SIM GLOBAL EDUCATION

UNIVERSITY OF WOLLONGONG AUSTRALIA

## School of Computing and Information Technology

# CSIT314
# Software Development Methodologies
# Singapore Institute of Management

## Final Examination Paper
## Session 4 2021

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| Exam duration | 2 hours + 15 minutes for scanning and uploading answers |
| Weighting | 50 % of the subject assessment |
| Marks available | 50 marks |

Directions to students

Clearly mark the question numbers. Answer each question on a new page.

This paper includes 3 questions.

Submit your work in **one single file** (PDF or Word) to the Final Exam submission site provided on Moodle.

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.

Submission must be made by the exam end time. Late submission is **not** accepted. The submission site will automatically be closed after the exam end time.

**The exam must be completed independently**. You must do it on your own and must **not** discuss, communicate, collude or share you work with any individual or group.

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

**Question 1** **(20 marks)**

Using the **b-c-e framework** to develop the design of a simple UML editing software application. Your answer should include the following:

- Design a set of 5 user stories that are **specifically** to this application. Note that your user stories must reflect the functionalities that are **unique** this kind of application. *Generic user stories for normal software applications (e.g. log in, log out, create or edit account, registration, change password, etc.) will receive 0 mark.*
- A flow of events for one selected use case from the above user stories. *Again, note that generic use cases for normal software applications (e.g. log in, log out, create or edit account, registration, change password, etc.) will receive 0 mark.*
- A class diagram to represent your design based on the above user stories.
- A communication diagram depicting the selected use case above.
- 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 Sheldon, Amy, Leonard, Penny, Howard and Raj), and apply a combination of Extreme Programming and DevOps to develop the above system in Question 1 in two months starting from today.

Describe how your team would organise and conduct validation and verification during the development of the above system. *Your discussion must be **specific** to this case study (e.g. provide details, activities, timelines and examples that are specific to this team, their chosen methodologies, this system and this duration). 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 you are asked to develop a software system which facilitates the recruitment process for HR managers, recruiters or hiring teams.

Propose (and explain your reasons) a functionality of this software that can be developed using the data-driven approach discussed in the subject.

What data should be collected and how to collect them to develop this functionality? What features should be extracted from the collected data and why?

What are the ethical considerations **specific** to this functionality? Discuss how you would address them during the development and operation of the system.

*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