

## CSE 566: Software Project, Process and Quality Management

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# Software Maintainability Project

## Purpose

There are numerous measures of software quality that have been developed over the years. Software quality measurement (analytics) can be used to guide development and testing activities. The purpose of this assignment is to gain some experience with one of the many tools used to capture software metrics. In addition, you will have the opportunity to research software maintainability metrics and apply the knowledge you have gained with the RSM tool.

## Objectives

Learners will be able to:

- Utilize a commercial software quality measurement tool.
- Interpret the results of the tool output.
- Identify and describe a software maintainability metric.

## Technology Requirements

- Java
- Ability to access the [Resource Standard Metrics tool](#)
- Word processor
- PDF option to convert the typed document

## Project Description

Download a trial version of the [Resource Standard Metrics tool](#).

Using the *Your Name\_CSE 566\_Software Maintainability Project\_Template* compose a three-part paper:

## Part 1: Tool Demonstration

- Demonstrate the use of the tool on one of your own Java programs or a Java program you download from the web by generating a report that includes complexity metrics and one additional (non-default) metric that is appropriate for the code you are analyzing.
- Mention what additional metric(s) you chose.
- ***Provide an interpretation of what the metrics indicate in terms of the quality/design of your program.*** Submit your source code\* as well as the metric report produced by the tool by copying and pasting it into your paper or inserting a screenshot.

\*If the source code is long, submit a 250 line excerpt from an interesting section instead (i.e., not just function definitions or preprocessor directives).

## Part 2: Software Maintainability Measure (500 words or 1 page)

- Research, identify, and describe a software maintainability measure, including how maintainability is calculated.
- Describe how the proposed measure relates to the RSM tool metrics.
- Cite references where used in your paper.

## Part 3: References (3-5 research-based references)

- Using IEEE or ACM style, list the references you used in your project paper

## Formatting Specifications

The *Your Name\_CSE 566\_Software Maintainability\_Template* has the established formatting with a header for your identification information (Your Name) and the session you are taking this course (e.g., Spring B 2022), headings, subheadings, line spacing, font sizes, margins, and a sans serif font. These specifications were set up to support the use of assistive technologies, such as screen readers.

In-text citations and paraphrased references within the body of your paper should be in IEEE or ACM style. Whichever style you choose, your References page must be in the same style.

## Submission Directions for Project Deliverables

You are given a limited number of attempts to submit your best work. The number of attempts is given to anticipate any submission errors you may have in regards to properly submitting your best work within the deadline (e.g., accidentally submitting the wrong paper). It is not meant for you to receive multiple rounds of feedback and then one (1) final submission. Only your most recent submission will be assessed.

You must submit your Software Maintainability Project deliverable in the appropriate submission space in the course. Learners may **not** email or use other means to submit any project for review, including feedback, and grading.

The Code Refactoring Project includes **one (1)** deliverables:

1. **Written Final Project Paper:** Your Software Maintainability Project must be a single PDF with the correct naming convention: *Your Name\_CSE 566\_Software Maintainability Project*. You are required to use the provided *Your Name\_CSE 566\_Software Maintainability Project\_Template*.

## Evaluation

Please review the rubric for how this project will be graded. The rubric can be viewed directly in your course, through the submission space for this project. Project papers will be evaluated based on each criterion and will receive a total score.

Prior to starting any graded coursework, learners are expected to read through the rubric so they know how they will be assessed. You are encouraged to self-assess your responses and make informed revisions before submitting your final work. Engaging in this learning practice will support you in developing your best work.

Project papers missing any part of the project will be graded based on what was submitted against the rubric criteria. Missing parts submitted after the deadline will not be graded.

*Review the course syllabus for details regarding late penalties.*

Scoring Criteria
The learner demonstrates the use of the tool on their own Java programs or one downloaded from the web by copy-pasting screenshots of a report they generate that includes complexity metrics and one additional non-default metric that is appropriate for the code they are analyzing.
The learner provides an interpretation of what the metrics indicate in terms of the quality/design of their program.
The learner provides a copy of the source code in the document, either pasted lines or a screenshot.
The learner performs a literature review and identifies a measure or measures for software maintainability.
The learner describes how the selected measure or measures are calculated.
The learner describes how the measure or measures relate to the RSM tool metrics.