

CS1013 - Programming Project

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Debugging

- Golden rule: change one thing at a time.
- Understand the errors being reported.
- Use `println()` to print out values of important variables. Print out the fact that you have reached certain points in the program.
- Always check whether an object returned from a method is *null* before using it - program defensively.
- When accessing an array, always make sure that the index you are using is within the size of the array.
- Get to know the debugging tools when you've got a fully functioned IDE.

Coding conventions

- Code conventions are important to programmers for a number of reasons:
- 80% of the lifetime cost of a piece of software goes to maintenance.
- Hardly any software is maintained for its whole life by the original author.
- Code conventions improve the readability of the software, allowing engineers to understand new code more quickly and thoroughly.
- If you ship your source code as a product, you need to make sure it is as well packaged and clean as any other product you create.

Taken From: <http://java.sun.com/docs/codeconv/>

Documenting code

- Many coding standards out there, Sun have a set for Java. Below are some recommendations from Scott Ambler.
- If your program isn't worth documenting, it probably isn't worth running.
- Good comments will come back to help you!
- Document why something is being done, not just what.
- Member functions - strong, active verb
- is/get/set for access/update.

Variable names

- In Java, variable names, values which change should be short but meaningful:
 - Example: `int testScore = 80;`
- Use a full English descriptor:
 - Which is best? `testScore = 12;` OR `tsc = 12;` OR `t = 12;`
- In Java, constants, values that do not change, are typically implemented as *static final fields of classes*, *CAPITALISED with spaces*:
 - Example: `static final int MONTHS_IN_YEAR = 12;`
- For names of components (interface widgets) you can use a full english descriptor postfixed by the widget type:
 - Example: `okButton !button456`, `cancelButton`, `applyButton`

Naming Collections (Arrays)

Should be given a plural name representing the types of objects stored by the array.

- The name should be a full English descriptor with the first letter of all non-initial words capitalized.
- -Examples: customers, orderItems, myCircles, theAliens.
- Try to only access fields of objects using get/set.

Function header

- What and why the member function does what it does.
- What a member function must be passed as parameters.
- What a member function returns.
- Known bugs.
- Any exceptions that a member function throws.
- Include a history of any code changes.
- Examples of how to invoke the member function if appropriate.
- Use whitespace in your code.

Writing files

- Declare a `PrintWriter` variable:
`PrintWriter output;`
- Create a `PrintWriter` object
`output = createWriter("delays.csv");`
- Write to the file
`output.println("some text");`
- Flush the output (make sure everything is actually written to the disk).
`output.flush();`
- Close the file.
`output.close();`

Tomorrow's demonstration points

- Should be able to select all of the different query types and have the query appear.
- Should be able to change the parameters to the query, eg.
 - type the symbol of a stock or select it from a list.
 - select the date range
 - view the stocks with the biggest changes.

Project presentation

- Demonstrations will be 4pm-7pm Thursday 7th.
- Order of presentation will be given at final week's lecture.
- You have 5 minutes to present 2 slides ONLY on the features of your program plus a quick demonstration.
- The slides are to be uploaded to subversion in PPT or PDF format, with filename CS1013-presentation-x.ppt (where x=your group number).
- Your report should be in PDF or DOC (word) format, 4 pages MAXIMUM, and should be uploaded to subversion as CS1013-report-x.pdf
- If your program does not run directly from the subversion upload, please have the demonstration machine ready to run, and make sure it can connect to the projector beforehand - I suggest doing this after the Monday lecture slot.