaves *exactly* like `Pig.jar`. (Following a specification is a useful skill for you. Having all students' programs behave the same way also makes life easier for your grader.) The (mostly empty) file `Pig.java` can be found in the default package within the `src` folder.

Take notes as you work. What bugs and conceptual difficulties did you encounter? How did you overcome them? What did you learn?

There are two approaches that you might take to writing this program:

1. Write out the entire program, test it, and then debug it.
2. Implement one small feature, test it, and debug it. Add another feature, test it, and debug it. Repeat until the program is done.

Experienced software developers know that the second approach takes *vastly* less time. Here's a reasonable sequence of stages your program might go through as it grows:

1. Roll the die and print the result.
2. Roll the die five times, printing each roll and the running total.

3. Play a complete turn, allowing the user to keep going or stop. The turn ends when the player either rolls a 1 or chooses to stop.
4. Allow two players to alternate turns. Maintain both players' scores.
5. Play the complete game, including detecting the end of the game.

You may end up writing some code that doesn't end up in the final program, such as the "five times" loop or `println`s for debugging. That's fine! It's like construction workers putting up scaffolding that won't remain in place when the building is finished. Just be sure to remove this temporary code before you hand in your program.

If you don't know how to do something (like breaking out of a loop or generating a random number to simulate rolling a die), you have many resources at your disposal:

- Ask another student.
- Consult your notes or textbook.
- Look through previous programs you have examined or written.
- Search the internet. Some students are reluctant to do this, thinking that it might be "cheating". It certainly would be plagiarism to simply find a working Pig program and hand it in. On the other hand, the internet is perfectly valid as a way to remind yourself of syntax, find examples, or expand your understanding. Real programmers do this all the time.

Note that some internet sources may use different terminology, refer to obscure Java features, or be out of date. The official websites for your textbook and your course are less likely to suffer from these problems and are therefore particularly good sources.

- Post to your course email list or forum.
- Ask your instructor or teaching assistant.

For more information about Pig (including strategy), see <http://nifty.stanford.edu/2010/neller-pig/>

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