National University of Computer and Emerging Sciences, Lahore Campus

Course:	Database Systems		Course Code:	CS2005
Program:	BS (Computer Science)		Semester:	Spring 2023
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			RollNo:	[redacted]
Section:	BCS-4J	Date: 02/09/23	Name:	[redacted]

Quiz 1

Question 1: **CLO-6**

1a. Consider the following schema

Country(countryId, name)

State(stateId, countryId, stateName)

City(cityId, stateId, cityName)

Region(regId, cityId, regName, developed)

Where:

countryId, stated, cityId and regId are the primary keys of each of the above tables.

Identify the foreign key in this schema. Explain how the referential Integrity rules apply to these relations.(4 Marks)

countryId in State, stateId in City and cityId in Region are foreign keys. The rules apply like this like if the country id or stateId or cityId is not the same as the ~~one referenced in the primary key or is~~ one referenced in the primary key table, then it is not allowed.

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1b. Alter/ Modify the Schema given above.(3 Marks) 2

i. **Alter table and Add countryCode in Country table.**

```
alter table Country add countryCode int
```

ii. **Alter table and add Unique Constraint on country code.** UNIQUE_CC

```
alter table Country add constraint ^countryCode int unique
```

iii. **Consider that city Id is of data type integer. Modify it to varchar.**

```
alter table City alter column cityId varchar(50)
```

1c. Choose the most appropriate primary key from each of the schema and give your reasoning in 1-2 lines. Answer without reasoning will not be considered. Keep the concept of composite primary key in mind while solving.(3 Marks) 3

i. Card(cardNo, cardTypeId, PIN)

CardNo as it is uniquely defines the card

ii. ProductOwner(productId, ownerId, productDetails)

~~ownerId as it and productId as the name of owner may be same~~ as if productId will be unique.

productId and ownerId as it will ~~unique~~ identify the owner and the unique product Id.

iii. Vehicle(chasisNo, modelNo, licenseNo, make)

LicenseNo as the ~~number of~~ license number which identifies the vehicle will be unique

Question 02: What is the cardinality and degree of each relational schema defined in **Question 01.CLO-1 [4]** 2

Schema Name	Degree	Cardinality
Country	2	1
State	3	1
City	3	1
Region	4	1

Best of Luck