

**THE TECHNICAL UNIVERSITY OF KENYA
DEPARTMENT OF COMPUTER COMMUNICATION AND NETWORKS**

**IBL 2305: SOFTWARE DESIGN AND DEVELOPMENT LABORATORY
PRACTICAL**

GROUP ASSIGNMENT 1

SUBMISSION DEADLINE: 29th November 2021

SUBMIT TO: richard.omoka@tukenya.ac.ke

CONSULTATION: Physical/Google Meet during class session. You can send consultation request via emails to richard.omoka@tukenya.ac.ke

1. Identify areas of computer application in an organization. Select one computer system that your group will design and develop as an outcome of this course.
2. For the system selected above, identify:
 - a. System users
 - b. Functional requirements
 - c. Non-functional requirements
3. Draw a use case diagram to depict all actors, functions and relationships in the system.
4. Draw the Entity Relationship Diagram (ERD) for your system.
5. Identify the technology stack your group will use in developing your selected system (Back-end, front-end, database technologies)
6. Many computer systems in an organization implement some form of authentication and authorization.
 - a. Differentiate between authentication and authorization.
 - b. Design an interface for your system used for authentication.
7. Using the technologies selected in step 5 above:
 - a. Create back-end and front-end repositories for your system on github.
 - b. Implement the following functionality for your system as RESTful APIs:
 - i. Create, Read, Update & Delete (CRUD) user accounts.

- ii. Create, Read, Update & Delete (CRUD) user roles.
 - iii. Create, Read, Update & Delete (CRUD) system permissions.
 - iv. User login
 - v. Reset password
 - vi. Change Password
 - vii. Assign roles to users
 - viii. Assign permissions to roles
8. What is multi-tenancy in a computer system? Implement multi-tenancy for your system.