

Data Modelling Process

What is data Modelling and the design process?

- Process of analysing data requirements and identifying the objects to be used for Database
- A data Model is created
- Similar to class modelling in OOPS
- Three types of Data Models
 - Conceptual
 - Logical
 - Physical
- **Conceptual Data Model**
 - A high level model, shows relationships between objects
 - Usually just names or concepts
- **Logical Data Model**
 - Shows objects at a more detailed level, also shows relationships and information for each object
- **Physical Data Model**
 - It describes the internal schema of the database
 - Table names, Column names, keys, relationships

Determine the goal of the Database

- What is the Database trying to achieve and what is its purpose?
- It is not just storage but about solving a problem. It is a solution of a problem. This is called the scope.
- The scope is the limit and boundary for what a Database can be used for.
- Can leave things out. Depends on project to project.
- Determining the goal of the Database helps you determine what needs to be stored.

Consider the current system

- Replace or enhance a current existing system. The current system is a good source of requirements.

Gathering requirements of the Database

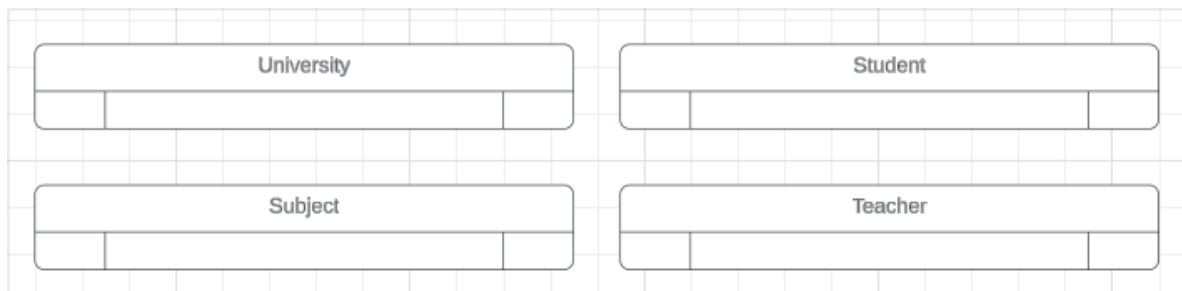
- People, manager, business representatives.
- Be clear on what you want to store and what you don't want to store.
- Auditing needs to be added - What records have changed, when they had changed, who changed them and what changed in them
- History of changed needs to be stored

Finding exceptions to the rules

- Ask about exception to rules
- Databases are built on rules, data is stored and related in a certain way, fields have certain type, they can cause your data model to break
- "Usually" - DANGEROUS - almost always true.
- Need to know definitely true or definitely false.
- Database should always stay the same, even though the technology may change
- Customer IDs can be 0000 - 9999 but if the customers cross, 10,000
- Eg: Y2K
- Finding exceptions to your rules during your design phase is important
- Databases should handle your future growth and your data type and size should allow for it
- Question any field length and type restriction

Identifying Entities

- Entity = Something we want to store data about
- Goal: to help **university** to keep track of
 - **Students** that have enrolled
 - What **subjects** they are taking
 - The **teachers** of those subjects
- Look for Nouns - Use singular words - university, student, subject, teacher



Defining the attributes

- Attributes - what is being stored for each entity or table. Also called as columns and fields.
- "Attributed" to an object or entity
- Eg: Product: name, price, color, size

How to determine attributes?

- Work out what you need to know about your tables
- Eg: **Students**: first name, last name and DOB
- Q: What does the object have?
- Eg: **subjects** have students enrolled in them
 - Subject name, category, student name
- Teacher: first name, last name, dob, address, subject taught
- University: name, address

Attributes Types

- What types of information is stored for each attributes
- **Students**
 - first name (text)
 - last name (text)
 - DOB (date)

- **Subjects**

- subject name (text)
- category (text)
- student name (text)

- **Teacher**

- first name (text)
- last name (text)
- dob (date)
- address (text)
- subject taught (text)

- **University**

- name, address - (text) (text)

University		
	name	text
	address	text

Student		
	subject name	text
	category	text
	student name	text

Subject		
	first name	text
	last name	text
	date of birth	date
	address	text

Teacher		
	first name	text
	last name	text
	data of birth	date
	address	text
	subjects taught	text