

BINUS University

Academic Career: <i>Undergraduate / Master / Doctoral *)</i>		Class Program: <i>International/Regular/Smart Program/Global Class*)</i>	
<input checked="" type="checkbox"/> Mid Exam <input type="checkbox"/> Final Exam <input type="checkbox"/> Short Term Exam <input type="checkbox"/> Others Exam : _____		Term : Odd/Even/Short *)	
<input checked="" type="checkbox"/> Kemanggisan <input checked="" type="checkbox"/> Alam Sutera <input type="checkbox"/> Bekasi <input type="checkbox"/> Senayan <input type="checkbox"/> Bandung <input type="checkbox"/> Malang		Academic Year : 2021 / 2022	
Faculty / Dept. : School of Computer Science		Deadline	Day / Date : Saturday / Nov 27 th , 2021 Time : 13:00
Code - Course : COMP6579001 – Big Data Processing		Class : All Classes	
Lecturer : Team		Exam Type : Online	
*) <i>Strikethrough the unnecessary items</i>			
<i>The penalty for CHEATING is DROP OUT!!!</i>			

Learning Outcomes:

LO 1 : Define big data processing concepts

LO 2 : Explain big data architecture layers

LO 4 : Differentiate big data case studies

I. Essay (65%)

1. **[LO 1, 10 points]** What is 4 V's in Big Data, explain for each V and give example!
2. **[LO 2, 10 points]** How many deployment models for big data architecture? Please explain for each deployment model and state the advantage and disadvantage for each deployment model!
3. **[LO 4, 15 points]** Big data can be implemented in many industries such as Finance, Banking, Retail, etc. Please give a case example of big data implementation in National Government!
4. **[LO 2, 20 points]** Please **draw an architecture diagram** of Hadoop Infrastructure layer with minimum requirement if we want to implement it in production ready environment!
5. **[LO 1, LO 2, 10 points]** Please mention and explain each of the Data Ingestion Design Pattern!

II. Case (35%)

You are a big data specialist in a company. Currently your company have many systems:

1. Weather and utilities sensor with **MQTT protocol**
2. Form survey submission using Web **REST protocol**
3. Pump Panel system using **TCP Protocol**
4. Smart visitor camera system with **UDP protocol**

With many systems and many protocols for sending data and communication, you should gather all data for all systems because you want to analyze the data using your big data architecture.

- **[LO 1 & LO 4, 15 points]** Based on that information, what is the best **ingestion design pattern** for that case!
- **[LO2 & LO4, 20 points]** Please **draw an ingestion design pattern diagram** that you choose based on that case and explain it!

Verified by,

Kristien Margi Suryaningrum - D6414 and sent to Program on October 30th, 2021

-- Good Luck--

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