

## School of Computing and Information Technology

# CSIT314 Software Development Methodologies Singapore Institute of Management

## Final Examination Paper Session 2 2021

Exam duration	2 hours + 15 minutes for scanning and uploading answers
Weighting	50 % of the subject assessment
Marks available	50 marks
Directions to students	<p>Clearly mark the question numbers. Answer each question on a new page.</p> <p>This paper includes <b>3</b> questions.</p> <p>Submit your work in <b>one single file</b> (PDF or Word) to the Final Exam submission site provided on Moodle.</p> <p>To draw diagrams, you can use any tool of your choice (or draw by hand and take pictures – make sure the pictures are all clear). However, you need to insert the diagrams back into the submission file.</p> <p>Submission must be made by the exam end time. Late submission is <b>not</b> accepted. The submission site will automatically be closed after the exam end time.</p> <p><b>The exam must be completed independently.</b> You must do it on your own and must <b>not</b> discuss and collude nor share you work with anyone else.</p> <p>When you submit, you acknowledge it is your own work. Plagiarism and other academic misconduct may result in a Fail grade and will be subject to university Academic Misconduct Procedures</p>

### Question 1

(20 marks)

Using the **b-c-e framework** to develop the design of a simple CI/CD software tool (e.g. similar to GitLab). Your answer should include the following:

- A list of at least 10 user stories that specifically support Continuous Integration/Continuous Deployment functionalities.
- A use case description for one selected use case from the above user stories.
- A class diagram to represent your design.
- A deployment diagram showing how the software would be deployed.
- A UML state diagram to model the behaviour of an **object** in this system. You need to clearly specify which object you model and your state diagram needs to have at least 5 states.

*Your discussion must be **specific** to this case study. Generic answers copied from the lecture slides or other sources will be given 0 mark.*

### Question 2

(15 marks)

Assume that you have a team of 6 people (namely Ross, Rachel, Chandler, Phoebe, Monica and Joey). Describe how your team would apply the Scrum development methodology to develop the above system in 3 months starting from today. Your discussion should include the following details:

- a) How would you organize your team (e.g. roles and tasks)?
- b) What are the processes you would follow?
- c) What is your plan in terms of phases, iterations, meetings and milestones? What should be delivered in each phase and when?
- d) How do you execute your plan, monitor it and make adjustments if necessary?

*Your discussion must be **specific** to this case study. Generic answers copied from the lecture slides or other sources will be given 0 mark.*

Any assumptions which you have made should be stated clearly.

### Question 3

(15 marks)

Assume that after 3 months, your team in Question 2 finished developing the CI/CD tool. Discuss how your team can demonstrate that the development process it followed meets all the process areas specifically set out for Capability Maturity Model Integration (CMMI) Level 3. Provide examples specific to this case study to illustrate your answer.

*Your discussion must be **specific** to this case study. Generic answers copied from the lecture slides or any other sources will be given 0 mark.*

## End of Examination