[cover sheet 1 of 2]

2

ASSIGNMENT 2

**DEFECT ANALYSIS REPORT**

CSE 6329 -- SOFTWARE MEASUREMENT AND QUALITY ENGINEERING

Professor Dennis J. Frailey

**Fall, 2018**

NAME \_\_\_**<put your name(s) here>**\_\_\_

ID Number\_\_\_**<put your ID number(s) here>**\_\_\_

Grader Comments:

**Erase this sentence and leave the rest of this page blank.**

This is the template. To generate your report, first make a copy of this template for use in developing your report. (Keep the original template for reference).

When you make the copy, change the file name on the copy to replace the word “template” with your last and first names (or if you are working as a team, give the last name and first initial of each team member, in alphabetical order).

Finally, as you develop your report, **delete all red text** and replace as appropriate with suitable words, formulas, figures, etc.

Also delete all notes in blue boxes (like this one), which are intended to suggest how you should do your report.

The Grading Template is on the next page.

Leave this template in your report, for use by the instructor and grader in grading your report.

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| **Grading Template (student should not write inside this box)** | | | | | | |
| **Section 1 – Introduction and Overview** | | | | | | |
| \_\_\_\_\_ (/10) | 1.1 \_\_\_\_\_ Purpose of This Report (1)  1.2 \_\_\_\_\_ Structure of Analysis Tool (4)  1.3 \_\_\_\_ Data Collection Overview (3)  1.4 \_\_\_\_\_ Summary of Analyses and Graphs (2) | | | | | (10 points) |
| **Section 2 – Measures, Graphs and Analysis** | | | | | | |
| **Section 2.1 – Post Release Quality** | | | | | | |
|  | i (1 point)  **Overview**  (Purpose / Question / Definition / Collection) | ii (1 point)  **Sample Graphs** | iii **Analysis** (5 points) | | iv (3 points)  **Procedure**  (Base measures / Refinement / Compound Measures / Generation of Graph) | |
| 1. (2 pts)  **General**  **Description**  (Purpose / Graph / How to Analyze) | 2. (3 pts)  **Specific Discussion**  (What it shows / recommendations) |
| 2.1.a \_\_\_\_\_/10 |  |  |  |  |  | |
| 2.1.b \_\_\_\_\_/10 |  |  |  |  |  | |
| 2.1.c \_\_\_\_\_/10 |  |  |  |  |  | |
| 2.1.d \_\_\_\_\_/10 |  |  |  |  |  | |
| 2.1.e \_\_\_\_\_/10 |  |  |  |  |  | |
| 2.1.f \_\_\_\_\_/10 |  |  |  |  |  | |
| **Section 2.2 – Current Quality** | | | | | | |
|  | i (1 point)  **Overview**  (Purpose / Question / Definition / Collection) | ii (1 point)  **Sample Graphs** | iii (5 points) | | iv (3 points)  **Procedure**  (Base measures / Refinement / Compound Measures / Generation of Graph) | |
| (2 pts)  **Generic**  **Description**  (Purpose / Graph / How to Analyze) | (3 pts)  **Specific Discussion**  (What it shows / recommendations) |
| 2.2.a \_\_\_\_\_/10 |  |  |  |  |  | |
| 2.2.b \_\_\_\_\_/10 |  |  |  |  |  | |
| 2.2.c \_\_\_\_\_/10 |  |  |  |  |  | |
| \_\_\_\_\_\_\_\_\_/100 | 🡸 **Total Assignment Grade** | | | | | |

**Defect Analysis Report**

1. **Introduction**
   1. **Purpose of This Report**

This report shows the results of analyzing three years of defect data on our released products. The purpose is to gain a greater understanding of the quality levels of our released products and to determine whether there is any correlation between software quality and other factors such as the programming language used, the development process used, or the time when the product was developed. You may add information here if you wish.

* 1. **Structure of Analysis Tool**

In order to analyze defect data, we have created a workbook … continue, with a description of your analysis tool. For example, explain that it is a workbook, how many worksheets, and what each worksheet is for. Pictures or samples of several worksheets should be shown.

When you see red text in the 12 point font, like this, it means you are expected to replace the red text with something you have written.

* 1. **Data Collection Overview**

Here you should describe how and how often you collect the data, where the data is kept (show a picture of the data spreadsheet and explain it), how many years of data you have collected, etc. You may expand this to several pages if you wish, so you can show pictures of the data spreadsheet and explain them.

**1.4 Summary of Analyses and Graphs**

Here you should make a list of all the analyses/graphs you will be discussing and, for each, provide the number of the report section where it is discussed and a short summary (one sentence should be enough) of each (its purpose). A table might be helpful for doing this.

1. **Measures, Graphs and Analysis**
   1. **Post Release Quality**

**2.1.a. Post-Release Quality for One Product**

**i. Overview**

Explain the purpose of this measure and graph – i.e., the **information need** and the **question** being answered. Then give a **definition** of the measure (in words – the formula will be provided in section iv.) and explain how often you collect the data and compute the measure. Finally, describe the type of graph (line chart, bar chart, etc.). If you will show multiple graphs, explain the purpose of each.

**ii. Sample Graph**

The graph below shows Post Release Quality for one year of Product ZB.

Insert your own figure depicting Post Release Quality for Product ZB here, along with additional descriptions if you wish.

**iii. Analysis and Discussion**

1. **General Discussion**

Here you explain how to interpret the lines, bars or other elements of the graph. For example, explain what each axis, line or bar represents. You may include any other comments or observations you believe will be helpful for someone trying to understand how to interpret the graph, generate the graph or analyze the data. For example:

Black text, like this, is an example that you may use for your report, where it is appropriate. You may also alter the text or remove it entirely, as you see fit.

* Two lines are shown: both DT and DUNC,T are plotted monthly on a line chart for the first release of product A. The horizontal axis is number of months since product release and the vertical axis shows defect count. The chart shows one year of data.
* The DT line is monotonic – it will tend to grow slowly, but to flatten out over time, as the product’s defects are found. When the line flattens, it is approximately equal to the total number of defects in the product.
* The DUNC,T line should decrease over time, as defects are found and corrected. However it may increase in any particular month if a lot of new defects are found in that month.

1. Specific Discussion

This section is for analysis, not just description. Here you analyze and describe the graph shown above and what conclusions or observations you make from looking at the graph. For example, you might observe that a particular line or bar means something significant. Note that the SOW and the data spreadsheet provide some background, which might help you explain some of the behaviors seen on the graphs. Look at the example in the SOW appendix.

**iv. Procedure Used to Collect and Refine Data and Produce Graph**

In the tables below, explain the details of your data refinement and how you produce the graph. The purpose of this section is to enable someone else to start with the same data and produce the same graphs. Describe each step of the measurement process: data collected, data refinement performed, compound measures calculated, and what data are shown on the graph. A sample of what is expected is shown below. You can use this for the first graph but need to provide the corresponding information for all other graphs.

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| 2.1.a.iv.1 Data Collection: Base Measures Collected |
| Here you list and describe the base metrics needed to compute this metric. Also describe when the data are collected (how often, etc.) Here is an example:  The data required for this measure are:   * **DPRE** – The number of known defects at the time of product release. Collected at time of product release. * **DRPT, i** – The number of defects reported in the ***ith*** customer failure report. Collected at the beginning of each month. * **N** – The total number of customer failure reports (total number of months). This is normally 12 for each product. * **DC,i** – The number of defects corrected in month ***i***, reported monthly by engineering staff.   The above data are collected separately for each software product. |

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| 2.1.a.iv.2 Data Refinement (manipulations, extractions, sorting, etc.) |
| Here you explain all data manipulations and refinements needed to compute this metric, such as computing totals, sorting, shifting data to new columns, and so forth. Here is an example:   * For this graph, the total defects are computed each month by adding the latest month’s defects to the previous total. * The uncorrected defects are computed each month by subtracting the number of defects corrected in the latest month from the previous uncorrected defects total. |

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| 2.1.a.iv.3 Compound Measures (Metrics Computed) |
| Here you show all compound metrics used, including their formulas and any intermediate computations needed. Here is an example:   * **Total Defects** at month T (is defined as the cumulative sum of all defects known at month T. This measure is computed every month, for each product. This includes both defects reported by the customer (post-release defects) and defects known to be in the product at release time (pre-release defects):   Equation - Total Defects   * **Uncorrected Defects** (at month T is defined as **Total Defects** minus the cumulative sum of all defects that have been corrected:   Equation - Uncorrected Defects |

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| 2.1.a.iv.4 How to Generate the Graph |
| Here you explain how to generate the graph. This is specific, so you should describe specific parts of your spreadsheet correspond to the various base metrics and compound metrics and refinements mentioned above, as well as other details that would enable someone else to generate the same graph. |

**2.1.b Post Release Quality Average for All Products, Normalized by Size**

Repeat as above for the other five post release quality measures.

* 1. **Current Quality**

Repeat as above.