NATIONAL SCHOOL OF BUSINESS MANAGEMENT
BSc (Hons) Software Engineering – 19.2/20.1
BSc (Hons) Computer Science – 19.2/20.1
2nd Year 2nd   Semester Examination
27th October 2021
SE205.3 – Software Architecture

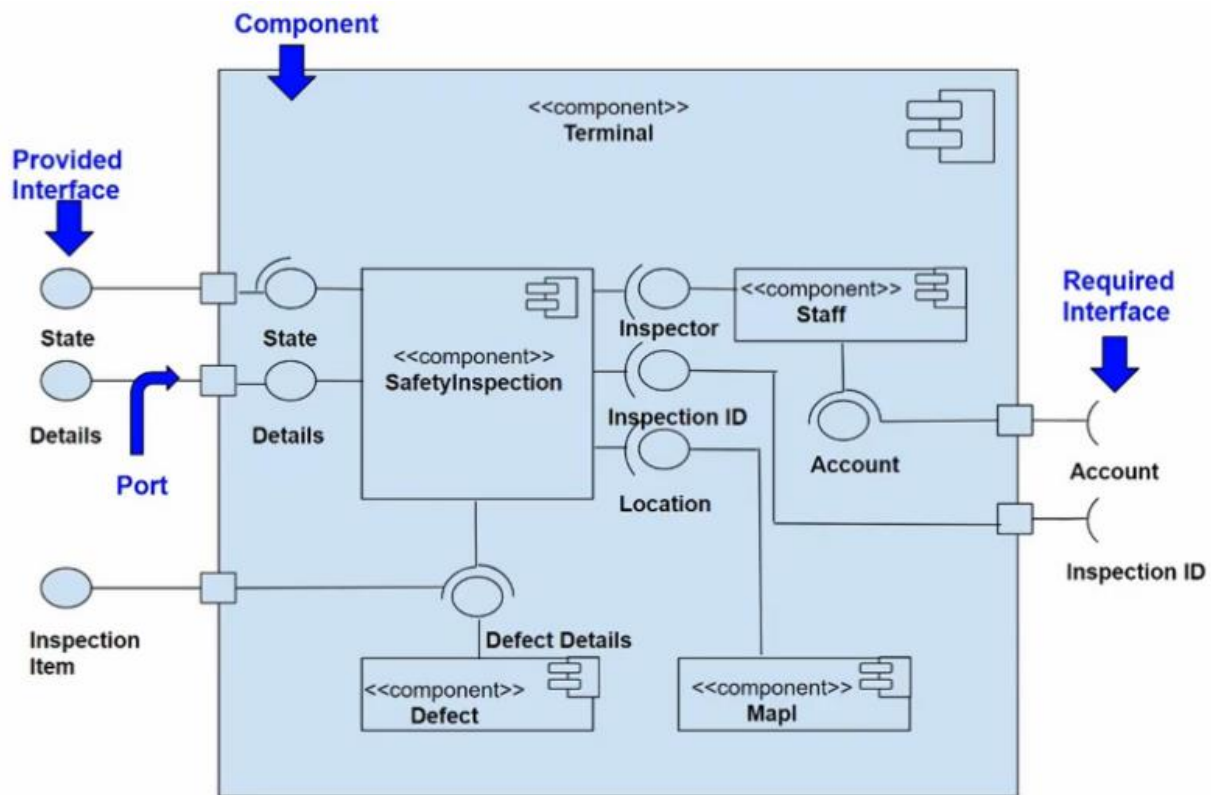## Instructions to Candidates

1) **Answer all questions.**

2) Time allocated for the examination is **five (05) hours** (Including downloading and uploading time)

3) Weightage of Examination: 60% out of final grade

4) Download the paper, provide answers to the selected questions in a word document.

5) Please upload the document with answers (Answer Script) to the submission link before the submission link expires

6) Answer script should be uploaded in PDF Format

7) Under any circumstances E-mail submissions would not be taken into consideration for marking. Incomplete attempt would be counted as a MISSED ATTEMPT.

8) The Naming convention of the answer script – Module Code_Subject name_Index No

9) You must adhere to the online examination guidelines when submitting the answer script to N-Learn.

10) Your answers will be subjected to Turnitin similarity check, hence, direct copying and pasting from internet sources, friend's answers etc. will be penalized.

Question 01 (20 Marks)

a) Explain the _**connectivity**_ among **Use Case**, **Class and Sequence Diagrams.** (10 Marks)

b) Explain the complete procedure taking place in below diagram in your words. (10 Marks)

Question 02 (20 Marks)

a) Compare and contrast **Broker Topology vs Mediator Topology.** Draw suitable diagrams to support your explanations. (10 Marks).

b) What are the roles of **Core** and **Plugin** in **Plugin architecture**? Draw suitable diagrams to support your explanations. (10 Marks)

Question 03 (20 Marks)

a) Elaborate the need for **Software Architecture** (5 Marks)?

b) List **five** quality attributes you can expect from a Software Architecture. (5 Marks)

c) "**Accomplishing all quality attributes are impossible.**" Explain the rationale of this statement in your words **accommodating a suitable real-life example**. (6 Marks)

d) List four advantages of Micro services. (4 Marks)

Question 04   **(20 Marks)**

You have been asked to design a "*Greeter Robot*" for a supermarket. The tasks of the Greeter Robot is to open the door for the entering customer, Greet the customer and hand over a shopping cart.

a) Draw a suitable *Activity diagram* with *Swim-lanes* for the aforementioned business requirement (6 Marks)

b) Adhering to the **EBC model**, propose a suitable class diagram for the aforementioned business process. Use of the **EBC model** is a must and unless **zero marks** will be awarded. (8 Marks)

c) Elaborate how did you apply EBC model for the aforementioned scenario. What are the pros and cons you recognized? (6 Marks)

Question 05   **(20 Marks)**

a) Compare and contrast the difference between *Architectural Patterns vs Design Patterns*. (3 Marks)?

b) Explain the idea of the "*Memento*" Design Pattern in your words. List a real-world application of the "Memento" Design Pattern (5 Marks)

c) Compare and contrast the differences between *Factory* Vs. *Abstract Factory* Design Patterns ?. (6 Marks)

d) Draw a *Flow chart* to showcase the idea of the "*Chain of Responsibilities*" Design Pattern. Explain the concept in your words ?. (6 Marks)

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