ourdiu.com | Shared by H@DY_222

Daffodil International University

Faculty of Science & Information Technology

Department of Computer Science & Engineering

Final Examination, Spring 2026

Course Code: CSE413, Course Title: Mobile Application Design

Level: 4 Term: 2 Batch:

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.	Dunder Mifflin is building a mobile app called "Dunder Mifflin Mobile" for employees to view sales data, submit paper orders, and manage customer information. The app communicates with a backend server via REST APIs.			**CO2**
	a)	Explain what a REST API is and describe the purposes of any four common HTTP methods used in REST APIs.	[4]	
	b)	Interpret the given paper order details and construct a JSON object representing the order of Dwight Schrute: Order ID: 202 Product: "Schrute Farms Beets Specialty Paper" Quantity: 1000 reams Status: "Processing" Shipping address: 123 Beet Farm Road, Honesdale, PA	[3]	
	c)	Discuss any three design considerations for ensuring secure mobile data transfer in the Dunder Mifflin Mobile app.	[3]	
2.	In The Office, the Dunder Mifflin Scranton branch is building a Voice-Activated Sales Log App to help the sales team record spoken notes during client meetings and paper sales calls. 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)	Identify major design challenges developers may face when integrating emerging technologies (AR/VR, advanced sensors, etc.) into mobile apps. For each challenge, provide one practical solution.	[4]	
3.	In Flutter, Michael Scott from Dunder Mifflin wants to create a mobile app feature that displays his "World's Best Boss" mug. The mug starts small and pulsates on the screen:		[10]	**CO4**

ourdiu.com | Shared by H@DY_222

		• The mug container starts with width = 50 and height = 50 • Expands smoothly to width = 150 and height = 150 over 3 seconds • Then shrinks back to 50×50 over the next 3 seconds • This animation repeats continuously (expand and shrink forever) • The container should be coffee brown color and centered on the screen • Inside the container, display the text "World's Best Boss" in white color and bold • The app should have an AppBar with title "Michael's Mug" Analyze the animation requirements, implement the complete Flutter code, and clearly explain how each major part of your code (e.g., widget type, animation controller, tween, repeat logic, etc.) contributes to achieving the required behavior.		
4.	*a)*	In The Office, Dwight Schrute is hoarding beetroot jars in his desk. He starts with 10 jars on day 1. Each day he follows a strange rule: • If the number of jars is even, he gives away half of them to Jim (as a prank revenge). • If the number of jars is odd, he steals 5 more jars from the office kitchen. Write a function beetJars(int days) that returns the number of jars Dwight has after the given number of days, starting from day 1 applying the rule repeatedly. 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 two funny quotes "I declare bankruptcy!" and "Ryan started the fire!", each on a new line, in bold with a font size of 20.	[5]	

ourdiu.com