Nirma University

Institute of Technology

Semester End Examination (IR), February - 2022

B. Tech. in Computer Science and Engineering, Semester-VII

2CSDE77 Microservice Architecture and Programming

Roll/ Exam No | Supervisor's initial with date

Time: 2 Hours | Max Marks: 50

Instructions:
1. Attempt all questions.
2. Figures to right indicate full marks.
3. Draw neat sketches wherever necessary.
4. Assume necessary data wherever required.

Q.1 **Answer the following.** **[16]**

A CO4 How MongoDB provides consistency in multidocument transactions with replicated data in cluster setup? (06)

B CO1 With suitable example demonstrate how API gateway makes life of the client (like mobile app) easy which is going to use MSA based large scale application as backend. (06)

C CO1 For JMS based messaging system, producer is effectively synchronous but consumer may be synchronous or asynchronous. Justify the statement. (04)

Q.2 **Do as directed.** **[18]**

A CO2 The clients are generating REST API requests using language A and also generating gRPC based requests using language B for some remotely implemented methods/procedures/functions. How an application can serve these requests having only single implementation of for these various methods/procedures/functions based on gRPC service implemented in language C? Supplement your answer with necessary diagrams. (06)

B CO3 Compare transactional out box pattern with event sourcing pattern for the scenario of choreography based Saga type transaction. (08)

OR

B CO3 Design a Cab Booking system showing minimum required microservices. Show the required communication types between front end client to application and service to service communication type also. Also write minimum conceptual code for every service in Ballerina. (08)

C CO2 Demonstrate with suitable diagram how gRPC server and client applications are built using various other supporting files. (04)

Q.3 Answer the following. **[16]**

A CO3	Compare consistency model of conventional SQL oriented Databases and modern NOSQL databases.	(07)
B CO3	State the purpose of the following Docker Commands. build, volume, commit, network, push	(05)
C CO2	How materialized views can be helpful in micro-service based applications?	(04)
	OR	
C CO2	Compare CRUD operations based data management with event sourcing based data management.	(04)