Assignment Kit for  
Coding Standard

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Personal Software Process for Engineers: Part I

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Personal Software Process for Engineers: Part I

Assignment Kit for the Coding Standard

Overview

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| Overview | This assignment kit covers the following topics. | |
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| Prerequisites | Prerequisites  • Read Chapter 4  • Complete Size Counting Standard |

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| Objectives | The objectives of the coding standard are to  • establish a consistent set of coding practices  • provide criteria for judging the quality of the code that you produce  • facilitate size counting by ensuring your programs are written so they can be readily counted  • for LOC counting, require that there be a separate physical line for each logical line of code |

### Coding standard requirements

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| Coding  standard requirements | Produce, document, and submit a completed coding standard that calls for quality coding practices.  For LOC counting, ensure that a separate physical source line is used for each logical line of code.  Submit the coding standard with your program 2 assignment package. |

### Example coding Standard

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| Coding standard example | Pages 5 and 6 of this workbook contain an example C++ coding standard.  Notes about the example  • Since it is an example, tailor it to meet your personal needs.  • If you have an existing organizational standard, consider using it for the PSP exercises. |

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**Example C++ Coding Standard**

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| Purpose | To guide implementation of C++ programs |
| Program Headers | Begin all programs with a descriptive header. |
| Header Format | /\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/  /\* Program Assignment: the program number \*/  /\* Name: your name \*/  /\* Date: the date you started developing the program \*/  /\* Description: a short description of the program and what it does \*/  /\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/ |
| Listing Contents | Provide a summary of the listing contents |
| Contents Example | /\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/  /\* Listing Contents: \*/  /\* Reuse instructions \*/  /\* Modification instructions \*/  /\* Compilation instructions \*/  /\* Includes \*/  /\* Class declarations: \*/  /\* CData \*/  /\* ASet \*/  /\* Source code in c:/classes/CData.cpp: \*/  /\* CData \*/  /\* CData() \*/  /\* Empty() \*/  /\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/ |

(continued)**Example C++ Coding Standard (continued)**

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| --- | --- |
| Reuse Instructions | * Describe how the program is used: declaration format, parameter values, types, and formats. * Provide warnings of illegal values, overflow conditions, or other conditions that could potentially result in improper operation. |
| Reuse Instruction Example | /\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/  /\* Reuse instructions \*/  /\* int PrintLine(char \*line\_of\_character) \*/  /\* Purpose: to print string, ‘line\_of\_character’, on one print line \*/  /\* Limitations: the line length must not exceed LINE\_LENGTH \*/  /\* Return 0 if printer not ready to print, else 1 \*/  /\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/ |
| Identifiers | Use descriptive names for all variable, function names, constants, and other identifiers. Avoid abbreviations or single-letter variables. |
| Identifier Example | Int number\_of\_students; /\* This is GOOD \*/  Float: x4, j, ftave; /\* This is BAD \*/ |
| Comments | * Document the code so the reader can understand its operation. * Comments should explain both the purpose and behavior of the code. * Comment variable declarations to indicate their purpose. |
| Good Comment | If(record\_count > limit) /\* have all records been processed? \*/ |
| Bad Comment | If(record\_count > limit) /\* check if record count exceeds limit \*/ |
| Major Sections | Precede major program sections by a block comment that describes the processing done in the next section. |
| Example | /\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/  /\* The program section examines the contents of the array ‘grades’ and calcu- \*/  /\* lates the average class grade. \*/  /\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/ |
| Blank Spaces | * Write programs with sufficient spacing so they do not appear crowded. * Separate every program construct with at least one space. |
| Indenting | * Indent each brace level from the preceding level. * Open and close braces should be on lines by themselves and aligned. |
| Indenting Example | while (miss\_distance > threshold)  {  success\_code = move\_robot (target \_location);  if (success\_code == MOVE\_FAILED)  {  printf(“The robot move has failed.\n”);  }  } |
| Capitalization | * Capitalize all defines. * Lowercase all other identifiers and reserved words. * To make them readable, user messages may use mixed case. |
| Capitalization Examples | #define DEFAULT-NUMBER-OF-STUDENTS 15  int class-size = DEFAULT-NUMBER-OF-STUDENTS; |

### Evaluation criteria and suggestions

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| Evaluationcriteria | Your standard must be  • complete  • legible |

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| Suggestions | Keep your standards simple and short.  Do not hesitate to copy or build on the PSP materials. |

**Coding Standard Template**

|  |  |
| --- | --- |
| Purpose | To guide the development of programs |
| Program Headers | Begin all programs with a descriptive header. |
| Header Format |  |
| Listing Contents | Provide a summary of the listing contents. |
| Contents  Example |  |
| Reuse Instructions | * Describe how the program is used. Provide the declaration format, parameter values and types, and parameter limits. * Provide warnings of illegal values, overflow conditions, or other conditions that could potentially result in improper operation. |
| Reuse Example |  |
| Identifiers | Use descriptive names for all variables, function names, constants, and other identifiers. Avoid abbreviations or single letter variables. |
| Identifier Example |  |

(continued)**Coding Standard Template (continued)**

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| --- | --- |
| Comments | * Document the code so that the reader can understand its operation. * Comments should explain both the purpose and behavior of the code. * Comment variable declarations to indicate their purpose. |
| Good Comment |  |
| Bad Comment |  |
| Major Sections | Precede major program sections by a block comment that describes the processing that is done in the next section |
| Example |  |
| Blank Spaces | * Write programs with sufficient spacing so they do not appear crowded. * Separate every program construct with at least one space. |
| Indenting | * Indent every level of brace from the previous one. * Open and closing braces should be on lines by themselves and aligned with each other. |
| Indenting  Example |  |
| Capitalization | * Capitalized all defines. * Lowercase all other identifiers and reserved words. * Messages being output to the user can be mixed-case so as to make a clean user presentation. |
| Capitalization Example |  |