

## Group Assignment

### Group Members

- 1)BCSC01/0040/2021 Levi Wanyonyi
- 2)BCSC01/0035/2021 Alvin Kiptoo
- 3)BCSC01/0007/2021 Sophie Muchiri
- 4)BCSC01/0012/2021 Ezra Amani

## **Step 1: Problem Formulation**

Then, in this step you have to specifically define the problem you are solving for and/or what objectives or output do you want from your simulation and which boundaries it encapsulates.

### **1)Problem Statement:**

i)Objective: Establish a method for improving security in the three computer labs next to each other.

ii)Tasks: Keep track of every student entering and exiting from the lab.

Identify lab equipment movement without authorization (mice, keyboards, monitors etc)

### **2)System Description:**

i)Entities:

- Abstract — Students: The users of the computer lab.
- Lab Tools – Stuff that has to stay in the lab (monitors, keyboards etc.)

ii)Processes:

- When students come and go, they scan IDs to record timestamps.
- Items are RFID or barcode tagged and monitored to alarm when removed from inside the lab.

iii)Environment:

Home to three neighbouring labs at a university, having the same security policy

### **Inputs and Outputs:**

i)Inputs:

- Student ID data.
- Tags or identifiers assigned to equipment.
- Lab entry/exit data.

ii)Outputs:

- Entry and exit log of students.
- Alarm for equipment removal without permission

**Assumptions:**

- All students have valid IDs.
- All lab equipment is marked with distinct identification tags.
- At its premise entrance and exit, there are more sensors or scanning devices.

**Objectives:**

- Make sure to have each and every movement of students under the radar.
- Stop guys from taking out lab tools without permission.

## **Step 2: Collect and Analyze Data**

In this step, gather and analyse data required for the simulation model.

**1)Data Collection:**

i)Students:

- Average number of students using the labs daily.
- Time spent by each student in the lab.

ii)Lab Equipment:

- Number and type of equipment in each lab.
- Frequency of equipment use.

iii)Lab Layout:

- Dimensions and structure of each lab.
- Locations of entry and exit points.

iv)Security System:

- Type of technology available (RFID, barcodes, cameras).
- Existing protocols for lab monitoring.

**Data Analysis:**

- Determine trends, such as peak hours for lab usage.
- Calculate the average frequency of student entry and exit.
- Assess risks for equipment theft based on past incidents (if data is available).

**Technological Feasibility:**

- Evaluate the feasibility of implementing an RFID system for tracking equipment.

- Consider compatibility with existing infrastructure (e.g., student ID systems).