



**NATIONAL SCHOOL OF BUSINESS MANAGEMENT**

**BSc (Hons) Software Engineering – 19.2/20.1**

**BSc (Hons) Computer Science – 19.2/20.1**

**2<sup>nd</sup> Year 2<sup>nd</sup> Semester Examination**

**27<sup>th</sup> October 2021**

**SE205.3 – Software Architecture**

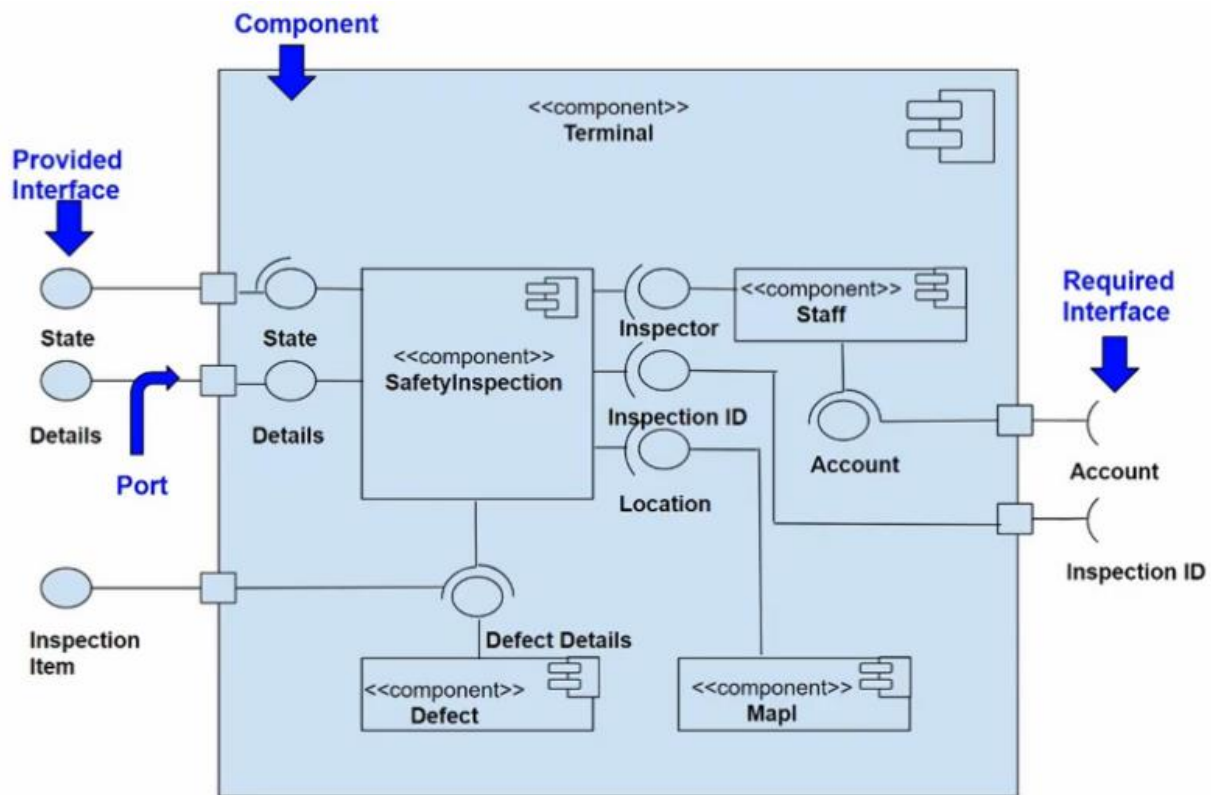
**Instructions to Candidates**

- 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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