DB Mgt Test 1

**Begins**

When you read past this page.

Once you begin

you may not stop and restart.

Skim the questions and send a note to me of anything needing an explanation before proceeding.

Bathroom & brief snack breaks don’t count.

Test is closed book, closed notes, and

without any external help.

Test is due

Friday, 14-FeB by 4 P.m.

CS 2243 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

100 points. Points in (). Due 4 pm, 14-FeB-2014

Test 1 Part ii

Introductory material and chapters 1, 2, & 9

**Test is closed book, closed notes, and without any external help.**

Points in ().

Answer in order. If you choose to skip a question, leave space for it rather than writing your answers “*as they come to you*. “ Include your name at the top of each sheet.

18. Name and explain the purpose of each language developed for the Network database. (4)

Data Management Language – details how the data can be handled. Deals with the data.

Data Definition Language – describes data. Helps define how the database is constructed.

19. How does a database *model* an organization? In specific database terms what of interest is being modeled? (5)

It's a mixture of ideas borrowed from math, and OOP practices, and ideas born from attempting to optimize data. It results in entities modeling real life things and modeling the relationships between entities.

20. In the *context of database design*, how are business rules used? How are they discovered? (5)

They're used to rigorously define relationships between entities. Generally common sense and asking people about the business, in order to learn more.

21. How does a Relational db aid in providing both structural and data independence? Give an example of each type of independence. (5)

Structural independence would be the ability to add columns to tables.

Data independence would be changing the storage format of a thing that was a char to an integer.

It abstracts the actual storage of data away from applications that access it. So it can afford to be a little more flexible in how and where things are stored, since it's the only one it matters to.

22. Why are the costs associated with implementing a new database management system more than monetary? Include a brief description of two of these costs. (6)

Because you're changing things. Systems resist change, and a business counts as a system. Getting locked into a sketchy vendor could end up being a huge cost. Having your system go down every Tuesday morning for 3 hours to update could be another cost. Depending on how drastic of a change implementing a DBMS is, getting everything running smoothly again could take some effort.

23. Describe three functions of a DBMS. (6)

If you ask it nicely for data, it'll give you data. If try pull a fast one over on it, it'll decide against giving you data (if the people who set it up are smart). It's designed so that just about anything can ask it for data, with relatively little effort. You can also ask it to put the data in a particular format. You can tell it to hold more data, or less data, or whatever you want. It's your portal to the data. It's just a layer of abstraction to make it easier for things to touch the data and the data not get broken.

24. Briefly describe each level of this diagram in terms of purpose/activity, data abstraction and user view. Explain the significance of placement as each model relates to the others. It is not necessary to relate to the Network or Hierarchical models. (10)

Applications programmers program at the left hand external level.

Users have a gander at the data and update records at the right hand external level.

Database Designers deal with the conceptual level.

Internal is the DBMS itself.

Physical layer is managed by the DBMS, in conjunction with the OS. (Or at least, there should be a kernel level component involved that prioritizes the DBMS data management);

External External

| |

\ /

Conceptual

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|

v

Internal

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|

v

Physical

25. Explain where, how, and why the database life cycle fits within the systems development life cycle. (5)

They go hand in hand. Each affects the other, the database lives in the system and the system supports the database.

Where – at just about every stage. Yes, there's other purposes to the system, but the database brings everything together.

How – The bottleneck in your system is also the bottleneck your database performance.

Why – The new version of Oracle came out! Also, a serious vulnerability has been discovered in the version we have. We need to update. Also, Oracle now works much better with more ram. This is a wonderful opportunity to optimize.

26. When should documentation be done in the Database Life Cycle? Specifically, what is documented? (5)

Documentation should be done at every stage, on everything that anyone could possibly have a question about, ever. That's a bit of an exaggeration, but not by much. Troubleshooting issues is so much easier when you have documentation. This applies in programming and IT as much as in database management, apparently. Documentation should be done by the end of every phase.

27. What does it mean to *verify the conceptual model*? How is verification a form of testing? (5)

It's part of making sure it works. It's all well and good to have put out a ton of work, but if what you turn out isn't good for anything, it should be fixed before moving on.

It may not be testing as in “This module does what I designed it to do,” because it's more testing as in “This module does what it needs to do to make things work properly and satisfactorily.”

Bonus:

A. Distinguish between (1 ea)

i) an operational or transactional database and data warehouse

PoS database at Kroger's, and Kroger's off site online backup, ready to restore at any time (I may or may not have made up Kroger's off site online backup)

ii) big data and non-transactional (social media) data

big data – trending topics on facebook, the way some websites track your mouse on the page, etc.

non-transactional data – joe shmoe posts about his dogs. Jane shmoe posts a video of her cats. Not the same thing, not exactly transactional. Not necessarily “big data,” though.

B. In db terms what are the three relationships of interest? (3)

One to One

One to Many

Many to Many

C. Where could a new attribute be placed and not affect existing data access programs (1 ea)

i) in a structurally dependent table?

Difficult to say without examining the actual structure of the file. I'd say tack it on to the end of the table and hope for the best. Depending on the way the programs are accessing the table, it could break them. Optimistically, I'd say it would break half. Pessimistically, it would break all the programs, and when you try to revert, your file is scrambled, pointers are pointing to themselves, chaos breaks loose and your graphics card on your desktop has a melt down, just for good measure and no particular connection with the table.

ii) in a relational db table?

Wherever you want.

Statement of Integrity:

On my honor as a gentleman, I acknowledge that I am aware of our community policy toward Academic Integrity and affirm that on this test I have maintained that integrity.

Signed: Mason Howard

Fatigue set in quickly after starting this exam. Please excuse any semi-colons you find instead of periods, but I think I cleaned them all up.

Thanks!

Mason Howard