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ERD

1. All objects and its attributes can be seen in ERD

Objects	Attributes
Users	UserId FirstName LastName School Address Email PhoneNumber Location DateOfBirth Gender
Friends	FriendId UserId
Pages	PageId PageName PageContent
PageLikes	UserId PageId
CommentLikes	UserId CommentId
PostLikes	PostId UserId
Shares	PostId UserId
Posts	PostId UserId PostDate PostContent

Photos	PhotoId PostId ImageContent
Comments	CommentId PostId UserId CommentDate CommentContent

2. The relations between object can be seen in ERD

   Master and Child: (master -> child)

   Users -> Friends (one to many)

   Users -> Shares (one to many)

   Users -> PostLikes (one to many)

   Users -> Posts (one to many)

   Users -> PageLikes (one to many)

   Users -> CommentLikes (one to many)

   Users -> Comments (one to many)

   Posts -> PostLikes (one to many)

   Posts -> Shares (one to many)

   Posts -> Photos (one to many)

   Posts -> Comments (one to many)

   Comments -> CommentLikes (one to many)

   Pages -> PageLikes (one to many)

3.

Objects	Attributes
Users	UserId (PRIMARY KEY and CHECK) FirstName LastName School

	Address Email PhoneNumber Location DateOfBirth Gender
Friends	FriendId (PRIMARY KEY and CHECK) UserId (PRIMARY KEY and FOREIGN KEY)
Pages	PageId (PRIMARY KEY and CHECK) PageName PageContent
PageLikes	UserId (PRIMARY KEY and FOREIGN KEY) PageId (PRIMARY KEY and FOREIGN KEY)
CommentLikes	UserId (PRIMARY KEY and FOREIGN KEY) CommentId (PRIMARY KEY and FOREIGN KEY)
PostLikes	PostId (PRIMARY KEY and FOREIGN KEY) UserId (PRIMARY KEY and FOREIGN KEY)
Shares	PostId (PRIMARY KEY and FOREIGN KEY) UserId (PRIMARY KEY and FOREIGN KEY)
Posts	PostId (PRIMARY KEY and CHECK) UserId (PRIMARY KEY and FOREIGN KEY)

	PostDate PostContent
Photos	PhotoId (PRIMARY KEY and CHECK) PostId (PRIMARY KEY and FOREIGN KEY) ImageContent
Comments	CommentId (PRIMARY KEY and CHECK) PostId (PRIMARY KEY and FOREIGN KEY) UserId (PRIMARY KEY and FOREIGN KEY) CommentDate CommentContent

The constraints that will be used by me are PRIMARY KEY (uniquely identify the table), FOREIGN KEY (take another table's primary key), CHECK (to check the inserting data). On FOREIGN KEY, I use ON UPDATE CASCADE, ON DELETE CASCANDE, ON UPDATE NO ACTION, and ON DELETE NO ACTION. ON UPDATE NO ACTION and ON DELETE NO ACTION are used to prevent cascade multiple paths. Another constraint is NOT NULL on all attributes. The detail can be seen in the .sql.

4. The ERD can be seen in ERD.jpg

DDL

1. Data integrity is a thing that used to make the data in the table accurate and consistent.
2. Primary Key: a column that uniquely identify each row in the table, must not be null and does not have limitations in inserting.

   Foreign Key: a column that creates relationship with another table and has a limitation in inserting (the value of foreign key is taken from the value of primary key in another table).

   Composite Key: combination of two or more columns to uniquely identify each row in a table.

One of the examples of primary key is UserId in Users object in the previous ERD.
One of the examples of foreign key is PostId in Photos object in the previous ERD.
One of the examples of composite key is UserId and PageId in PageLikes object in the previous ERD.

3. BEGIN TRAN: to begin transaction and locks table
   COMMIT: save changes and unlock table
   ROLLBACK: removes changes and unlock table
   BEGIN TRAN
   DELETE FROM tableName
   ROLLBACK
   COMMIT

4. The answer is in .sql
   In the .sql file, there are some foreign key that I do not use ON UPDATE CASCADE and ON DELETE CASCADE due to cascade multiple paths, so I use ON UPDATE NO ACTION and ON DELETE NO ACTION