# *Systems III (420-E31-HR)*

# *Lab 08 – Development Standards*

Date assigned: Wednesday, Sept 27, 2017

Date due: **Wednesday, Sept 27, 2017, 12:00 p.m.**

**Learning Objectives**

Upon successful completion of this lab exercise, the student will be able to:

* Examine common public domain coding standards for Java, JavaScript and SQL
* Identify violations of a coding standard and fix the code to conform.

**Marking Scheme**

|  |  |
| --- | --- |
|  | Marks |
| Part A |  |
| 1 | 4 |
| 2 | 4 |
| 3 | 2 |
| 4 | 5 |
| Part B | 3x8 |
| Organization & English | 4 |
| Total | 43 |

**Part A – General standards**

1. The Apache web server is one of the most deployed web servers in the world. Find the C language style guide and paste the URL here:

<https://httpd.apache.org/dev/styleguide.html>

* 1. What is the rule for indentation, how big is it and are tabs allowed?

**4 spaces no tabs**

* 1. Spacing: is this valid? If not why not?

f (a,b);

/\* call function f \*/

No, there is space between the function name and the opening brace

* 1. What’s wrong with the following?

static const char \*really\_long\_name(int i, int j, const char \*args, void \*foo, int k)

if (cond1 && (item2 || item3) && (!item4)

&& (item5 || item6) && item7)

{

do\_a\_thing();

}

The function parameters should be broken down into 3 lines with the parameters indented all the way to the right so that they’re in line.

The braces should be on the same line – THE PROPER WAY

* 1. What’s wrong with the following?

for (x=1;x<10;x++)

{

do\_a\_thing();

}

Some horrible person put the braces on a new line. Also since this is C, I think this would throw a syntax error since x isn’t declared as an int, it’s just x – Although it could be declared above this which would be horrible.

1. Read <https://en.wikipedia.org/wiki/Coding_conventions>
   1. Why have Code Conventions?

So that other people don’t write unreadable or unmaintainable code

* 1. What is the problem with complex code and what should the goal of the code complexity be?

The problem with complex code everyone other than the person who wrote it may not understand what the code does. It will make the code unmaintainable.

1. What happens if you submit code to an open source project that doesn’t meet their coding standards? (i.e. <https://commons.apache.org/proper/commons-net/code-standards.html>, https://www.infoq.com/news/2014/02/google-java-coding-standards)

If you commit code that does not follow these conventions, you are responsible for also fixing your own code.

1. Google’s rules for camel case defined:

Sometimes there is more than one reasonable way to convert an English phrase into camel case, such as when acronyms or unusual constructs like "IPv6" or "iOS" are present. To improve predictability, Google Style specifies the following (nearly) deterministic scheme.

Beginning with the prose form of the name:

1. Convert the phrase to plain ASCII and remove any apostrophes. For example, "Müller's algorithm" might become "Muellers algorithm".
2. Divide this result into words, splitting on spaces and any remaining punctuation (typically hyphens).
   * *Recommended:* if any word already has a conventional camel-case appearance in common usage, split this into its constituent parts (e.g., "AdWords" becomes "ad words"). Note that a word such as "iOS" is not really in camel case *per se*; it defies *any* convention, so this recommendation does not apply.
3. Now lowercase *everything* (including acronyms), then uppercase only the first character of:
   * ... each word, to yield *upper camel case*, or
   * ... each word except the first, to yield *lower camel case*
4. Finally, join all the words into a single identifier.

Note that the casing of the original words is almost entirely disregarded

Create the camel case for the following:

|  |  |  |
| --- | --- | --- |
| **Prose form** | **Upper Camel**  **Case** | **Lower**  **Camel Case** |
| "XML HTTP request" | XmlHttpRequest | xmlHttpRequest |
| "new customer ID" | NewCustomerID | newCustomerId |
| "inner stopwatch" | InnerStopwatch | innerStopwatch |
| "supports IPv6 on iOS?" | SupportsIpv6OnIos | supportsIpv6OnIos |
| "YouTube importer" | YouTubeImporter | youtubeImporter |

**Part B – Goggle Java standards**

1. Read the Google Java standard: <https://google.github.io/styleguide/javaguide.html>
   1. Identify what’s wrong, point to the section of the Google standard that it is in violation of, and fix, the following samples:

|  |  |  |  |
| --- | --- | --- | --- |
| **Code Sample** | **Violations**  **(indicate section number from Coding standard)** | **Fixed** | **Describe solution** |
| String unitAbbrev = "\u03bcs"; | It’s a Unicode string – 2.3.3 | String unitAbbrev = "μs"; | Convert the string from escaped Unicode |
| In a single source file:  public class TodoList {  …  …  }  public class Calendar {  …  …  } | 3.4.1 | **TodoList.java:**  public class TodoList {  …  …  }  **Calendar.java:**  public class Calendar {  …  …  } | Break it up into two files – one for TodoList the other for Calendar |
| public void add(String userId, String summary, String description,  String url) {  synchronized (this) {  EntityManager em = EMFService.get().createEntityManager();  Todo todo = new Todo(userId, summary, description, url);  em.persist(todo; em.close();  }  } | The parameters aren’t indented, the code inside the synchronized isn’t indented properly.  4.3 |  | Indent the parameters to all be inline. Indent the synchronized to 4 spaces (tab) |
| Dao.INSTANCE.add(user.getUserId(), summary  , longDescription, url); | 4.5.1 – the comma should move up a line | Dao.INSTANCE.add(user.getUserId(), summary,  longDescription, url); | Move the comma up inline with the summary parameter |
| int var1, var2; | 4.3 | int var1;  int var2; | Put the two variables on their own lines and terminate each statement with a semicolon, not a comma. |
| switch (input) {  case 1:  case 2:  prepareOneOrTwo();  case 3:  handleOneTwoOrThree();  break;  } | There’s no default, the fall through isn’t commented  4.8.4.2 | switch (input) {  case 1:  case 2:  prepareOneOrTwo();  // fall through  case 3:  handleOneTwoOrThree();  break;  default:  handleLargeNumber(input);  } | Comment the fall through, added a default. |
| public class sortedList {  …  public String GetShortDescription() {  return summary;  }  } | Where did that summary variable come from??? But also that class name should be capitalized.  5.2.2 | public class SortedList {  …  public String GetShortDescription() {  return summary;  }  } | Capitalized the SortedList |
| try {  int i = Integer.parseInt(response);  return handleNumericResponse(i);  } catch (NumberFormatException ok) {  }  return handleTextResponse(response); | Missing a comment in the catch  6.2 | try {  int i = Integer.parseInt(response);  return handleNumericResponse(i);  } catch (NumberFormatException ok) {  //Comment here  }  return handleTextResponse(response); | Added a comment to the empty catch block. |

**To submit**

When you have completed the assignment, upload the following document to Moodle.

* **YourName\_E31\_L05\_Standards.docx**