



United International University

Department of Computer Science and Engineering

CSE 3421: Software Engineering Final: Spring 2024

Total Marks: 40 Time: 2 hours

Any examinee found adopting unfair means will be expelled from the trimester / program as per UIU disciplinary rules.

Answer all the questions. Numbers to the right of the questions denote their marks.

1. (a) Yummy is a fast-food chain restaurant serving the best dishes. They offer Burgers, Pizzas, and Drinks. There are two kinds of Burgers - Beef and Chicken. Pizzas come in 4 types - Alfredo, SMG, Cheezy, Mushroom. Soft Drinks (Coke, Dew, Sprite) and Shakes (Oreo, Kitkat) are available under Drinks. Draw an **UML diagram** for the scenario above using the **appropriate design pattern**. (4)
- (b) Yummy is a fast-food chain restaurant serving the best dishes. They offer the customer's to enjoy an open live kitchen and see their food being prepared. They cook their food either in the Skillet Grill, Tandoor Grill, Air Fryer according to the customer's demand. Draw an **UML diagram** for the scenario above using the **appropriate design pattern**. (4)
2. (a) Briefly **explain Native app** and **Web app** with a suitable **example** for each. (3)
- (b) Your friend has developed a location tracking software with cross-platform support. You're using it now and have found that the app looks very different on Mac and Windows platforms i.e. the layout looks completely non-identical. Moreover, if you just try to track the location, you're forced to go through a complicated five-step process every time. On top of that, when the location is being tracked, there is no way to stop or pause the process. When you accidentally press the delete button, your account gets vanished without any warnings. Which of the **Schneiderman's 8 Golden Rules** are **violated**? **Explain** with **proper reasoning**. (5)
3. (a) Why is **Docker** a **better** solution for running a project application on different environments and settings than **Virtual Machines**? Give a **proper comparison** between the two. (3)
- (b) John has recently graduated and joined a company as an intern. The product that the company makes is a wearable. Research has shown that the radiation emitted by that device is beyond the acceptable limit. On the other hand, John and his colleagues are discouraged from forming healthy social relationships out of fear that socialization might lead to the unionization of employees. Moreover, John is pressurized by his boss to do tasks beyond his pay grade, and in one instance when he made a small mistake, he was rebuked in front of all of his colleagues. Which of the **ACM codes of ethics** are **violated**? **Explain** with **proper reasoning**. (5)
4. (a) What is **Unit Testing**? Usually, you've **2000** users per day. You are simulating a scenario of **90000** users per day and testing your system for this. What **type of testing** is this and **why** is such a testing **required**? **Explain** briefly. (3)
- (b) **Explain micro-kernel, microservice, and monolithic architecture** with suitable **examples** for each. (5)
5. (a) Briefly **describe** the terms: **Critical Path, Float**. (2)
- (b) Find the **Earliest Start, Earliest Finish, Latest Start, Latest Finish, Project Deadline, and Critical Path** using the **Critical Path Method** for the following tasks: (6)

Tasks	Duration	Precedents
A	10	-
B	5	A
C	8	B
D	11	A,C
E	15	-
F	5	D
G	7	D,E
H	12	-
I	9	G,H
J	6	I
K	11	C,I