COMP 62532

Two hours - online hybrid

EXAM PAPER MUST NOT BE REMOVED FROM THE EXAM ROOM

UNIVERSITY OF MANCHESTER
SCHOOL OF COMPUTER SCIENCE

Component-based Software Development

Date: Thursday 30th May 2019
Time: 14:00 - 16:00

This is a hybrid examination with sections to be answered online and questions to be answered on paper

Please answer ALL 20 Questions in Section A online
Please answer BOTH Questions in Section B in a separate answerbook

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This is a CLOSED book examination
The use of electronic calculators is NOT permitted

[PTO]
Section A contains multiple choice questions and is, therefore, restricted
2. Consider a vending machine that sells coffee and tea. The customer can choose coffee (which comes in two forms: Latte or Mocha), or tea, and add milk or sugar if desired; and the vending machine will display the total price for the customer’s choice. The customer can choose to pay with cash or card; and for a cash payment, the vending machine can give change if necessary. Once switched on, the vending system will keep working until the power is turned off.

Use the X-MAN component model to design and build a system for the vending machine. You should explain your answer clearly.

i) Identify the required components. For each component, list its provided services. (5 marks)

ii) Use X-MAN notation to implement the system. Also identify the connectors needed to construct the system. (5 marks)

iii) Identify the services provided by the system. (5 marks)

iv) Specify 5 data channels in the system. (5 marks)

3. Consider the vending machine in Question 2. Use UML2.0 to design and build this system. You should explain your answer clearly.

i) Identify the components and their required and provided services. (5 marks)

ii) Design the system using the identified components. (5 marks)

iii) Show the system’s behaviour. You can use any UML notation, e.g. activity or state diagram. (5 marks)

iv) Identify the required and provided system services. (5 marks)