COMP 33711

Two hours

UNIVERSITY OF MANCHESTER
SCHOOL OF COMPUTER SCIENCE

Agile Software Engineering

Date: Thursday 17th January 2019

Time: 14:00 - 16:00

Please answer BOTH Questions.

Use a SEPARATE answerbook for each QUESTION.

This is a CLOSED book examination

The use of electronic calculators is NOT permitted

[PTO]

Question 1

a) Below you can find 5 agile principles as stated by the Agile Manifesto. For each one of them, name an agile practice that enforces the principle and describe how a waterfall model with a "big up front" approach can violate it.

i. "Welcome changing requirements, even late in development."

ii. "Business people and developers must work together daily throughout the project."

iii. "Working software is the primary measure of success."

iv. "Simplicity—the art of maximizing the amount of work not done—is essential."

v. "The best architectures, requirements and designs emerge from self-organizing teams."

(10 marks)

b) You have been hired by a company that specialises in delivering software for logistics operations. In particular, during this period the company is working towards delivering an end-to-end application for delivering fast food to customers upon ordering. During your first day at work you walk through the room where the story board is being held. The story board has numerous user stories at various stages of development. At present, the story board has the following stages: 1) Backlog, 2) Tasks to Do, 3) In Progress, 4) Done.

i. According to the existing story board layout, if you believe any vital stages are missing, please name one and explain its significance. Also describe how the missing stage relates to the agile principles. (5 marks)

ii. Soon after you joined, the company just released the first version to their customer and now they are in the process of planning the second release which will include a new feature. This new feature allows a single delivery person to combine two deliveries if the customers who placed the orders live in close proximity. According to that high level specification please write **one (1) epic and four (4) user stories**, that relate to the epic story using the Connextra template. For each of the stories, please explain the expected value (or behaviour change) the customer will receive. (5 marks)

iii. During the implementation of one iteration your team discovers that they cannot deliver all the user stories scheduled for that iteration. Although the total number of story points for this iteration is in the range of the projected velocity of the team, the team has reached the end of the iteration without managing to deliver all the expected work. Please describe one possible scenario of why this could happen as well as propose a mitigation technique in order to rectify this issue that adheres to the agile principles of development. (5 marks)

Question 2

You are a member of an agile team developing software for a lightweight social networking application, aimed at allowing users to share news and gossip. Users registered with the system post news items to their account, which are then viewable by other registered users from the following day for a period of 1 week.

a) Explain three advantages of using examples to specify software requirements as opposed to a generic description of requirements (e.g. in the form of business rules). (3 marks)

b) Below are three BDD scenarios from the feature suite that is used to specify and develop this application. All three are consistent with the requirements for the application, but exhibit some form of bad practice or error in the way they are written. In each case, explain the problem with the scenario in its current form, and rewrite it to correct the problem you have identified.

i. Given a registered user Bob
And a registered user Caron
And on Monday, 1st October 2018 Bob posts "New season of Game of Drones now filming at Salford Quays!" to his account
Then on Tuesday, 2nd October 2018 Caron can see this item on Bob's account
But on Monday, 8th October 2018 Caron cannot see this item on Bob's account

ii. Given a user Bob registered in the database
And a user Caron registered in the database
When Caron is added to the recipient property of Bob's post "XXX"
Then Caron's array of visible posts includes a message object with text "XXX"

iii. Given a user Abe who registers on Monday
Then Abe posts "Early costume designs for Game of Drones released" on Tuesday
Then Abe can see this post on his account on Tuesday
When a user Dee registers on Wednesday
Then Dee can see Abe's post on his account on Wednesday
When Dee unregisters on Thursday
Then Dee cannot see Abe's post on Friday

(10 marks)

(Question 2 continues on the following page)

(Question 2 continues from the previous page)

c) You are asked to use TDD to write some code that manages a simple notification system for this application. Users are notified when news items are posted on which they are named as a recipient. Users can also specify a set of tags of interest. They will be notified whenever a news item with one of these tags is posted. Users can choose to turn notifications on or off.

Specifically, you are asked to implement a method on a class Notifier, which returns a Boolean value saying whether a particular news post should be notified to a particular user or not.

i. State whether you would write production code, test code or both for the first step of the first TDD cycle. Give the code that you would write. (5 marks)

ii. State what kind of code you would write for the second step of the first TDD cycle. Give the code that you would write. (2 marks)

iii. Assuming that no code changes are needed for the third step of the first TDD cycle, give the code that you would write for the three steps of the second TDD cycle. You must write out the code that you expect to get at the end of each step, rather than just giving the state of the code at the end of the cycle. Give a brief justification of any non-obvious code design decisions at each point. (5 marks)

END OF EXAMINATION