



Daffodil International University
Faculty of Science & Information Technology
Department of Computer Science & Engineering
Final Examination, Fall 2025

Course Code: CSE413, Course Title: Mobile Application Design
Level: 4 Term: 2 Batch: 62

Time: 02:00 Hrs

Marks: 40

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.		A startup in Hawkins wants to create a “Monster Info App” that provides real-time information about creatures appearing in the Upside Down. The app fetches data like creature name, type, last spotted location, and threat level from a central server. The developers want the app to dynamically retrieve data, display it in lists or cards, and ensure the system is secure, reliable, and reusable. Explain the role of an API in this scenario, describe at least three key features that make an API suitable for this app, briefly explain how an API works to provide the requested data, and discuss the role of JSON in fetching and displaying the creature information.		CO2
	a)	Explain the role of an API in the given application scenario.	[2]	
	b)	Describe any three features of an API that make it suitable for this mobile application.	[3]	
	c)	Explain how an API retrieves data from a server and provides it to a mobile application.	[3]	
	d)	Explain the role of JSON in transferring and displaying the creature information in the app.	[2]	
2.		In Stranger Things, the Hawkins AV Club is building a Voice-Activated Field Log App to help the team record spoken notes during investigations of Upside-Down activity. The app must convert speech into text using Flutter and the speech_to_text package.		CO3
	a)	Implement a Flutter code snippet that shows how to start or stop speech recognition, display the recognized text, and toggle the microphone icon based on listening state.	[6]	
	b)	Demonstrate how to handle at least two design challenges when integrating emerging technologies (AR/VR, advanced sensors, etc.) into mobile apps, providing a practical example for each.	[4]	

3.		Joyce Byers is using her Christmas-light communication wall to receive messages from Will in the Upside Down. She wants a digital replica of this wall built in Flutter. Each time a message comes through, one specific light on the screen should fade in or fade out smoothly, recreating the supernatural blinking effect seen in the series.		CO4
	a)	Analyze the design requirements for a Flutter animation that fades a green rectangular light in and out when a button is pressed, justify the use of <code>AnimatedOpacity</code> , and implement the solution.	[6]	
	b)	Analyze and justify best practices to keep Flutter animations performant and accessible, especially for frequently blinking effects.	[4]	
4.	a)	In Hawkins, Eleven from Stranger Things is tracking the number of Eggo waffles she eats each day. They notice a pattern: - On day 1, she eats 1 waffle. - On day 2, she eats 2 waffles. - From day 3 onward, the number of waffles eaten equals the number eaten the previous day plus twice the number eaten two days ago. Analyze this pattern and implement a function <code>eggoWaffles(int n)</code> that returns the number of waffles eaten on the nth day. Write unit tests to verify correctness for days 1 through 6.	[5]	CO4
	b)	A client wants a cross-platform mobile app with a highly consistent UI across all devices, support for custom UI components, and a fast development cycle with features like hot reload. Analyze the requirements and propose a suitable cross-platform framework and implement a code snippet using it to display centered text saying "Stranger Things" in bold with a specific font size.	[5]	