UGANDA CHRISTIAN UNIVERSITY

A Centre of Excellence in the Heart of Africa

FACULTY OF ENGINEERING, DESIGN AND TECHNOLOGY
DEPARTMENT OF COMPUTING AND TECHNOLOGY
EASTER 2025 SEMESTER EXAMINATION

PROGRAM: *BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY*

YEAR: 1 SEMESTER: 2

COURSE CODE: *CSC1202*

COURSE NAME: *WEB & MOBILE APPLICATION DEVELOPMENT*

EXAMINATION TYPE: *100% PROJECT-BASED EXAM*

PROJECT DURATION: APRIL 2025

TIME ALLOWED: *TWO WEEKS*

Examination Instructions

1. **Uganda Christian University Examination Guidelines and Policies:**
   - The general Uganda Christian University examination guidelines and academic & financial policies apply to this examination. Violating any of the policies by the student automatically makes this examination attempt void, even if you have completed and submitted the answer booklet.
2. **Project Duration and Submission:**
   - This exam consists of a project to be executed in **Two weeks**.
   - Assessment of the project shall be based on **five milestones**, evaluated during the duration of the project. Each milestone shall be evaluated out of **20 marks**.
   - At the end of the project, the following **SHALL** be submitted on **Moodle**:
     - A well-written project report (Font: Trebuchet MS, 12Pts, 1.5 spacing, justified alignment), using **IEEE Referencing style**.
     - Two links to **GitHub repositories** (Frontend and Backend). These repositories should have evidence of **collaboration** and **consistent individual commits**.
3. **Group Work and Individual Contribution:**
   - Every student is responsible for proving their contribution towards every milestone. Marks may be awarded to every student individually based on their contribution.
   - Each group must consist of **6 students**. Collaboration and communication within the group are essential for the successful completion of the project.

PART A: PROJECT DESCRIPTION

Introduction

You are a developer at "**TechNova Solutions**," and you have been assigned to build a prototype for the library application. You can choose to develop either a **web application** using **React** or a **mobile application** using **React Native**. The prototype should include core features such as book search, reservation, and user interaction. You will be evaluated based on five milestones, each worth 20% of the total grade. This exam will be conducted in **groups of 6 students**, and each group will work collaboratively to complete the project.

Business Overview

Project Name: Library Management System (LMS)
Client: Local Community Library
Business Objective:
The local community library aims to modernize its operations by providing an online platform where users can browse, search, and reserve books. The library wants to improve user engagement and make its services more accessible to the community. The application will serve as a bridge between the library and its users, allowing them to interact with the library's resources from the comfort of their homes or on the go.

Target Audience:

- Library members (students, researchers, and general readers).
- Library staff (for managing book reservations and user accounts).

Key Features:

1. **Book Search:** Users can search for books by title, author, or genre.
2. **Book Reservation:** Users can reserve books online and receive notifications when the book is available.
3. **User Profiles:** Users can create profiles to manage their reservations and view their borrowing history.
4. **Admin Dashboard:** Library staff can manage books, reservations, and user accounts.

Platforms:

- **Web Application:** For users who prefer accessing the library system from their computers.
- **Mobile Application:** For users who want to access the library system on their smartphones.

Business Value:

- **Increased Accessibility:** Users can access library services anytime, anywhere.
- **Improved User Experience:** A modern, user-friendly interface will attract more users to the library.
- **Efficient Management:** Library staff can manage books and reservations more efficiently, reducing manual work.

PART B: PROJECT-BASED ASSESSMENT GUIDELINES

Milestone 1: Conceptualization (20%)

Objective: Plan and design the application.

Tasks:

1. **Choose Your Platform:** Decide whether your group will build a **web application** or a **mobile application** (React Native).
2. **Project Planning:**
   - Create a project plan outlining the features you will implement (e.g., book search, reservation, user profile).
   - Sketch wireframes for the main screens (e.g., homepage, search results, book details).
3. **Set Up the Project:**
   - Initialize a Git repository for your project.
   - Create a README.md file that describes the project, its features, and how to run it.
   - Push the repository to a remote platform (e.g., GitHub).

Deliverables:

- Project plan document.
- Wireframes or sketches of the application.
- Git repository with a README.md file.

Milestone 2: Core Functionality (20%)

Objective: Implement the core features of the application.

Tasks:

1. **Web Application:**
   - Create a homepage with a navigation bar and a search form.
   - Implement a book search feature that filters and displays books based on user input.
   - Display a list of books with basic details (e.g., title, author, genre).
2. **Mobile Application (React Native):**
   - Create a home screen with a search bar and a list of books.
   - Implement a book search feature that filters and displays books based on user input.
   - Display book details when a user taps on a book.

Deliverables:

- Functional search feature.
- Display of book list and details.
- Code pushed to the Git repository.

Milestone 3: Advanced Features (20%)

Objective: Add advanced features to enhance the application.

Tasks:

1. **Web Application:**
   - Implement a book reservation feature that allows users to reserve a book.
   - Add loading and error states for API calls.
2. **Mobile Application (React Native):**
   - Integrate an external API (e.g., Google Books API or a mock API) to fetch book details.
   - Implement a book reservation feature that allows users to reserve a book.
   - Add loading and error states for API calls.
   - Use React Navigation to navigate between screens (e.g., from the book list to book details).

Deliverables:

- Book reservation feature.
- Loading and error handling.
- Code pushed to the Git repository.

Milestone 4: Implementation Quality (20%)

Objective: Ensure the application is well-structured, responsive, and follows best practices.

Tasks:

1. **Web Application:**
   - Ensure the application is responsive and works well on different screen sizes.
   - Optimize the application for performance (e.g., lazy loading, memorization).
2. **Mobile Application (React Native):**
   - Ensure the application is responsive and works well on different devices.
   - Use React hooks (useState, useEffect) to manage state and side effects.
   - Optimize the application for performance (e.g., flat lists, avoiding unnecessary re-renders).

Deliverables:

- Responsive and optimized application.
- Clean, well-structured code with proper comments.
- Code pushed to the Git repository.

Milestone 5: Presentation (20%)

Objective: Present your application and explain your implementation.

Tasks:

1. **Prepare a Presentation:**
   - Create a presentation that showcases your application.
   - Include a demo of the key features (e.g., book search, reservation).
   - Explain the challenges you faced and how you overcame them.
2. **Deploy the Application:**
   - **Web Application:** Deploy the application to a hosting platform (GitHub Pages).
   - **Mobile Application:** Build and run the application on a physical device or emulator.
3. **Submit Your Work:**

- Provide a link to the deployed application or a video demo.
- Share the Git repository link with your instructor.
- Submit the final project report on Moodle.

Deliverables:

- Presentation slides or video demo.
- Deployed application or video of the mobile app running.
- Final Git repository link.
- Project report in IEEE format.

S/N	Milestone Description	Maximum Marks
1	**MILESTONE ONE - Conceptualization** Project planning, wireframes, and Git setup.	**20 %**
2	**MILESTONE TWO - Core Functionality** Implementation of core features (e.g., search, book lis	**20 %**
3	**MILESTONE THREE - Advanced Features** Integration of advanced features (reservation, navigation).	**20 %**
4	**MILESTONE FOUR - Implementation Quality** Code quality, responsiveness, and performance optimization.	**20 %**
5	**MILESTONE FIVE - Presentation** Final presentation, deployment, and demo.	**20 %**
	TOTAL MARKS	**100 %**

Additional Instructions for Groups:

1. **Group Formation:**
    - Each group must consist of **6 students**. Ensure that roles and responsibilities are clearly defined within the group.
2. **Collaboration and Git Usage:**
    - Use **GitHub** for version control. Ensure that all group members make consistent and meaningful commits to the repository.
    - The GitHub repository should have evidence of collaboration (e.g., branches, pull requests, and comments).
3. **Individual Contribution:**
    - Each student must demonstrate their contribution to the project. Marks will be awarded individually based on the evidence of work in the GitHub repository and the final report.
4. **Project Report:**

- The project report should be well-written, following the specified format (Trebuchet MS, 12Pts, 1.5 spacing, justified alignment).
- Use **IEEE Referencing Style** for citations and references.

5. **Submission:**
    - Submit the final project report, GitHub repository links, and any additional materials (e.g., video demo) on **Moodle** by the deadline.

Important Notes:

- **Violation of Policies:** Any violation of Uganda Christian University's examination guidelines or academic policies will result in the examination attempt being void, regardless of completion.
- **Deadline:** The project must be completed and submitted within **two weeks.** Late submissions will not be accepted.
- **Plagiarism:** Plagiarism or any form of academic dishonesty will result in severe penalties, including the possibility of failing the exam.

This practical exam is designed to test your ability to work collaboratively, plan, develop, and present a functional web or mobile application. Good luck!

~END OF EXAM GUIDELINES~