CSL7090 Software and Data Engineering
Department of Computer Science and Engineering
Indian Institute of Technology Jodhpur

Duration: 2 Hour   Date: 29-Nov-2023   Time: 06:00 PM   Marks: 100

Instructions:
1. Any kind of plagiarism may result in zero marks in the Minor-2 component.
2. Write/type your answers concisely and precisely. It is compulsory to submit a typed/scanned pdf file on Google classroom.
3. It is an open book examination, you can refer to books, the internet, or any other source except discussing with each other and LLM models such as ChatGPT, etc. Any amount of copying from any source, including a book, colleagues' answers, etc., will result in zero marks in the whole paper.

S. No.	Question	Marks
1	Discuss a situation in which you need to change Nginx configuration and another where you don't need to despite adding new features.	10
2	An application needs to store customers' age when they enter their DOB. Discuss the pros and cons of using a database Stored Procedure versus an API to accomplish this.	10
3	Discuss the advantages and disadvantages of hosting ML APIs on the edge (remember edge computing?).	10
4	If APIs are containerized, how would you ensure that Nginx routing works flawlessly in a multi-cloud environment?	10
5	In the UI/UX class, I discussed minification and SASS. Can you use a numerical example to show the yearly benefits of minification? Assume that after minification the page size is reduced to 25 KB from 100KB. Assume a certain number for users and frequency (ex: 500,000 users using it 6 times a day). Also, discuss the advantages of SASS preferably with an example.	10
6	Draw a diagram representing the utility of RDD in stream data analytics.	10
7	Give a schematic representation of using Parameter Server with Model and Data Parallelism.	10
8	Draw the following views for a software solution to broadcast IPL Live telecast all over the country. Make sure to be as realistic as possible while creating these views. You can make appropriate real world assumptions and mention explicitly as and when required. a. Logical View b. Physical View c. Development View d. Process View	20
9	Draw class diagrams (UML) for any of the 3 tactics covered during the class to achieve the availability quality attribute.	10