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**[Group Assignment - Term Project Phase 3 – Physical Design](https://ku.blackboard.com/webapps/assignment/uploadAssignment?content_id=_275986_1&course_id=_30974_1&group_id=&mode=view)**

Attached Files:

* [[File](https://ku.blackboard.com/bbcswebdav/pid-275986-dt-content-rid-7350867_1/xid-7350867_1) Lucidchart\_SQLscripts.pdf](https://ku.blackboard.com/bbcswebdav/pid-275986-dt-content-rid-7350867_1/xid-7350867_1) (396.459 KB)
* [[File](https://ku.blackboard.com/bbcswebdav/pid-275986-dt-content-rid-7351230_1/xid-7351230_1) SQlite\_populate.pdf](https://ku.blackboard.com/bbcswebdav/pid-275986-dt-content-rid-7351230_1/xid-7351230_1) (416.43 KB)

Dear All,

THIS IS GRADED - DEADLINE 22nd May 2020  FRIDAY 23:30

For the third and last phase of your project you will be converting your Logical Design, which you have uploaded to Term project - Phase 2:

The input of this phase is Logical Design uploaded to Term Project - Phase 2 and your Lucid chart output.

The outputs of this phase is a Physical Design,  SQL scripts to create the database structures you have modeled and a report.

Your physical design shall include:

i) Tables’ SQL creation scripts see steps 1-5.

ii) Identify a backup strategy among the strategies.

iii) Security strategy using roles and granting priviledges.

iv) Performance evaluation of database including storage, cpu and memory.

A few of you asked me if you could make any modifications/changes to your BRs, E-R diagrams or logical design. I am glad to hear such a need arouse as it is a part of modelling. If you would like to add/modify anything you have submitted in phases 1&2 you can do so and upload them again to this phase. Let me know about the changes by writing a few sentences or just pointing to the changes in a word document so that I can identify parts changed.

You will be uploading the following items/documents to blackboard for this assignment:

**SQL Scripts** (5 files)

1-  An SQL file named “CREATE\_TABLES\_< GroupName > . sql”. You can use the “Export to SQL” facility of Lucid chart to convert your design to MySQL scripts automatically (see COMP306- Lucidchart\_ SQLscripts. pdf). The creation SQL scripts for the tables shall include primary keys, check constraints, unique  constraints + anything else your design requires. Scripts must be runnable, it is recommended that you test running them in SQLite, before uploading.

2- Populate your tables with meaningful no. of records, on which you may run your statements in Steps 3-5, you may use populate option available in SQLite (see related pdf for how to use it)

3- Write SQL statements insert, update, delete (5 for each) and meaningful 10 queries based on your db purpose. INSERT, UPDATE, DELETE and SELECT statements shall be prepared in a separate text file named "DML\_stmts\_<GroupName>. sql"

4- Create 3-5 meaningful views stating who might be using them.  A separate text file named "view\_stmts\_<GroupName>. sql"

5- Create one trigger for insert, update, delete, before and after (making 6 in total) on 3 or 4  tables you choose.  A separate text file named "trigger\_code\_<GroupName>. sql"

**Report** in word/pdf including following parts (1-7):

PART 1- Pick 3 tables and propose the size of these tables following the steps shown in slides. Calculate the avg length of rows for each of these 3 tables, estimate the number of records for each table in 3 months and 12 months time.

Avg. row length =(begin inline style sum for a l l space N O T thin space N U L L space c o l u m n space l e n g t h s of end style

)+((begin inline style sum for a l l space n u l l a b l e space c o l u m n space l e n g t h s of end style )/2)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Table Name | Initial #of rows | #of rows in 3 months | #of rows in a year | Avg. length |
| Table A |  |  |  |  |
| Table B |  |  |  |  |
| Table C |  |  |  |  |

PART 2- State how many concurrent user you expect fort he database you designed. Pick 3 tables and estimate the number of transactions in 3 months, 12 months. Prepare a table similar to below which shows which DML operations will be taking place in majority on this table; identify the most intensive DML operation/s on the table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Table Name | INSERT | UPDATE | DELETE | SELECT |
| Table A |  |  |  |  |

PART 3 – STORAGE Identify the disk structure you would use for your database. How many tablespaces  would you use? Which RAID type(s), storage arrays you would prefer, discuss with your reasoning considering index types you use.

PART 4- BACKUP Define a backup strategy for your database. For given backup and restore limits, and using a standby (hot or cold)  (example limits: 4 hours for backup, 2 hours for restore)

PART 5 – SECURITY Define the security strategy for your database. Define the roles and the available operations for each role, end user(s) who will be assigned this role to and a strategy for how passwords shall be stored/changed who will be incharge in IT.

PART 6 - PERFORMANCE Considering all of the above make an overall performance evaluation: you shall identify possible performance bottlenecks in terms of storage, cpu and memory if no. of concurrent users system shall be serving increased fifty times (x50) , then suggest solutions which storage options inc. RAID types, which index types might help additionally making use of partitioning for both tables and indexes (suggest min 4 partitions with appropriate partitioning types).

PART 7 - Write a paragraph what you would consider to do in terms of any changes/ additions/ modifications to improve your model if you had another 2 weeks to work on it.

All scripts shall be tested on SQLite database for any syntax errors.

\*\* For those scripts which has syntax error(s) 15 points will be deducted from the overall assignment (that's -15 pts for syntax errors in scripts, therefore pls test them before uploading)