Introduction to Coding Standards

Overview

- Definitions
- Motivation
- Small Example Coding Standard
- Conclusions
- References

Definitions

- A coding standard defines the style of your source code including (but not limited to):
  - Indentation, Bracket Placement
  - Variable, Function and Class Names
  - Comments
  - Declaring Pointers
  - Higher level aspects (often to avoid obscure pitfalls)
  - And more
- A standard is defined for a language or project
- If everyone follows the standard the code is easy to read

Motivation

- A coding standard can be useful for the following reasons
  - Programmers can quickly read someone else's code on a project
  - New people can get up to speed quickly
  - People new to a language are spared the need to develop a personal style

Indentation and Bracket Placement Examples

```
if (hours < 24 && minutes < 60 && seconds < 60)
{
   return true;
}
else
{
   return false;
}
```

- ANSI C++ Style

Indentation and Bracket Placement Examples

```
if (hours < 24 && minutes < 60 && seconds < 60) {
   return true;
} else {
   return false;
}
```

- Kernighan and Ritchie Style

Indentation and Bracket Placement Examples

```
if   (       hours<
    24       && minutes<
    60       && seconds<
    60                        )
    {return       true
;}              else
    {return       false
;}
```

- Hopefully no one’s style

Indentation and Bracket Placement Example

- Clearly we want to avoid the use the last option.
- The coding standard can define that the last option shouldn’t happen
- It also chooses between the two reasonable options
  - This makes all the code on a project look the same

Commonly used Identifier Case

- Upper Case with Underscores:
  - THIS_IS_AN_EXAMPLE
- Lower Camel Case:
  - thisIsAnExample
- Upper Camel Case:
  - ThisIsAnExample
- Lower Case with Underscores:
  - this_is_an_example

Example Coding Standard – Variable Names

- Classes have Upper Camel Case
  - ex: PizzaFactory
- Functions have lower Camel Case
  - ex: myFunction
- Member variables begin with m and have Upper Camel Case
  - ex: mMemberVariable
- Local variables have lower case with underscores
  - ex: my_local_variable

Example Coding Standard – Indentation, Spaces and Tabs

- No tabs are used, set your editor to enter spaces when you hit tab
- When you hit tab, 2 spaces are entered
- There is only one space between tokens
- K&R Placement of braces

```
if(condition) {
  basic_block
} else {
  basic_block
}
```

Example Coding Standard – Declaring Pointers

- C codestyle

  int *z;

- C++ codestyle

  int* z;

- But what about two variables?
- C codestyle

  int *z, *y;

- C++ codestyle

  int* z, y;

  (y is an int, not a pointer in this case)

Conclusions

- Some employers or projects will require you to conform to the coding standard
  - This may make life easier for you if you sometimes ask: “What is the best way to do it?”
- When you join a project you can ask: “Is there a coding standard?”
- The coding standard could be specified by referencing the project’s coding standard document in the “Process Requirements” section of the B-Spec.
- If a coding standard is specified you should use a tool to automatically check the standard during qualification

Coding Standards on the Web

- Coding conventions
  - http://en.wikipedia.org/wiki/Programming_style
    - C,C++,C#,Java

References

1.http://en.wikipedia.org/wiki/Programming_style

2.http://www.possibility.com/Cpp/CppCodingStandard.html#important

3.http://en.wikipedia.org/wiki/The_C_Programming_Language_(book)

4.http://en.wikibooks.org/wiki/C%2B%2B_Programming/Code_Style