

A decorative graphic on the left side of the slide, consisting of a network of white lines and circles on a blue gradient background, resembling a circuit board or a neural network.

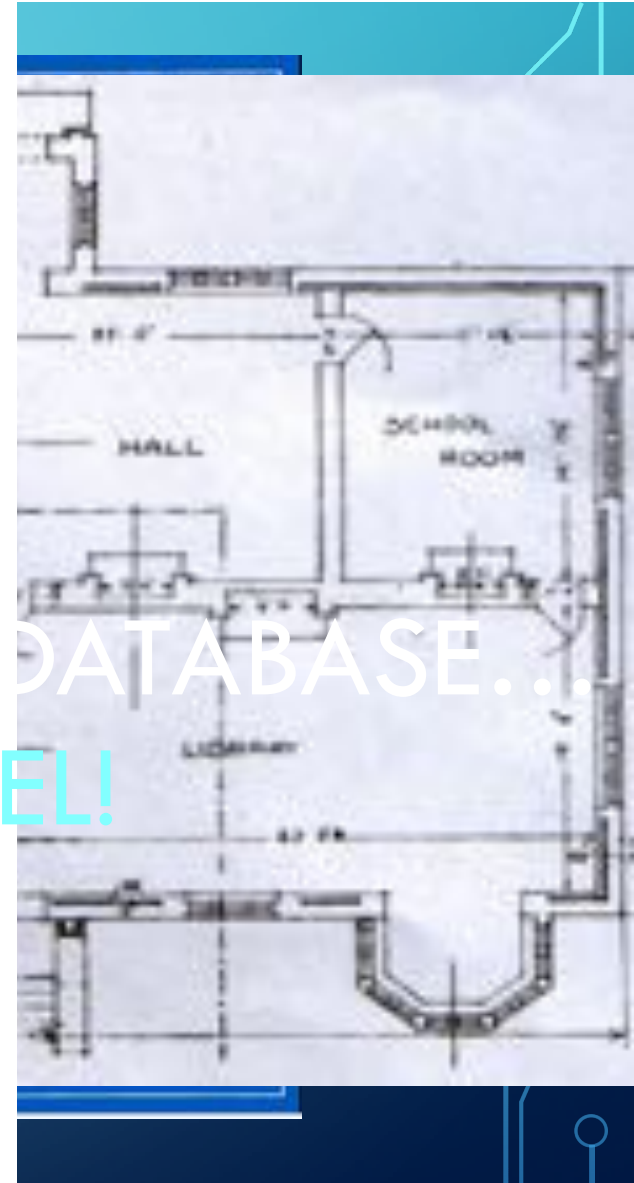
WEEK 1

MODELLING DATA AND ENTITY RELATIONSHIP DIAGRAMS – PART 1

CS3319

STUDENT OBJECTIVES

- Upon completion of this video, you should be able to:
 - List 2 of the steps required to build the requirements for a large system
 - Give the name of the model that we will use to visually represent our database for our mini-world
 - Give the name of the person who invented the visual model used for representing database
 - List at least 2 different pieces of software you could use to create the visual model



BEFORE CREATING A DATABASE...
BUILD A MODEL!

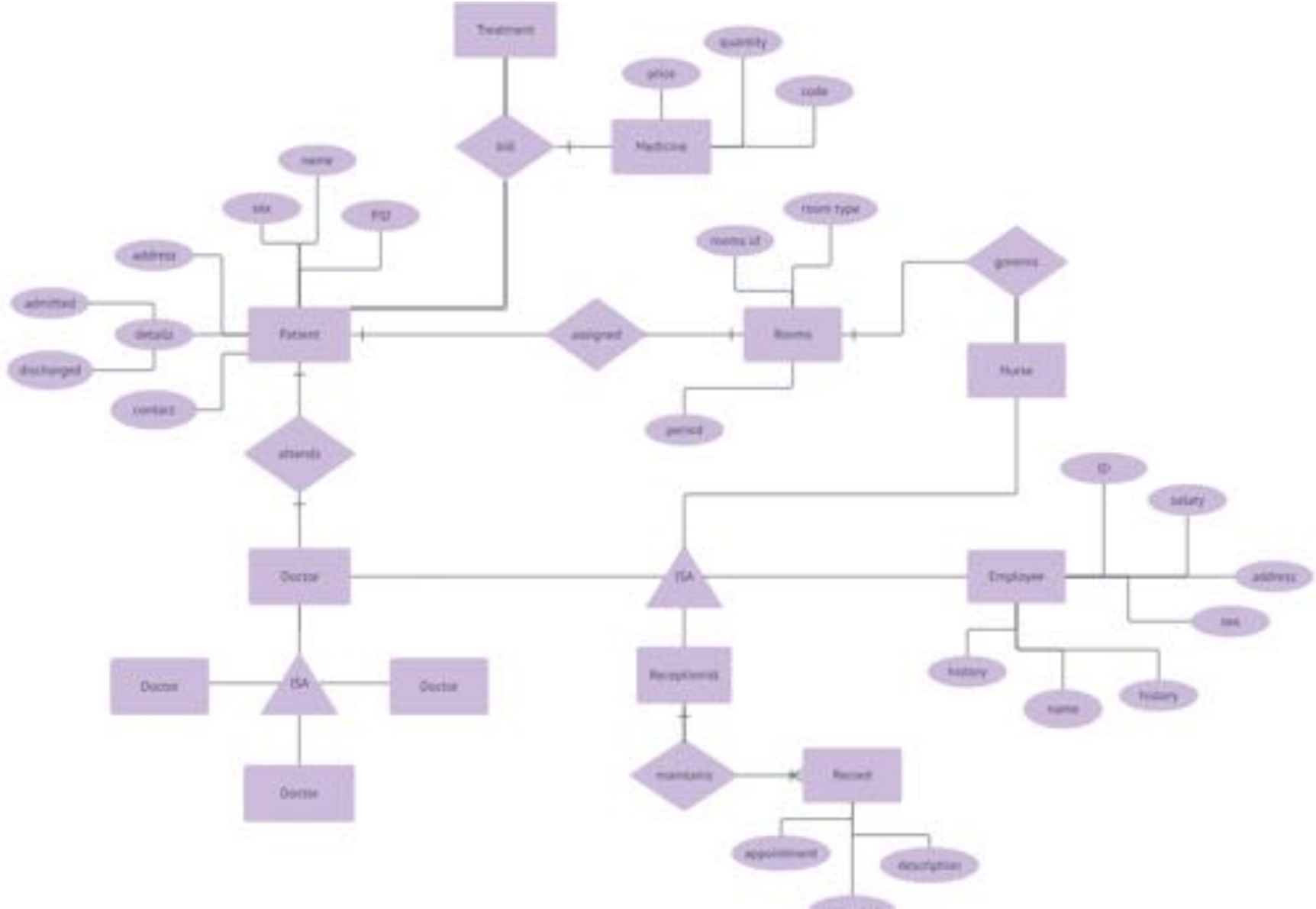
Start with the data - not wide!
 narrow the scope as much as possible.
 figure out what data need to store

WHERE AND HOW DO WE START?

CALNOC Benchmarking Report - Falls and HAPI3+ Incidence By Unit											
CALNOC		Service Line : Adult Acute Care									
		From : JULY 2011 To : SEPTEMBER 2011									
		RDV : 18									
		Unit Name : SURGICAL									
		Region Group : California									
		Average Daily Census : 100-199									
Date : 09/17/2012		Comparison Group Data									
Unit/Unit Type/Measure		California									
		Year	Unit	Unit	Facility	Like	10th	25th	50th	75th	90th
		Unit	Identifier*	Demonstrator*	Mean	Hospital	Mean	Percentile	Percentile	Percentile	Percentile
					By	By	By	Lower	(Median)	Upper	By
					Unit	Unit	Unit	Quantiles	by Unit	Quantiles	Unit
					Type	Type	Type	by Unit	Type	Unit Type	Type
<u>SURGICAL / Adult - Medical/Surgical</u>											
<u>Falls Incidence Measures</u>											
1. Falls per 1000 Pt Days		2.68	7	2873	4.16	3.02	3.08	0.87	1.60	3.46	3.91
2. Unassisted Falls per 1000 Pt days		1.07	3	2872	3.67	2.41	2.53	0.31	1.25	2.19	4.84
3. All Injury Falls per 1000 Patient Days		0.37	1	2872	0.88	0.81	0.87	0.00	0.00	0.86	1.21
4. Moderate+ Injury Falls per 1000 Pt Days		0.37	1	2872	0.11	0.08	0.08	0.00	0.00	0.00	0.29
5. Percent of Reported Falls Resulting in Moderate+ Injury		8.33	1	7	3.78	2.46	2.79	0.00	0.00	0.00	8.33
<u>Falls Descriptive Measures</u>											
6. Percent of Falls Coded Accidental						44.76	39.33	0.00	0.00	30.00	75.00
7. Percent of Falls Coded Unanticipated Physiologic						1.01	1.13	0.00	0.00	1.00	3.00
8. Percent of Falls Coded Anticipated Physiologic						37.89	40.87	0.00	0.00	40.00	77.78
9. Percent of Falls Observed		66.67	4	7	11.94	19.43	19.39	0.00	0.00	14.28	50.00
10. Percent of Falls Assisted		66.67	4	7	11.94	19.43	19.39	0.00	0.00	5.00	26.32
11. Percent of Falls with Restraint in Use		8.33	1	7	11.20	9.23	4.27	0.00	0.00	0.00	14.29
12. Percent of Repeat Falls Same Unit		16.67	1	7	12.64	3.39	4.42	0.00	0.00	0.00	16.67
13. Percent of Repeat Falls Any Unit		0.00	0	7	0.00	3.16	2.79	0.00	0.00	0.00	8.33
<u>Falls Prevention Measures</u>											
14. Percent Patients Assessed at Risk		83.33	5	6	91.37	81.82	79.32	44.44	66.67	88.89	100.00

DRAW A MODEL BEFORE CREATING THE DATABASE!

- Entity Relationship Model (ER Diagram)
- Created by Peter Chen in 1976
- VISUAL representation of your data
- Map your ER Diagram/Model to a currently used model for implementing a database (we will map to the Relational Model)



CASE STUDY – CREATING AN ER DIAGRAM

- Suppose we plan to model a company which is organized into departments.
- Each department has a unique name, number and employee who manages it (we want to keep track of when the employee started managing the department)
- A department may have several locations
- A department controls a bunch of projects, each project has a unique number, name and a single location
- Each employee has a name, ssnumber, address, salary, sex and birthdate
- An employee is assigned to only one department but may work on several projects which are not necessarily from the same department
- Keep track of the number of hours each employee works on each project.
- Keep track of the direct supervisor of each employee
- Keep track of the dependents of each employee (name, sex, birthdate and relation)

HOW CAN WE REPRESENT THE PREVIOUS SLIDE AS A MODEL?

- We must incorporate all the information of the mini-world we described!
- We will represent it visually
- Several programs you could use to create ER Diagrams, for example:
 - Microsoft Visio → <https://support.office.com/en-us/article/video-what-is-visio-421b0c94-7ecf-4e62-8072-d27e04d24fe6>
 - Draw IO → <https://www.draw.io/>
 - smartdraw → <https://cloud.smartdraw.com/>
 - Lots of other ones!