Requirements Analysis and Specification (COE691)

Lab 5

Due the Week of April 8 , 2024 (In Your lab Session), Late submission will not be accepted

Objectives

Review Requirement Management and Risk management and analysis modeling. In lab 2, you have either designed a mini-case or used available cases; in both cases, a set of requirements has been elicited. You have categorized those requirements into functional and non-functional requirements. In this lab, we will reference your materials collected in Lab 2.

Part I: Requirements Management (25 points)

As a requirement engineer, one of your main tasks is to provide efficient requirement management. You are asked to perform the following tasks

1- Build traceability matrices between requirements identified in lab 2 using either "depends on", "contradicts with ", "specified with", "parent of", or any other links relationship you can extract between your elicited requirements (10 points).
2- Calculate for each requirement the number of related requirements and build histograms of the frequency of each relationship (10 points)
3- Identify which requirement(s) has the most frequent relationship with all other requirements of any relationship type and why? (5 points).

Part II: Risk Management and Analysis (40 points)

1- Identify 5-10 risks in your project discussed in Lab2. Risks could be technical, economical, business, known, unknown, or generic (**DO NOT USE risks discussed in class, be innovative, develop your own list of risks for your project**) (5 points).
2- Identify the project objectives (cost, time, scope, quality) that will be impacted by these risks (5 points).
3- Use monte Caro Simulation to simulate the probability and impact of each risk as follows (10 points):
    - Randomly, assign a probability for each risk, use of a five-point *Likert scale* as:
        - Highly unlikely ($p < 20\%$)
        - Unlikely ($20\% < p < 40\%$)
        - About even ($40\% < p < 60\%$)
        - Likely ($60\% < p < 80\%$)
        - Highly likely ($p > 80\%$)
        - Calculate the expected probability using 100 simulation trials.
    - Randomly, define the severity impact of each risk (1:negligible, 2:marginal, 3:critical, 4:catastrophic)
        - Calculate the expected impact using 100 simulation trials.
4- For each risk, calculate the Expected *Risk factor (RF) = probability *impact (5 points)*

5- Rank risks using the calculated *Risk factor* and then extract those risks of high-risk factors (RF) (5 points)
6- Fill in the attached Risk Register template with your results above, including the Cause-and-Effect Diagram (10 points)

Submit your lab

To submit your lab, including the following.

1- Submit an excel file, Lab5_PartI.xls, with answers to Part I.
2- Submit an excel file, Lab 5_PartII.xls, with answers to Part II and the complete Risk Register.
3- Save your work as a .zip file with the two excel files and the risk register included (ensure that your zip file can be unzipped). Upload it by the due date. This is individual work; no group work is allowed. **A software for plagiarism check will be applied on each submitted work. Please get yourself familiar with Ryerson's plagiarism policy. Do not forget to add a cover page with your name and ID in the report.**