SCHOOL OF TECHNOLOGY
MSC IN DATA ANALYTICS
MISM/MDA5105 PRINCIPLES OF DATA SCIENCE
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21/08673
TAKE HOME CAT1

Task1 [15 marks]

Identify and apply at least one data base schemas to design the schema of analytics database (Dataware house) [5 marks]

Relational Schema: I opted for Relational Schema

In relational databases, this type of schema defines the structure of tables, their columns, primary keys, foreign keys, and relationships between tables. It specifies how data is organized in a relational database.

Together, primary keys and foreign keys are fundamental in maintaining the relational integrity of a database, facilitating data retrieval, and enabling the enforcement of data consistency and accuracy.

Use PostgreSQL or any other DBMS to implement the designed schema   [5 marks]

Create Database and Tables(**MySQL commands**)

CREATE DATABASE kcauniversityanalytics

Screenshots of the kcauniversityanalytics DataBase

Table	Action						Rows	Type	Collation	Size	Overhead
campus	☆	Browse	Structure	Search	Insert	Empty	Drop	4	InnoDB	utf8mb4_general_ci	16.0 KiB	-
course	☆	Browse	Structure	Search	Insert	Empty	Drop	0	InnoDB	utf8mb4_general_ci	16.0 KiB	-
department	☆	Browse	Structure	Search	Insert	Empty	Drop	0	InnoDB	utf8mb4_general_ci	16.0 KiB	-
staff	☆	Browse	Structure	Search	Insert	Empty	Drop	0	InnoDB	utf8mb4_general_ci	16.0 KiB	-
student	☆	Browse	Structure	Search	Insert	Empty	Drop	10	InnoDB	utf8mb4_general_ci	16.0 KiB	-
5 tables	Sum						14	InnoDB	utf8mb4_general_ci	80.0 KiB	0 B

Student Table Structure

Browse | Structure | SQL | Search | Insert | Export | Import | Privileges | Operations | Triggers

Table structure | Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action		
□	1	student_id	int(11)		No	None		AUTO_INCREMENT	Change	Drop	More
□	2	name	varchar(255)	utf8mb4_general_ci	No	None			Change	Drop	More
□	3	date_of_birth	date		No	None			Change	Drop	More
□	4	major	varchar(100)	utf8mb4_general_ci	Yes	NULL			Change	Drop	More
□	5	address	varchar(255)	utf8mb4_general_ci	Yes	NULL			Change	Drop	More
□	6	phone_number	varchar(15)	utf8mb4_general_ci	Yes	NULL			Change	Drop	More
□	7	email	varchar(255)	utf8mb4_general_ci	Yes	NULL			Change	Drop	More
□	8	gender	enum('Male', 'Female', 'Other')	utf8mb4_general_ci	Yes	NULL			Change	Drop	More
□	9	nationality	varchar(100)	utf8mb4_general_ci	Yes	NULL			Change	Drop	More
□	10	entrance_year	int(11)		Yes	NULL			Change	Drop	More
□	11	graduation_year	int(11)		Yes	NULL			Change	Drop	More
□	12	campus_id	varchar(4)	utf8mb4_general_ci	Yes	NULL			Change	Drop	More
□	13	department_id	varchar(255)	utf8mb4_general_ci	Yes	NULL			Change	Drop	More

Check all | With selected: | Browse | Change | Drop | Primary | Unique | Index | Spatial | Fulltext

Campus Table Structure

Browse | Structure | SQL | Search | Insert | Export | Import | Privileges | Operations | Triggers

Table structure | Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action		
□	1	campus_id	int(11)		No	None		AUTO_INCREMENT	Change	Drop	More
□	2	campus_name	varchar(255)	utf8mb4_general_ci	Yes	NULL			Change	Drop	More
□	3	location	varchar(100)	utf8mb4_general_ci	Yes	NULL			Change	Drop	More
□	4	campus_description	text	utf8mb4_general_ci	Yes	NULL			Change	Drop	More
□	5	number_of_buildings	int(11)		Yes	NULL			Change	Drop	More
□	6	campus_size_acres	decimal(10,2)		Yes	NULL			Change	Drop	More
□	7	website	varchar(255)	utf8mb4_general_ci	Yes	NULL			Change	Drop	More
□	8	contact_email	varchar(100)	utf8mb4_general_ci	Yes	NULL			Change	Drop	More
□	9	contact_phone_number	varchar(15)	utf8mb4_general_ci	Yes	NULL			Change	Drop	More
□	10	established_year	int(11)		Yes	NULL			Change	Drop	More

Store 10 dummy data in the implemented analytics database [5 marks]

Insert Data

Insert data student table

MySQL Command

INSERT Student (name, date_of_birth, major, address, phone_number, email, gender, nationality, entrance_year, graduation_year)

VALUES

    ('John Doe', '1990-05-15', 'Computer Science', '123 P.O BOX', '254-123-4567', 'john.doe@email.com', 'Male', 'UG', 2018, 2022),

    ('Jane Kipchumba', '1992-08-21', 'Business Administration', '456 P.O BOX', '254-987-6543', 'jane@email.com', 'Female', 'KEN', 2019, 2023),

    ('Michael Etyang', '1991-04-30', 'Physics', '789 P.O BOX', '254-222-3333', 'michael@email.com', 'Male', 'KEN', 2017, 2021),

    ('Emily Sirir', '1993-12-10', 'ChemiP.O BOXry', '567 P.O BOX', '254-444-2545', 'emily@email.com', 'Female', 'ETH', 2020, 2024),

    ('David Kibet', '1994-06-25', 'Mathematics', '890 P.O BOX', '254-678-9012', 'david@email.com', 'Male', 'KEN', 2019, 2023),

    ('Sarah Fatuma', '1992-03-05', 'Psychology', '345 P.O BOX', '254-111-3333', 'sarah@email.com', 'Female', 'KEN', 2020, 2024),

    ('James Ndeng', '1995-07-17', 'Engineering', '234 P.O BOX', '254-876-5432', 'james@email.com', 'Male', 'SS', 2021, 2025),

    ('Olivia Atieno', '1993-10-01', 'History', '678 P.O BOX', '254-789-0123', 'olivia@email.com', 'Female', 'KEN', 2018, 2022),

    ('Daniel Brown', '1994-09-15', 'Biology', '123 P.O BOX', '254-222-1111', 'daniel@email.com', 'Male', 'KEN', 2020, 2024),

    ('Sophia Kimotho', '1991-01-29', 'Economics', '456 P.O BOX', '254-333-7777', 'sophia@email.com', 'Female', 'KEN', 2017, 2021);
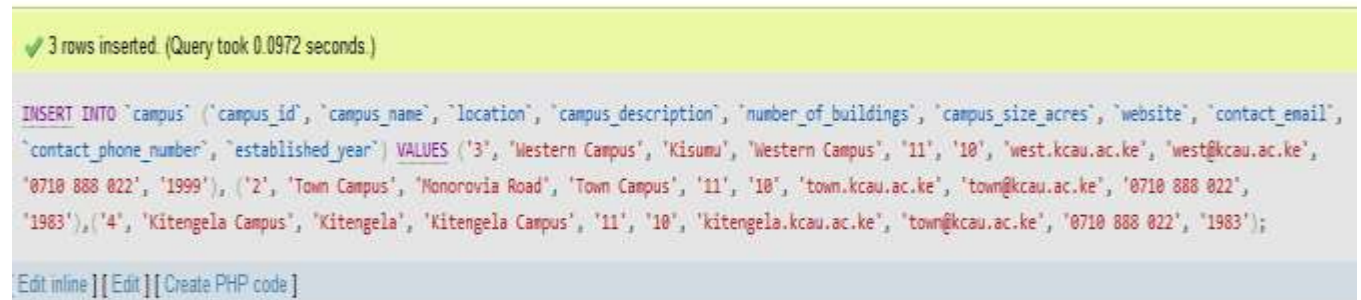
Screenshot of the student' table data

	student_id	name	date_of_birth	major	address	phone_number	email	gender	nationality	entrance_year	graduation_year
lete	1	John Doe	1990-05-15	Computer Science	123 P.O BOX	254-123-4567	john.doe@email.com	Male	UG	2018	2022
lete	2	Jane Kipchumba	1992-08-21	Business Administration	456 P.O BOX	254-987-6543	jane@email.com	Female	KEN	2019	2023
lete	3	Michael Etyang	1991-04-30	Physics	789 P.O BOX	254-222-3333	michael@email.com	Male	KEN	2017	2021
lete	4	Emily Sirir	1993-12-10	ChemiP.O BOXry	567 P.O BOX	254-444-2545	emily@email.com	Female	ETH	2020	2024
lete	5	David Kibet	1994-06-25	Mathematics	890 P.O BOX	254-678-9012	david@email.com	Male	KEN	2019	2023
lete	6	Sarah Fatuma	1992-03-05	Psychology	345 P.O BOX	254-111-3333	sarah@email.com	Female	KEN	2020	2024
lete	7	James Ndeng	1995-07-17	Engineering	234 P.O BOX	254-876-5432	james@email.com	Male	SS	2021	2025
lete	8	Olivia Atieno	1993-10-01	History	678 P.O BOX	254-789-0123	olivia@email.com	Female	KEN	2018	2022
lete	9	Daniel Brown	1994-09-15	Biology	123 P.O BOX	254-222-1111	daniel@email.com	Male	KEN	2020	2024
Console	10	Sophia	1991-01-29	Economics	456 P.O	254-333-7777	sophia@email.com	Female	KEN	2017	2021

Insert Data campus table
MySQL command
INSERT INTO `campus` (`campus_id`, `campus_name`, `location`, `campus_description`, `number_of_buildings`, `campus_size_acres`, `website`, `contact_email`, `contact_phone_number`, `established_year`) VALUES ('3', 'Western Campus', 'Kisumu', 'Western Campus', '11', '10', 'west.kcau.ac.ke', 'west@kcau.ac.ke', '0710 888 022', '1999'), ('2', 'Town Campus', 'Monorovia Road', 'Town Campus', '11', '10', 'town.kcau.ac.ke', 'town@kcau.ac.ke', '0710 888 022', '1983'),('4', 'Kitengela Campus', 'Kitengela', 'Kitengela Campus', '11', '10', 'kitengela.kcau.ac.ke', 'town@kcau.ac.ke', '0710 888 022', '1983');

Screenshot of the **MySQL** command execution to insert data campus

Screenshot of the Data campus Table