

Database Application Development Methodology - Assumptions

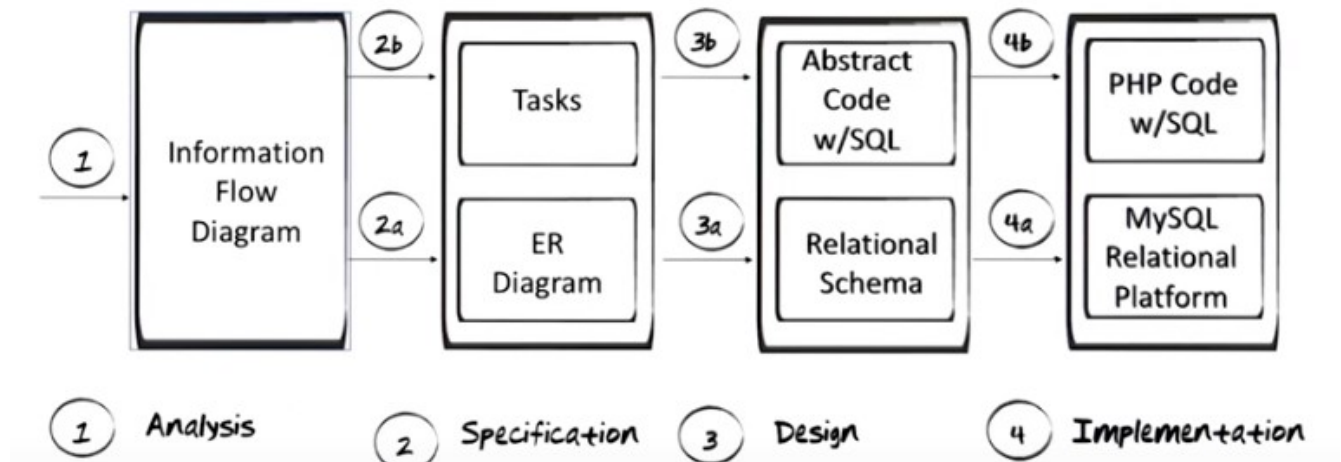
- Business processes are well-designed
- Documents are known
- Tasks are known
- System boundary is known
- One database schema unifying all views can be designed
 - difficult: interests, goals, power, politics
 - problems with the methodology?
 - problems with the organization?
 - organization: „an entity created to pursue a shared set of goals“

上圖中的問題: If it is that difficult, is it a problem with a methodology or is it a problem with the organization? It is always a problem with the organization. If your organization cannot successfully arrive at such a unifying view, then it's a problem with the organization.

The Software Process



Overview of the Methodology: Data First!

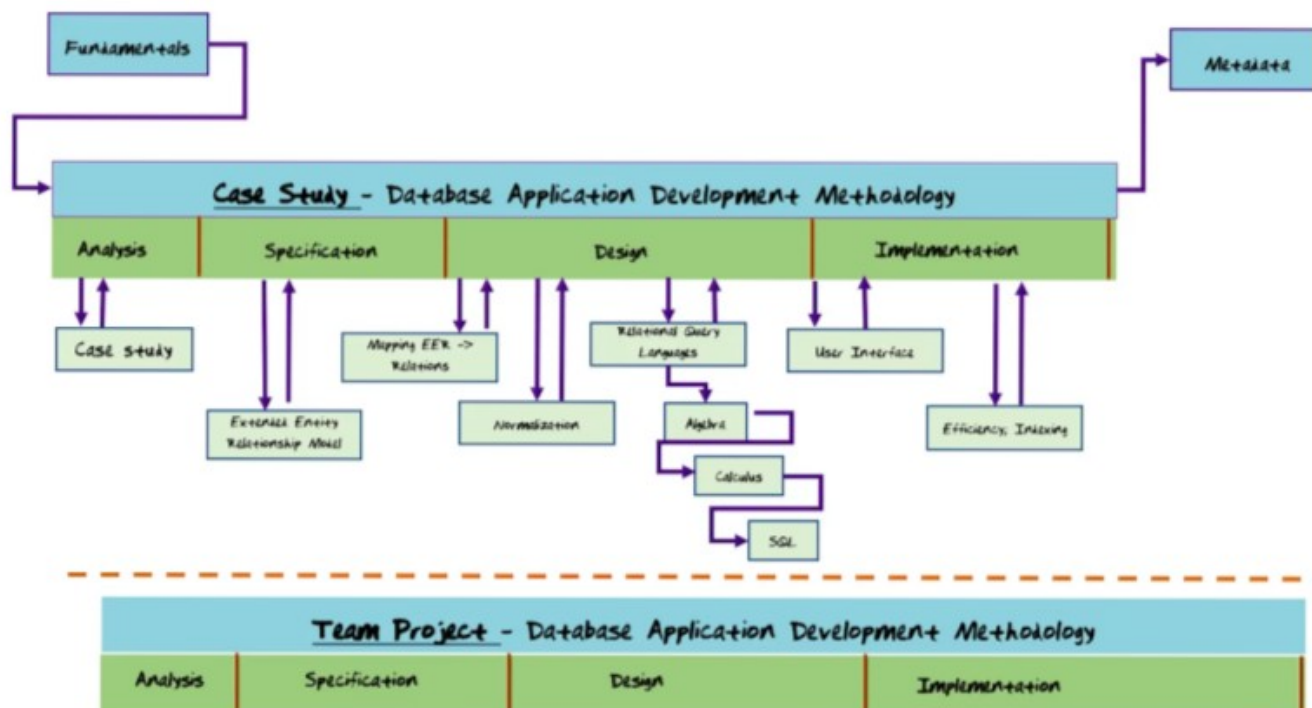


上圖: In database application development methodologies, data is always first. In general software development methodologies, process is often first. So they will concentrate on laying out the class diagrams in just the right way to get the functionality just the right way and then they will hang the data on the declares where they fit. In database development its data first and oce the data is desinged just right, we will hang the processes on where they fit.

上圖中最左邊的輸入是 information provided by the customer (the customer's requirment). 上圖的意思就是: 在 Software Process 的 Analysis 階段, databas 任務對應的就是 Information Flow Diagram, 其餘的類似。

注意本節課(及本 note)之題目即為 Methodology I: ANALYSIS. 所以是 focus on analysis 的。

以下是 6400 Syllabus 中的圖, 就是按上圖來的. 而 analysis, specification, design, implemetation 這四個最初來自哪裡? 自上上圖就知道了, 它們就是 software process 中的幾步啊。



Example Project Description

The project description
represents the customer:



The above figure: I'm gonna go through a project description that represents the customer. If you don't read that description, you won't be able to get anything out of the rest of this course.

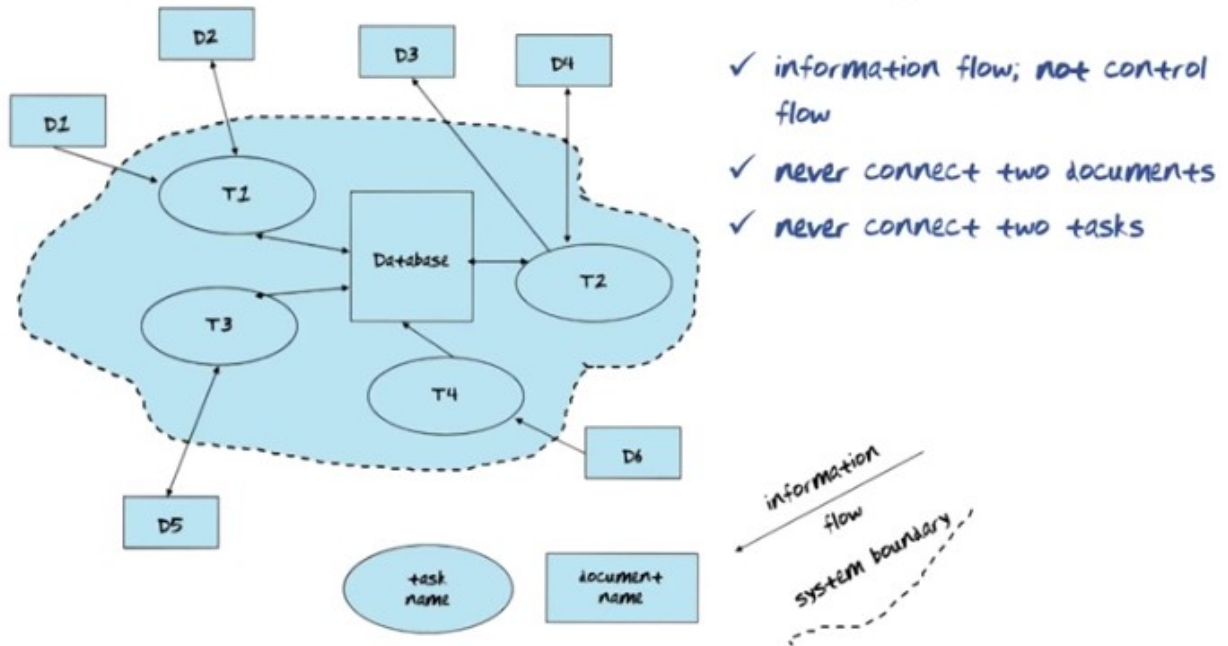
As an example, we're going to use GTA online.

GTOOnline

"a lite social networking site,
for networking socialites."

Simple Networking Application

Analysis: Information Flow Diagram



Requirement: ...Logging In to GTOOnline via the login screen. All users are uniquely identified by his or her Email Address. Providing a valid Email Address and Password combination will log the user into the system. Providing invalid login credentials should display an error message and return the user to the login screen.

The above figure: Notice as the user interacts with the login screen, the information provided is not written into the database as a result of the login process. However, the task that checks the login information will read information from the database to make sure that the user shows &%#@# to login is a valid user and provide the correct email and password. So this is purely an input document.

GTOOnline New User Registration

GTOOnline Lite Social Networking for Networking Socialites

First Name: Michael

Last Name: Bluth

Email: [empty]

Password: [empty]

Confirm Password: [empty]

Cancel Register

All fields are required

Returns to the login screen

Requirement: ...Users who are new to GTOOnline must register first. A **Register** button is provided directly on the login page. Clicking this button displays the new user registration form. After the user clicks **Register**, the system should verify that all fields are filled in, that the **Email Address** has not already been registered, and that the **Password** and **Confirm Password** fields are equal.

The above figure: Notice that the register document is an input document to the system, and as result of interacting with that registration task, the information will be written into the database.

Edit GTOOnline Profile for Michael Bluth

Michael Bluth

Sex: Male

Birthdate: 1988-08-20

Current City: [empty]

Hometown: [empty]

Interests: Tennis, Watching Inception Over and Over Again

Education: Georgia Institute of Technology (College/University), Year Graduated: 1990

Professional: Employer: Google LLC, Job Title: Assistant to the Regional Manager

Add a new interest and refreshes the page

Add another box to the user interface with School and Year Graduated

List available schools and their type

Add another box to the user interface with Employer and Job Title

May be left blank

Requirement: ...All GTOOnline users (except administrative users) have a User Profiles containing basic information about them. After a new user **Registers** with GTOOnline, they should be taken immediately to the **Edit Profile** screen. The basic profile properties include the user's **Sex**, **Birthdate**, **Current City**, **Hometown**, and any number of **Interests**.

The above figure: The Edit Profile screen obviously is going to result in potentially many types of information being written into the database: the personal information, interests, education information, and professional information. But notice that there will also be information that read from the database. For example, because the drop down list for school and the drop down list for employer needs to be controlled in the database to populate the screen.

View GTOline Profile for Michael Bluth

Michael Bluth		View Status Updates View Friends Log Out
Sex	Male	Search for Friends View Pending Requests Edit Profile
Birthdate	1968-06-20	
Current City	Scranton, PA	
Hometown	Beverly Hills, CA	
Interests	Tennis Watching Inception Over and Over Again Seinfeld	
Education		
School	Georgia Institute of Technology (College/University)	
Year Graduated	1990	
School Name	William McKinley (High School)	
Year Graduated	1986	
Professional		
Employer	Dunder Mifflin	
Job Title	Assistant to the Regional Manager	

Search for Friends, View Pending Requests, and Edit Profile are only visible if this is the profile of the currently logged in user

Only show Year Graduated if field is not null

Requirement: ...The profile also contains information about the user's **Education**. The set of available **Schools** and their **Types** is maintained by GTOline. A user can have any number of schools associated with his or her profile and can also provide a **Graduation Date** for each school.

Requirement: ...The profile also contains **Professional** information. The user will select his or her **Employer** from the list and then provide a **Job Title**.

Requirement: ...There are a number of links on the **View Profile** screen:

- Clicking **View Friends** shows the list of friends for this user.
- Clicking **Log Out** signs the user out of the system and shows the login screen.

In addition, the currently logged in user can:

- Clicking **View Pending Requests** to see the list of friend requests that have not yet been accepted or rejected.
- Clicking **Edit Profile** shows the **Edit Profile** screen allowing the user to make changes to his or her own profile.

The above figure: Notice that the view profile screen is not an input to the database. It is an output document from the database, where all the information about the user's profile has been read from the database and written on to this output document. There's of course control information here (左上角的那堆藍字) that leads you to a different screen depending on which link you choose.

Search for Friends

[Back to Profile](#)

Search for Friends

Name

Email

Hometown

Close Search

Search Results

Name	Hometown
Bob Vance	Scranton, PA
Phyllis Lapin-Vance	Scranton, PA

Existing friends should not be shown in the list

Clicking on a name shows the Add Friend dialog box

After clicking search, any relevant results appear here (or on a new page)

Request New Friend for Michael Bluth

Request New Friend for Michael Bluth

Name

Hometown

Relationship

Cancel Send Friend Request

The user provides any value for the relationship

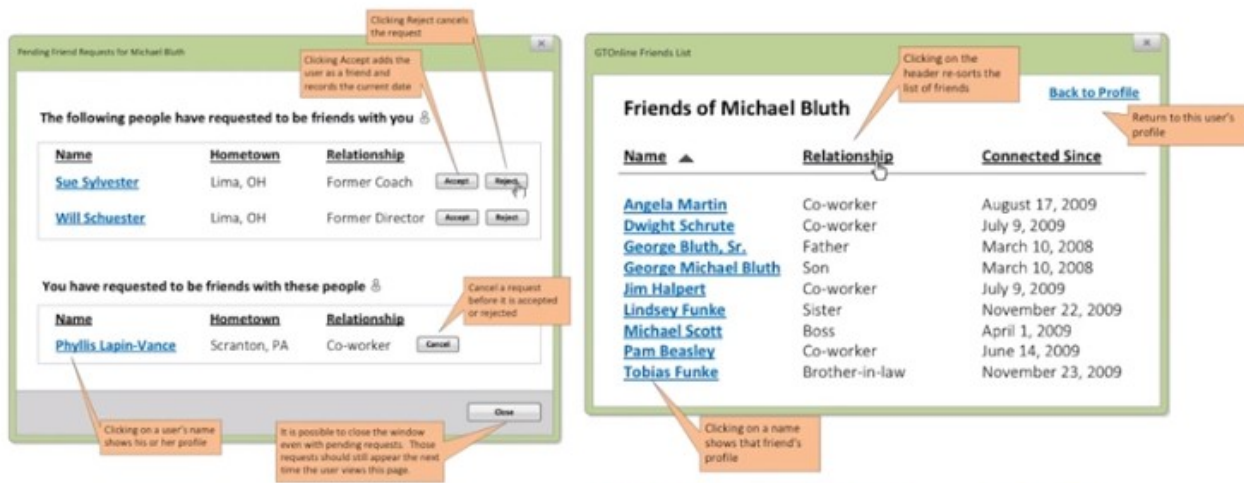
Friend is not immediately added. Instead, a request is sent to the other user.

Requirement: ...Social networks are all about making connections. GTOline allows users to **Search for Friends** and **Connect** to them. There are several steps involved in making a connection with a new friend on GTOline:

- The user searches for a friend based on several profile criteria including **Name**, **Email Address**, and **Hometown**.

•Then, the user submits a **Friend Request** to another user with whom they wish to connect.

The above figure: The search screen is an output document. The request new friend screen is an input document to the system.

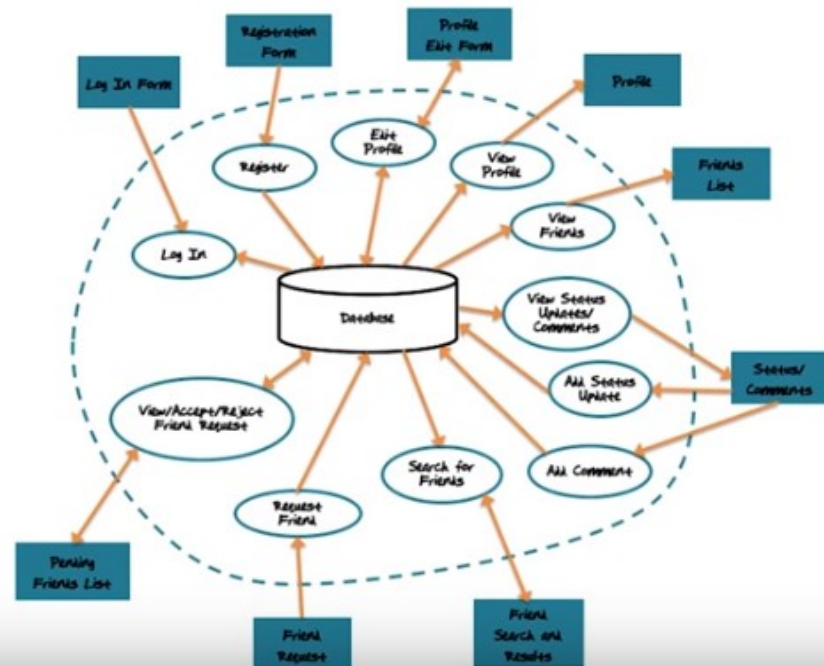


•Finally, the other user receives the friend request and Accepts it or Rejects it.

Requirement: ...Clicking View Friends on the View Profile screen shows the list of friends for this user.

The above figure: The pending friend request screen is both an input and output document. It's an output document from the database because it displays information from the database. It's also an input document to the database because it will cause changes in the database depending on whether you hit the accept or reject button. Of course if you hit the cancel button, it will delete your request to Phyllis for her to become a friend of yours. The friends list form is an output document from the database.

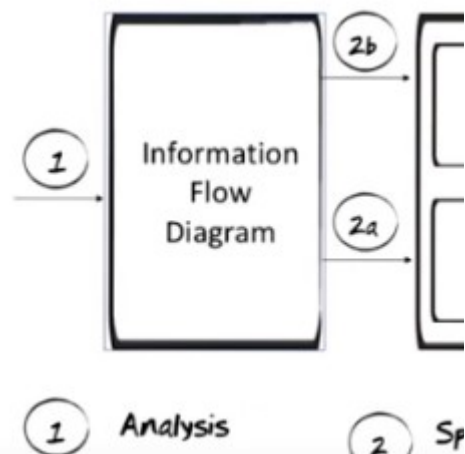
IFD




Use document and task names from the project description in the IFD!

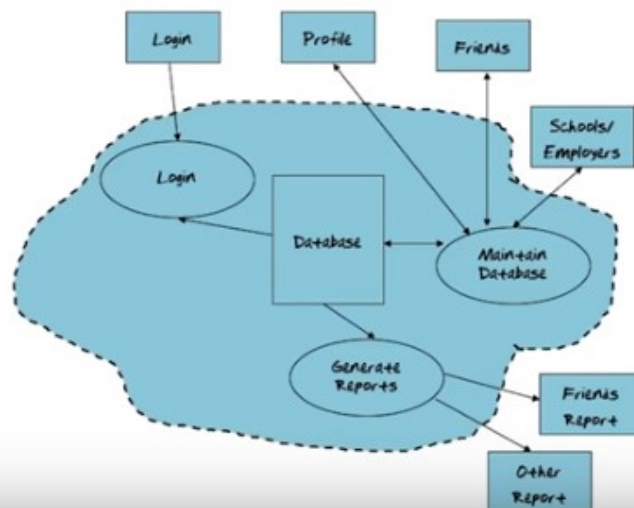
上圖中的 IFD 即 Information Flow Diagram, 見前面的圖(已截圖到下面). The output of the analysis

phase of the database application development methodology is an information flow diagram.



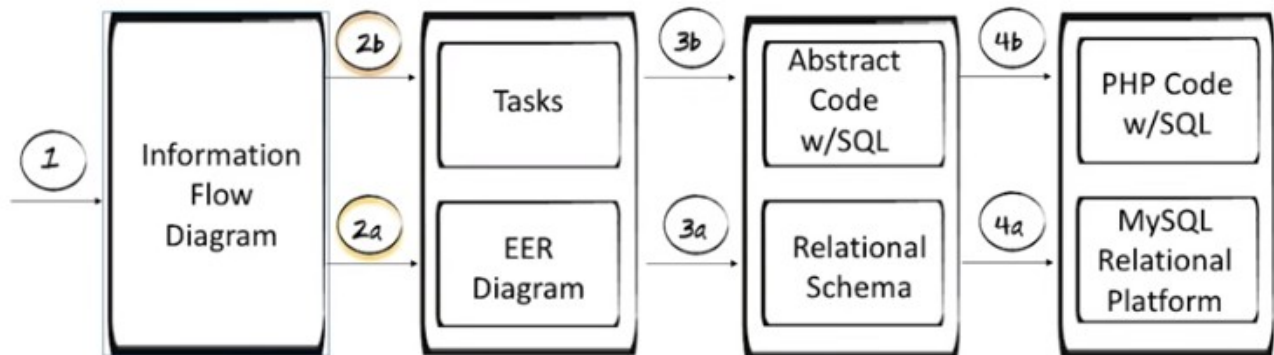
上圖是截的前面的圖, just for convenience to view.

 Don't go there



The above figure: Don't do that. That does not model the future system you are building. 沒做太多解釋.

Specification



上圖的意思就是說下一步是 specification.

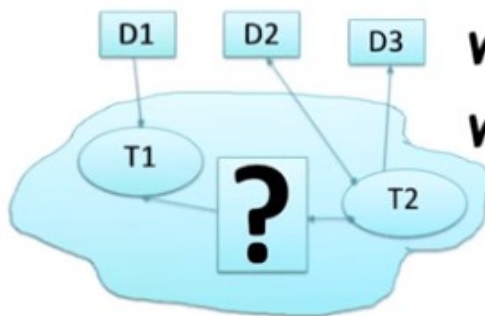
Specification

EER Diagram

Data Formats

Constraints

Task Decomposition



What goes into the database?

What comes out of the database?

- Everything in the database must come from somewhere
- Everything on the input documents must go somewhere
- Everything in the database must be used for something
- Everything on the output documents must come from somewhere



上圖：Before we go any further, we need a small detour to study an additional database tool or technique.