



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2021/2022

COURSE NAME : SOFTWARE ENGINEERING
COURSE CODE : BIT 10103
PROGRAMME CODE : BIT
EXAMINATION DATE : JULY 2022
DURATION : 3 HOURS
INSTRUCTION : 1. ANSWER ALL QUESTIONS
2. THIS FINAL EXAMINATION IS AN **ONLINE** ASSESSMENT AND CONDUCTED VIA **OPEN BOOK**.

THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

Q1 (a) State TRUE or FALSE for each of the following statement based on Figure Q1.

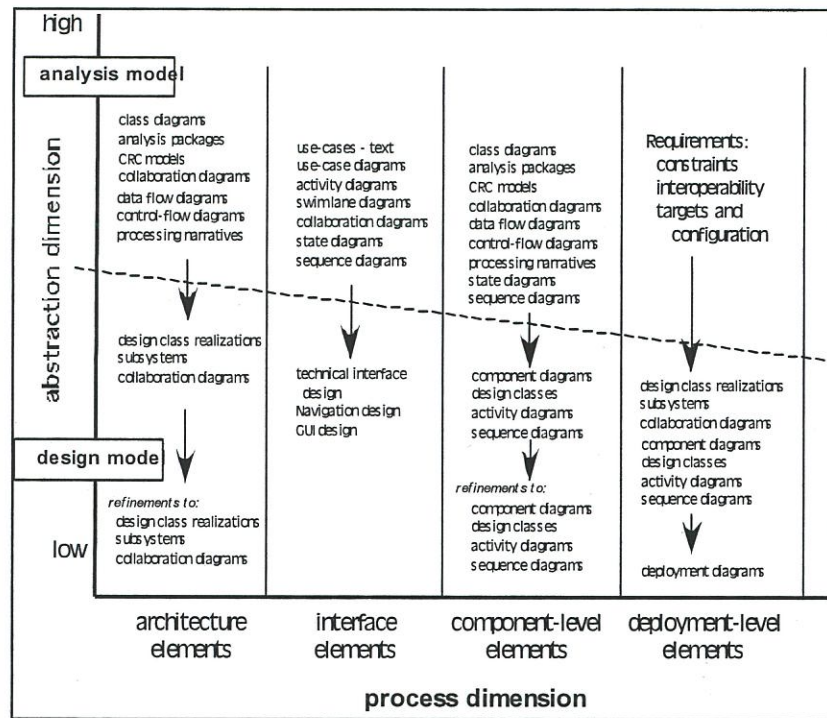


Figure Q1 (Pressman 2009)

- (i) A sequence diagram can describe the architecture elements of a software application. (1 mark)
- (ii) Both data flow diagram and use case diagram are analysis models. (1 mark)
- (iii) An activity diagram can describe the elements in a software’s component in more detail. (1 mark)
- (iv) The higher the abstraction level, the more detailed the diagram will be. (1 mark)
- (v) Use case diagrams are not suitable for describing a software’s interface elements. (1 mark)

(b) Describe TWO (2) distinctions between the interface elements and the architecture elements with respect to the design model. (4 marks)

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- (c) The design model is of lower abstraction level than the analysis model. Explain this statement. (5 marks)
- (d) List **THREE (3)** examples of a design model that do not satisfy the design principles. (6 marks)

Q2 Questions **Q2(a) – Q2(d)** are based on **Figure Q2**.

According to Daily Mail, scientists have built a mobile app that helps detect the virus through cough patterns via audio. ResApp, the app's name, uses machine learning to achieve that. The app has even gone through testing participated by 741 patients in the US and India. At last, results revealed that it reaches 92 per cent of accuracy by correctly detecting the patients having the virus in them. In follow-up tests, the researchers continue to test it with patients with other respiratory conditions, including asthma, pneumonia and respiratory tract infections. It shows that it can reach 90 per cent specificity for COVID-19.

The app is said to be initially deployed in settings where frequent COVID-19 tests are required. Those include travel, sports, entertainment, and healthcare settings. Professor *Catherine Bennett*, a member of ResApp's Covid-19 Scientific Advisory Board, says that "the simplicity, ease of use and unlimited scalability of ResApp's test will be welcomed by public health officials around the world."

TechNave

Figure Q2

- (a) Illustrates the ResApp's architecture using the model view controller (MVC) architecture. Suggest the components in each model, view and controller elements of the architecture. (10 marks)
- (b) Describe a disadvantage of the MVC architecture if ResApp uses this architecture. (2 marks)
- (c) Suggest any other architecture that is suitable for ResApp. Provide **ONE (1)** justification. (4 marks)

- (d) Describe **TWO (2)** distinctions between the MVC architecture and the architecture proposed in **Q2(c)**.

(4 marks)

Q3 Questions **Q3(a)** – **Q3(c)** are based on **Figure Q3**.

In Free-Play Mode, *LEGO Star Wars: The Skywalker Saga* will frequently and inexplicably swap the player's characters after cutscene transitions, at least on PS5. In Episode 7, for instance, Finn and Rey may spontaneously swap into two random characters from the player's catalog while in pursuit of Kylo Ren.

Other Free-Play Mode bugs that players may encounter affect enemy AI. One instance involves X-Wing starfighters becoming hostile and targetable instead of enemy TIE Fighters. Because characters can swap inexplicably, this is also the case with the player's starships mid-level, resulting in players potentially receiving a ship that may not be able to fire projectiles during *LEGO Star Wars: The Skywalker Saga*'s high-octane dogfights.

GameRant

Figure Q3

- (a) Describe **TWO (2)** purposes of a software maintenance. (4 marks)
- (b) Specify **TWO (2)** types of maintenance that are suitable for addressing the LEGO Star Wars' bugs. Provide **ONE (1)** justification for each answer. (8 marks)
- (c) The IEEE sequential maintenance process framework consists of eight processes. Determine appropriate **FOUR (4)** analysis activities to address the LEGO Star Wars bugs. (8 marks)

-END OF QUESTIONS -

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