COLLEGE OF BUSINESS, PEACE, LEADERSHIP AND GOVERNANCE

NCIS 407 – ENTERPRISE ARCHITECTURE

END OF SECOND SEMESTER EXAMINATIONS

MAY 2021

LECTURER: MR MUKHALELA

TIME: 7 HOURS

INSTRUCTIONS

Answer any **ONE** question**.** Submit answer to parts (a) as code(s) and output as screenshots via **email**: mukhalelab@africau.edu and part (b) (only applies for some questions) as essay type answers via **Moodle.**

The marks allocated to **each** question are shown at the end of the section. Include citations where possible in your essay type answers.

Credit will be awarded for logical, systematic and neat presentations.

Question One.

The proposed Employee workload system for Vusumuzi Agri-Projects (VAP) manages jobs and tracks hours spent on each project by staff member. Examine the following table design below proposed by an external IT consultant for the new system.

An employee can work on many projects over the years and for each project there can be many employees working on it at a time. Each employee is allocated an employee id umber when they start working at the company and keeps that number until they leave the company. Each employee gets allocated to a specific department. The human resources clerk will capture the employee workload data from handwritten workload form into the system. The form will have the employee id number, project number, date worked and number of hours worked on a project for that date. Each project is allocated a unique project id number at the start of a project.

The suggested design for the Employee table is shown below.

Projects	Employee	
Field Name		**Data Type**
employeeID		Short Text
employeeSurname		Short Text
employeeName		Short Text
employeeTitle		Short Text
EmployeeRate		Number
employeeDepartment		Short Text

The suggested design for Project table is shown below.

Field Name	Data Type
ProjectID	Short Text
projectName	Short Text
projectDuration	Number
projectManagerEmployeeID	Short Text
projectRate	Currency

The suggested design for the workload table is shown below.

Field Name	Data Type
employeeID	Short Text
projectId	Short Text
dateWorked	Date/Time
hoursWorked	Number

Required:
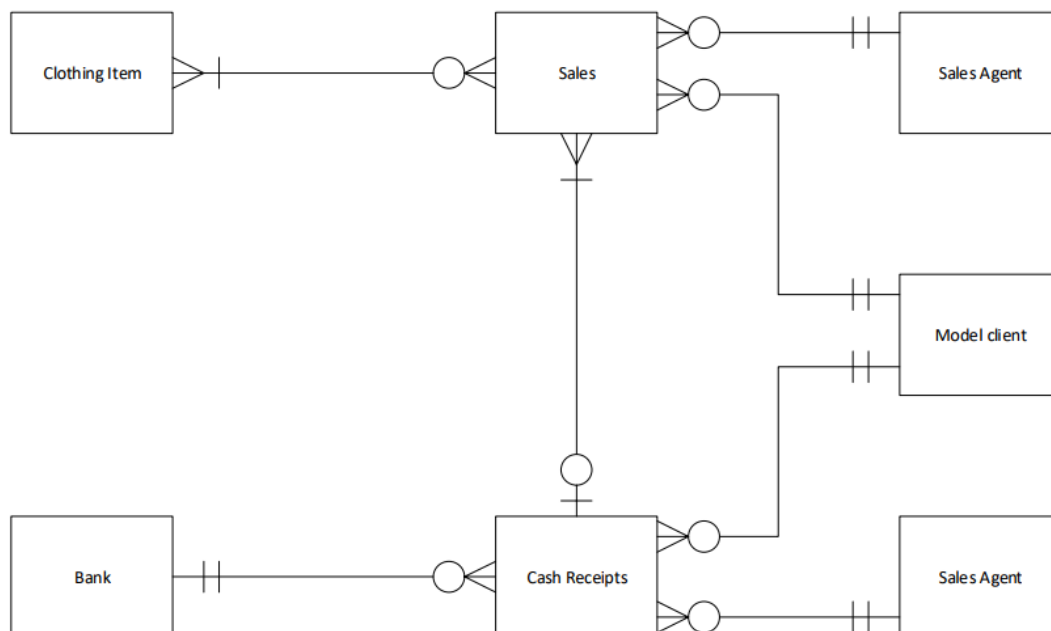
(a) Using Argo UML CASE tool, come up with a detailed use-case diagram for the new system architecture.   [15 marks]

(b) Re-Implement the above suggested design using MySQL engine in your XAMPP server ad enter at least 5 records in each table including designing queries which abide by given above description.   [35 marks]

Question Two.

Imagine you have just joined a team of Enterprise Architects as a Database Architect and two weeks down the line your senior left the organization for greener pastures, leaving you in possession of the below incomplete Resources, Events and Agents (REA) diagram.

The organization decides that you supersede your former boss, as a graduate Systems Architect and you have recommended that the organization continue developing a centralized database system based on the REA below.
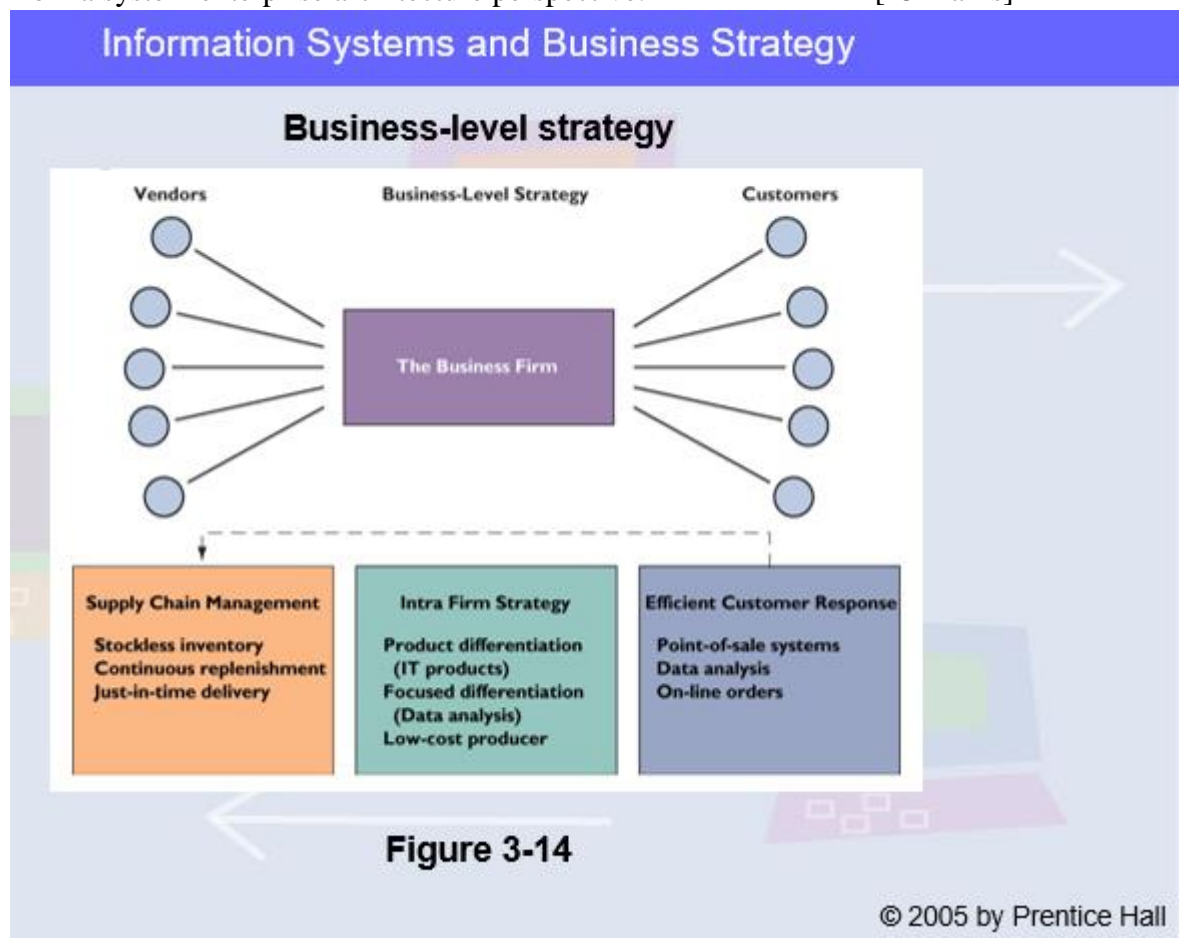

Required:

(a) Using a tool like MySQL Workbench, convert the REA above into a fully furnished, Entity Relational Diagram that fully maps how the proposed centralized system will link into each entity via referential integrity's primary and secondary keys connections. [35 marks]

(b) Write an elaborate report to your CIO in support for your decision of adopting an ERP at the same time doing some middleware for making your legacy systems work together with the proposed ERP. [15 marks]

Question Three.

(a) Using the illustration from the extract on alignment of information systems and business strategy below, write an elaborate account on how this alignment is achieved from a system enterprise architecture perspective. [25 marks]

Figure 3-14

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(b) Design a detailed class diagram for a proposed Rabbit-Breeding system, demonstrate appreciation on access modifiers for each of the proposed classes. [25 marks]

END OF EXAMINATION