

Project 2 – Concurrency Programming

SCSJ 4423 Real-time Software Engineering (RTSE)
Semester 2 2021/2022

School of Computing, Faculty of Engineering
UTM, Skudai

Project 2

- Objective:
 - i. Identify the Concurrent Programming (CP) problems situation in your Project 1
 - ii. Study suitable solution mechanism to solve the CP problem
 - iii. Apply a CP to your Project 1 to solve the Concurrent problem

Group Investigation

Concurrency Programming Problems

1. The following list assigns the Concurrency problem to groups:
 - I. Violating mutual exclusion
 - II. Deadlock
 - III. Busy waiting
 - IV. Unfairness
2. Each group need to identify at least 2 research papers consist of a case study implementation that discuss the following details:
 - i. the Concurrency Problem as assigned in (1)
 - ii. the solution mechanism for the problem
 - iii. the CP implementation of the solution

Group Investigation

Concurrency Programming Problems

1. From the identified research papers perform the following **review tasks**.
 - i. Review the CP problems and solution discussed in the papers
 - ii. Compare and discuss the problems identified and the solution proposed in the papers
 - iii. From the comparison, select the best fit solutions' mechanism to your project 1 CP problems with your justification
2. **Apply and implement** the CP selected solutions' mechanism using a CP language to your Project 1.
3. Prepare a demo video to show how your CP solution mechanism solve the CP problems in Project 1.
4. Prepare a report to discuss the review task and implementation of the concurrency CP mechanism for the Project 1

Reflection

Individual Project Reflection

What is a Journal?

- Your journal should be a reflective document that provides personal, thoughtful analysis of
 1. your individual participation on the group collaborative project,
 2. your assessment of the group interactions that may have occurred during the project week
- Applying the Gibbs' Reflective Model
 - Refer to the reference document in e-learning



Reflection

Individual Project Reflection

- In considering your 100% non-physical (face to face) interactions with your group member and classmates as you proceed with your group project, you could and should address:
 - I. Adaptability to Embedded Real-Time (ERT) System development, considering concurrency and RTOS
 - Your ability to apply known software Engineering and Computer Science solutions to the ERT development
 - Your ability to initiate and implement change to the system development especially task design and composition.
 - II. Collaborative Learning
 - What did you learn during this collaborative learning interaction?
 - What did you contribute?
 - What did the other members of the group contribute?
 - What is your assessment of how the group is functioning thus far?
 - What are the group's plans for the future next assignment or task?

Project 2

Assessment

- | | |
|----------------------------------|-----------|
| 1. Implementation & Code | 5% (CLO2) |
| 2. Demo Video | 5% (CLO2) |
| 3. Technical Report | 5% (CLO2) |
| 4. Q & A Forum | 2% (CLO4) |
| 5. Individual journal reflection | 3% (CLO4) |

Project 2

Assessment Rubrics

1. Code & Implementation
2. Demo video
3. Technical Report
4. Individual journal reflection
5. Q & A Forum

Project 2

Deadlines

- **22 May 2022:** Research papers selection
- **12 June 2022:** Submission Demo video
- **13-14 June 2022:** Q&A e-forum based on videos
- **15 June 2022:** Submission review and technical reports
- **16 June 2022:** Individual Journal Reflection