

SENG 5707 Data Modeling

Fall 2016

-2.(See footnote "Aunt Ethel"¹)

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0. Nature of the course

Your goal is to *master* skills in data modeling with users and extracting information from a DBMS. You will need to learn definitions of terms and understand the DBMS milieu. More importantly you must *practice* to acquire skills. Both skills involve precise communication.

1. Texts

- *Mastering Data Modeling: A User-Driven Approach* by John Carlis and Joseph Maguire.

Before the first class: Lightly read through page 90 – or more if it excites you.

Study the example in Chapter 1 (page 12). Find situations in you workplace (or wherever) that have this structure (and ones that have a somewhat different structure). We will discuss your situations in class.

[Why? Well, educational research shows that students retain more and learn more richly when they connect new things to what they already know.]

- *Mastering Database Querying and Analysis* by John Carlis. (Under construction) A draft the book will be handed out in early October.

In the latter half of the semester you will use the Oracle DBMS software (available on IT Labs Sun workstations), and will have access to its online documentation. You will use a relational algebra package that insulates you from much of the ugliness of SQL.

3. Keeping Score

- Tests 55% You have four tests with a weight vector (5, 25, 5, 20). Tests 1 and 3 are 30 minutes; test 2 is 75 minutes; and test 4 is 90 minutes. Before each test I will let you know the format of the test, so it will not surprise you.
- Homework 45%. All homework, unless otherwise stated, is to be done in 3-person teams. Every person on a team assignment gets the same grade.
- Tests are open book and notes. [Electronic notes are ok, but **no** internet searching during tests – you will not find it useful anyway.]
- Grades are criterion not reference based. There is no curve - up or down. You can all get A's, or all get F's - it is up to you. Since you are competing against a standard, your fellow students are not enemies. So talk to each other.

¹ Footnote Aunt Ethel: So why would Carlis start at -2 and give a footnote a name?
Do you notice anything else special/odd in this syllabus?

Getting grades in a course is like using a glass to pour water into a big bucket at the beach. The water you safely put from the glass (a test or assignment) into the bucket are safe (points earned), and the water you spill on the sand (points lost) is gone for good. At the end you ask "how full is the bucket?" You can get zero on the first test and still get an A, or be perfect going into the final and still get a C. Almost everyone gets most of the homework points, and the tests are where people differ.

2. Policies and Advice

- **NO** texting, email, Facebook, etc. during class. This is an active learning environment and you need to be engaged in it and not distracted.
- Teams consist of *three* people, if possible. You are responsible for team management. All team members receive the same grade. If you are going to drop the course do it early to save your teammates grief. If you drop, tell your teammates -- do not just disappear.
- Any grade is open to appeal within two weeks after you receive it. Appeals other than arithmetic ones must be written. Your grade may go down or up following an appeal.
- Homework reports may be penalized up to 30% for being messy or written in gibberish. [You will make two presentations of team homework to other teams, so several presentations will occur at the same time.
- Homework reports are due when they are due - at the start of class -- so you will not be tempted to miss class to finish off an assignment.
- Cheaters are low life forms, and won't be tolerated. [Sorry. This is boilerplate. MSSE students have too much self respect to cheat.]
- The books are not the course. The course is about your learning, and class time will not be spent telling you what you can get by reading.
- Students are adults. You are responsible for choosing a load (school, work, social life, ...) that you can handle. If you overload yourself you increase the likelihood that your grades will go down.
- Be respectful of each other, the t.a., and Carlis too. School [+ work + life] is stressful, but do not let it make you miserable, or grumpy. Indeed, be joyful. Being a student will be one of the best times of your life.

4. Learning

- Participate in class. A guiding principle: active learning is better than passive learning.
- You will **NOT** be graded on whether you speak well or poorly or at all. However, *ceterus paribus*, mute students generally do worse than active ones. Every class you will work on brief exercises where you will (actively) work with others.
- You must **prepare** for class. I'll assume that you have read the material and thought some about it. By being prepared you will learn more with less effort. Why prepare? Well, prepared students learn better and do so in less time.
- No texting or emailing during class.

Mastery of skills is the goal, not merely learning things. Since mastery of skills does not occur in ten minute units, you should quickly read big chunks (before class!) of the books and then reread pieces in context. Also, you should expect that the topics on the schedule for each week are approximate.

Learning is not always moving forward, but practicing with your teammates will keep you on track. Mastery includes communication, so work at speaking and writing well. Mastery includes facility - you need to own skills and the things they are based on.

4. Reading for each week and dates for things.

week	date	topic	mastery
1F a.m.	9/9	Intro to DB & DBMS Beginning Data Modeling Skills	(Bring the data modeling book to class) Ch. 1 to 6 & interlude
2S p.m.	9/17	More beginning Data Modeling Skills	Skim chapters 18 & 25 [International Talk Like A Pirate Day ☺]
3F a.m.	9/23	Shapes and Recipes	Ch. 7 to 12 and 26 & interlude
4S p.m.	10/1	Flow Test 1 – [30 min]	Ch. 18- to 21 & interlude
5F a.m.	10/7	Names & relations Carlis all day ☺	Ch. 13 to 16 and 25 & interlude
6F p.m.	10/7	Constraints; Meta;	Ch. 22-23
7S p.m.	10/15	Decisions Guest: Robinette Renner talking on Meta-Data Standards;	Ch. 24& interlude
8F a.m.	10/21	Integrating DBs; Querying & Analysis introduction	(Bring the querying book to class) Part I
	10/29	Mats – all day ☺	
9S p.m.	11/12	present data models [90 min] Test 2 – [75 min]	
10F p.m.	11/18	Unary Operators	Part II
T-S	11/24-27	turkey days ☺	constant grazing
11S p.m.	12/3	Set Operations Ways of Work Test 3? – [30 min]	Part II and Part III [Skim Part VII]
12F a.m.	12/9	<i>Whatever we can get to</i>	Part IV,V, VI, VII
13S p.m.	12/17	present analyses [90 min] Test 4 [90 min]	

Do you need early grade reporting for reimbursement?

The following is an apocryphal story, but none the less, amusing story on the permanency of bureaucracies.

The U.S. standard railroad gauge (distance between the rails) is 4 feet 8.5 inches. That's an exceedingly odd number.

Why was that gauge used?

Because that's the way they built them in England, and English expatriates built the US railroads.

Why did the English build them like that?

Because the first rail lines were built by the same people who built the pre-railroad tramways, and that's the gauge they used.

Why did 'they' use that gauge then?

Because the people who built the tramways used the same jigs and tools that they used for building wagons, which used that wheel spacing.

Okay! Why did the wagons have that particular odd wheel spacing?

Well, if they tried to use any other spacing, the wagon wheels would break on some of the old, long-distance roads in England, because that's the spacing of the wheel ruts.

So who built those old rutted roads?

The first long-distance roads in Europe (and England) were built by Imperial Rome for their legions. The roads have been used ever since.

And the ruts?

Roman war chariots first made the initial ruts, which everyone else had to match for fear of destroying their wagon wheels and wagons. Since the chariots were made for, or by Imperial Rome, they were all alike in the matter of wheel spacing. The Imperial Roman war chariots were made just wide enough to accommodate the back ends of two war horses.

Thus, we have the answer to the original question. The United States standard railroad gauge of 4 feet, 8.5 inches derives from the original specification for an Imperial Roman war chariot.

And now, the twist to the story . . .

When we see a space shuttle sitting on its launch pad, there are two big booster rockets attached to the sides of the main fuel tank. These are solid rocket boosters, or SRBs.

Thiokol makes the SRBs at their factory at Utah. The engineers who designed the SRBs might have preferred to make them a bit fatter, but the SRBs had to be shipped by train from the factory to the launch site. The railroad line from the factory had to run through a tunnel in the mountains. The SRBs had to fit through that tunnel.

The tunnel is slightly wider than the railroad track, and the railroad track is about as wide as two horses' behinds.

So, the major design feature of what is arguably the world's most advanced transportation system was determined by the width of a horse's ass! So, the next time you are handed a specification and wonder which horse's ass came up with it, you may be exactly right.

Specifications and bureaucracies live forever.

Source: <http://www.pluggednickel.com/home/picayunepursuits.html> (December 11, 2007).