

Question A.

APPLICATIONS (ApplicationId, MediaName)

STUDENTS (CWID, FName, LName, Email, Phone, Year)

USES (UsesID, CWID, ApplicationId, Date, Time, TimeSpent, ActivityId)

- TimeSpent tracks the number of minutes spent by a user on a social media on a particular Date.

PURPOSE (ActivityId, Description)

All entities are normalized.

APPLICATIONS

Column Name	Data Type	Key	Required	Default Value	Remarks
ApplicationId	Integer	Primary Key	Yes	DBMS supplied	Surrogate Key: Initial value = 1. Increment = 1
MediaName	VarChar(100)	No	Yes	None	None

PURPOSE

Column Name	Data Type	Key	Required	Default value	Remarks
ActivityId	Integer	Primary Key	Yes	None	Connected to USES
Description	Char (100)	No	Yes	None	None

Question B.

The above tables document the column name, data types, null status', default values, remarks, and the keys of all tables. Such descriptions help us organize and keep track of the relevant information needed when creating the tables in SQL.

Question C.

The importance of referential integrity constraint enforcement in database design is to prevent errors from being introduced into the database. It prevents data from being entered into a row of a child table for which you don't have any corresponding row in the parent table.

Relationship		Referential Integrity Constraint	Cascading Behavior	
Parent	Child		On Update	On Delete
PURPOSE	USES	ActivityId in USES must exist in ActivityId in PURPOSE	No	No
APPLICATION	USES	ApplicationId in USES must exist in ApplicationId in APPLICATION	No	No

STUDENTS	USES	CWID in USES must exist in CWID in STUDENTS	No	No
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Cascading Behavior Justifications

- **PURPOSE and USES**

On delete cascading behavior is set to “No” because of the need to preserve a record of ActivityId’s in PURPOSE even if a student stops using an application for those purposes.

- **APPLICATION and USES**

On delete cascading behavior is set to “No” because we assume users want to preserve all the uses data about an application even if an app from is removed from APPLICATIONS.

Because ApplicationId is a surrogate key, no cascading update behavior is necessary.

- **STUDENTS and USES**

Since CWID in STUDENTS is an unchanging value, these relationships do not need cascading updates.

Regarding delete, rows in the USES child table require a STUDENTS’ parent. We decided to keep the records in the USES table as students are never removed after being recorded into the database. Therefore, the relationship has no cascading deletion.

Question E.

The major difference between a data model and database design during the transformation phase is that we convert a general data model into a database to be implemented in a DBMS. More specifically, we use the data model to define the tables, keys, attributes and normalize the tables to ensure that the database will not have any modification problems.