Topics for Midterm

TOPICS FOR MIDTERM

Whatever we have covered in lectures are topics for the midterm. The specific topics are below. For each topic:

+ revisit the lecture slides, consult the recording if something is unclear

+ read the text book, suggested reading is on Page "Course Schedule", under Module "Welcome to CS 564", in canvas

+ come to the office hour for any unclear questions.

ER model

+ entity set, relationship, attribute

+ binary relationship, multiway relationship, other types of relationships (1-1, many-1, 1-many, many-many)

+ subclasses (that is, is-a hierarchies), weak entity set

+ key constraint, referential integrity constraint, primary key

Relational model and translating ER to relational

+ schema, instance, attribute types

+ translating basic cases to table, translating many-1 relations, weak entity sets, is-a hierarchies

SQL

+ understand the general construct select/from/where/groupby/having

+ aggregation (min, max, avg, sum, etc.)

+ null values, subqueries (that is, nested queries), boolean operators in, exists, any, all

+ database modification (insert, delete)

Storage and buffer management

+ how disk works, how data is laid out on disk, how data on disk is read into memory

+ why the database management system needs to manage a buffer of pages

+ buffer replacement policies (LRU, MRU), sequential flooding

+ understand the clock buffer replacement policy described in project stage 3

+ different implementations of heap files, page format, tuple format, as discussed in lectures

+ system catalog

File organization and indexing

+ heap file, sorted file, hash file, B+ tree file

+ have a good understanding of B+ tree, how it looks like, insert, delete

+ clustered vs non-clustered indexes

Topics from Project Stage 3

+ understand the clock algorithm for page replacement
+ for the main classes, BufHashTbl, BufDesc, BufMgr, understand their data fields and their methods. You should know what each data field does, and what each method does.