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KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY UNIVERSITY EXAMINATION, 2024/2025 ACADEMIC YEAR SECOND YEAR, SECOND SEMESTER EXAMINATION FOR THE DIPLOMA IN INFORMATION & COMMUNICATION TECHNOLOGY <u>DIT 1009 – VISUAL PROGRAMMING</u>

Date: 3RD December 2024 Time: 2:30PM – 4:30PM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS QUESTION ONE (30 MARKS)

- a) Imagine you are developing a mobile application for managing personal finances. Define visual programming and highlight how it can speed up the development process, making it easier for you to create an intuitive user interface without extensive coding. (2 Marks)
- b) As part of a team developing a collaborative tool,
 - i. Discuss how adhering to consistent naming conventions for variables, functions, and classes helps improve code readability and maintainability. (2 Marks)
 - ii. Highlight best practices that will help your peers understand your work (2 Marks)
- c) As part of a project team to develop a library management system, discuss how variables are used to store user input for book titles and authors, and write a short code program to demonstrate how to declare these variables in Visual Basic (4 Marks)
- d) You are tasked with building a customer relationship management (CRM) system. Describe how key features of Visual Studio that would assist you in efficiently developing the application.

(3 Marks)

- e) Consider a situation where you need to develop a complex data analysis tool. Compare visual programming and non-visual programming approaches, discussing which might be more efficient for quickly prototyping the tool and why. (4 Marks)
- f) As a developer, you are presenting at a tech conference on visual programming. Identify three visual programming languages and provide examples of real-world applications developed with each (3 Marks)
- g) You are mentoring a new intern who is starting to learn Visual Basic. Using a Visual Basic Code snippet, explain the basic syntax rules using examples relevant to a simple inventory management application.

(3 Marks)

- h) In your data analysis application, explain how to implement try-catch blocks to handle exceptions, such as attempting to read from a file that doesn't exist, preventing the application from crashing with a try-catch block of code. (4 Marks)
- i) While working on a mobile app project, identify common file types and explain how each contributes to the organization and functionality of the application. (3 Marks)

QUESTION TWO (20 MARKS)

- a) In a project that involves creating multiple forms in a Visual Basic application, explain how local variables can help avoid conflicts with global variables. (2 Marks)
- b) In a registration form for an online service, explain how implementing input validation techniques (like checking for valid email formats and password strength) helps ensure data integrity and enhances the overall security of the application. (5 Marks)

- c) In a chat application, discuss how to implement event handlers that respond to user actions, such as sending a message when the "Enter" key is pressed or clicking the "Send" button. (5 Marks)
- d) In a student grading application, explain how to create a multi-dimensional array to store grades for different subjects across multiple students and provide a code snippet that demonstrates how to access and display these grades.
 (8 Marks)

QUESTION THREE (20 MARKS)

- a) In a web application for a library, explain how to iterate through a collection of books using a FOR-Each loop to display each book's details to users on the front end. (4 Marks)
- b) As you develop a student results processing and grading system,
 - i. Describe basic control structures.
 - ii. Select the best control structures from the above and write a program for the implementation for student grading system. (10 Marks)

QUESTION FOUR (20 MARKS)

- a) In a game development project, discuss how choosing the right data types (e.g., using Integer for scores instead of String) can optimize memory usage and improve performance, especially when handling large amounts of data. (4 Marks)
- b) You are developing a customer management system. Define the core principles of OOP and explain how these principles facilitate modular, maintainable, and reusable code in your application. (6 Marks)
- c) In your library management system, discuss how you would create overloaded methods named AddBook() that accept different parameters (like just the book title or the title and author) to provide flexibility in adding new books.
- d) While building the backend for your e-commerce application, discuss how SQL commands like SELECT, INSERT, UPDATE, and DELETE are used to manage product and customer data. (4 Marks)

QUESTION FIVE (20 MARKS)

a) In a user registration form, discuss how using string manipulation functions (like **Trim**, **ToUpper**, and Substring) helps ensure that user input is standardized and validated before being stored in the database.

(2 Marks)

(6 Marks)

- b) As you prepare to launch your project management application, discuss the importance of creating user documentation that guides users (4 Marks)
- c) If you plan to release your customer management application on both Windows and Mac platforms, discuss three considerations you need to keep in mind. (6 Marks)
- d) In a data-driven application that displays customer information in a grid view, explain how data binding simplifies the process of linking UI components to data sources, making it easier to display and update customer records.
 (4 Marks)
- e) You are designing a system that manages different types of customers (e.g., regular customers and premium customers). Explain how you would use inheritance to create a base class Customer and derived classes RegularCustomer and PremiumCustomer, allowing shared functionality while extending features specific to each type. (4 Marks)