Assignment Kit for Program 2

Personal Software Process (PSP) for Engineers: Part I

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Assignment Kit for Program 2

Overview

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This assignment kit covers the following topics.

Prerequisites

Reading
- Chapters 3 4 and 5

Assignments
- size counting standard
- coding standard

Program 2 requirements

Program 2 requirements

Using PSP1, write a program to count (in LOC) the
- total program size
- total size of each of the program's parts (classes, functions, or procedures)
- the number of items (or methods) in each part

Produce and print
- a single count for the entire program
- size and item counts for each part together with the part name

If LOC is not a suitable size measure for the language you use, see chapter 3 and the following "Hints" section for alternative ways to measure size. Then write program 2 to use those measures.

Use the size counting standard and the coding standard defined in your report assignments.

Thoroughly test the program. At a minimum, test the program by counting the total program and part sizes in programs 1 and 2. Example output is illustrated in Table 1. In Table 1, consider the word *part* to be whatever applies for your language: class, function, procedure, and so forth.

Program Number	Part Name	Number of Items	Part Size	Total Size
1	ABC	3	86	
	DEF	2	8	
	GHI	4	92	
				212
2	…			

Table 1

Program 2 hints

Hints

Do not try to write a sophisticated counting program.

For LOC counting, follow the counting strategy suggested in Chapter 3, page 48, Size Counters.

If the classes, functions, embedded code, or anything else in your programming language is hard to identify and count, consider including special comments to identify such things for your counting program. Remember to modify your R1 counting standard and R2 coding standard to include these comments. You will also have to include such comments in every program, including program 1.

For database application or other languages where the LOC measure may not be appropriate, identify the items that you think could provide useful counts. Be as complete as you can while keeping the counting approach simple. A simple sum of the basic countable elements will likely provide as useful a size measure as more sophisticated measures.

Assignment instructions

Assignment instructions

Before starting program 2, review the top-level PSP1 process script below to ensure that you understand the "big picture" before you begin. Also, ensure that you have all of the required inputs before you begin the planning phase.

PSP1 Process Script

Purpose	To guide the development of module-level programs
Entry Criteria	- Problem description - PSP1 Project Plan Summary form - ***Size Estimating template*** - ***Historical size and time data (estimated and actual)*** - Time and Defect Recording logs - Defect Type, **Coding, and Size Measurement standards** - Stopwatch (optional)

Step	Activities	Description
1	Planning	- Produce or obtain a requirements statement. - ***Use the PROBE method to*** estimate the added and modified size of this program. - ***Complete the Size Estimating template.*** - ***Use the PROBE method to*** estimate the required development time. - Enter the plan data in the Project Plan Summary form. - Complete the Time Recording log.
2	Development	- Design the program. - Implement the design. - Compile the program, and fix and log all defects found. - Test the program, and fix and log all defects found. - Complete the Time Recording log.
3	Postmortem	Complete the Project Plan Summary form with actual time, defect, and size data.

Exit Criteria	- A thoroughly tested program - Completed Project Plan Summary form with estimated and actual data - ***Completed Size Estimating template*** - ***Completed Test Report template*** - **Completed PIP forms** - Completed Time and Defect Recording logs

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Planning phase Plan program 2 following the PSP1 planning phase script.

PSP1 Planning Script

Purpose	To guide the PSP planning process
Entry Criteria	- Problem description - PSP1 Project Plan Summary form - ***Size Estimating template*** - ***Historical size and time data (estimated and actual)*** - Time Recording log

Step	Activities	Description
1	Program Requirements	- Produce or obtain a requirements statement for the program. - Ensure that the requirements statement is clear and unambiguous. - Resolve any questions.
2	Size Estimate	- ***Produce a program conceptual design.*** - ***Use the PROBE method to*** estimate the added and modified size of this program. - ***Complete the Size Estimating template and Project Plan Summary form.***
3	Resource Estimate	- ***Use the PROBE method to*** estimate the time required to develop this program. - **Using the *To Date %* from the most recently developed program as a guide, distribute the development time over the planned project phases.**

Exit Criteria	- Documented requirements statement - ***Program conceptual design*** - ***Completed Size Estimating template*** - Completed Project Plan Summary form with estimated program size and development time data - Completed Time Recording log

Verify that you have met all of the exit criteria for the planning phase, **then have an instructor review your plan**. After your plan has been reviewed, proceed to the development phase.

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Development phase

Develop the program following the PSP1 development phase script.

PSP1 Development Script

Purpose	To guide the development of small programs
Entry Criteria	- Requirements statement - Project Plan Summary form with estimated program size and development time - Time and Defect Recording logs - Defect Type standard and Coding standard

Step	Activities	Description
1	Design	- Review the requirements and produce a design to meet them. - Record in the Defect Recording log any requirements defects found. - Record time in the Time Recording log.
2	Code	- Implement the design following the Coding standard. - Record in the Defect Recording log any requirements or design defects found. - Record time in the Time Recording log.
3	Compile	- Compile the program until there are no compile errors. - Fix all defects found. - Record defects in the Defect Recording log. - Record time in the Time Recording log.
4	Test	- Test until all tests run without error. - Fix all defects found. - Record defects in the Defect Recording log. - Record time in the Time Recording log. - ***Complete a Test Report template on the tests conducted and the results obtained.***

Exit Criteria	- A thoroughly tested program that conforms to the **Coding standard** - ***Completed Test Report template*** - Completed Time and Defect Recording logs

Verify that you have met all of the exit criteria for the development phase, then proceed to the postmortem phase.

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Postmortem phase

Conduct the postmortem following the PSP1 postmortem script.

PSP1 Postmortem Script

Purpose	To guide the PSP postmortem process
Entry Criteria	- Problem description and requirements statement - Project Plan Summary form with program size and development time data - ***Completed Test Report template*** - Completed Time and Defect Recording logs - A tested and running program that conforms to the coding and size measurement standards

Step	Activities	Description
1	Defect Recording	- Review the Project Plan Summary to verify that all of the defects found in each phase were recorded. - Using your best recollection, record any omitted defects.
2	Defect Data Consistency	- Check that the data on every defect in the Defect Recording log are accurate and complete. - Verify that the numbers of defects injected and removed per phase are reasonable and correct. - Using your best recollection, correct any missing or incorrect defect data.
3	Size	- **Count the size of the completed program.** - **Determine the size of the base, reused, deleted, modified, added, total, added and modified, and new reusable code.** - **Enter these data in the Project Plan Summary form.**
4	Time	- Review the completed Time Recording log for errors or omissions. - Using your best recollection, correct any missing or incomplete time data.

Exit Criteria	- A thoroughly tested program that conforms to the **coding and size measurement standards** - ***Completed Test Report template*** - Completed Project Plan Summary form - **Completed PIP forms describing process problems, improvement suggestions, and lessons learned** - Completed Time and Defect Recording logs

Verify that you have met all of the exit criteria for the PSP1 postmortem phase, then submit your assignment.

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Submitting your assignment

When you've completed your review, package the following data files into a zip file and upload the zip file to the program 1 assignment page on the SEI Learning Portal.

- Process data (mdb export file from SEI Student Workbook or zip data backup file from Process Dashboard).
- Source program listing.
- Test results.
- The project must use maven
- The project must GIT and GITHub for configuration management
- A Readme.txt file detailing:
    - How to obtain the source code from GitHub using git
    - How to build and test the application

Guidelines and evaluation criteria for program 2

Evaluation Criteria

Your process report must be
- complete
- legible
- in the specified order

Your process data must be
- accurate
- precise
- self-consistent

Suggestions

Remember, you should complete this assignment today.

Keep your programs simple. You will learn as much from developing small programs as from large ones.

If you are not sure about something, ask your instructor for clarification.

Software is not a solo business, so you do not have to work alone.
- You must, however, produce your own estimates, designs, code, and completed forms and reports.
- You may have others review your work, and you may change it as a result.
- You should note any help you receive from others in your process report. Log the review time that you and your associates spend, and log the defects found or any changes made.

