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Daffodil International University

Faculty of Science & Information Technology
Department of Computer Science & Engineering
Final Examination, Spring 2026
Course Code: CSE415, Course Title: Web Engineering
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 software company, NextGrid, develops an e-learning platform. Developers are writing PHP code for course modules, deciding how to use variables. Teams are coordinating multiple tasks, facing overlapping deadlines, and tracking progress in different ways. The system is split into several independent services, each interacting with others in various ways, requiring careful design to manage dependencies between them.			**CO1**
	a)	Explain the different scopes of variables in PHP and illustrate each with an appropriate code example.	**[6]**	
	b)	Analyze the scenario and identify the challenges the company is facing. Discuss these challenges in detail.	**[6]**	
	c)	Illustrate the benefits of using microservices in the system and examine the different types of coupling (domain, pass-through, common, content) between services.	**[6]**	
	d)	Suppose, you are accessing CodeHaven's homepage, which contains 7 images, 3 videos, 2 thumbnails, and base HTML that fits in a single RTT. Each image takes 3ms, each video 9ms, and each thumbnail 1ms to load. If the RTT is 63ms, calculate the percentage of speedup when using persistent connections with pipelining versus persistent connections without pipelining.	**[5]**	
2.	Imperial University of Engineering wants to introduce a Course Review System to evaluate teaching qualities. Students will submit reviews by providing their ID, name, course code, course title, teacher's name, teacher's initials, rating out of 5, and optional feedback through a web form. The system must validate inputs and store them in a database. Another page will display all teachers' reviews in separate cards, showing each teacher's name and overall rating. The list must be ordered from highest to lowest rating. While displaying, the system should calculate the average rating for each teacher using the teacher's initials.			**CO2**
	a)	Construct an HTML form that allows students the required course review information as defined in the above scenario.	**[4]**	
3.	***a)***	Considering the scenario from question 2, using PHP implement server-side validation to ensure the submitted rating lies between 1 and 5. If the validation fails, the user should be returned to the form without saving the record. Otherwise, store the data in the database and redirect the user to the teacher review list page.	**[6]**	**CO3**
	b)	Develop a separate page to present teacher-wise review information. First, draw your proposed layout of the teacher-wise review page based on the given scenario, showing how each teacher's information will appear in card format. Then, implement the designed layout using PHP, HTML, and appropriate CSS. While displaying the data, compute the average rating using teacher initials and arrange the results from highest to lowest average rating.	**[7]**	