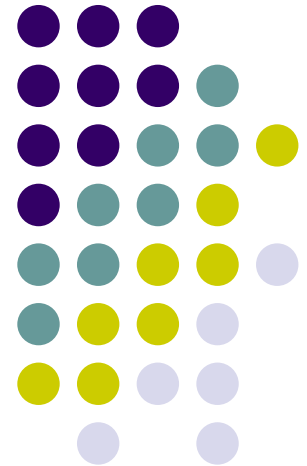


# Client / Server

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Chulalongkorn University





# What is Client/Server?

**The client computer sends a request for service to the server over a network.**

**If the client's request is appropriate, the server provides the service.**

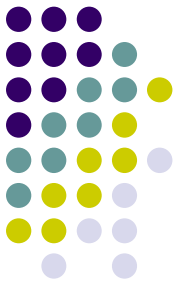


**Client**

**Networks**



**Server**



# Why Client/Server?

- Shared data
- Shared resources
  - Storages
  - Printers
- Security control



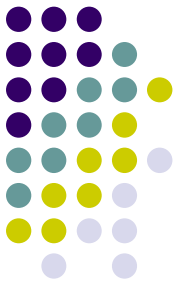
# Popular Servers

- Web Server
- Database Server
- File Server
- App Server
- Authentication Server (Radius / LDAP)



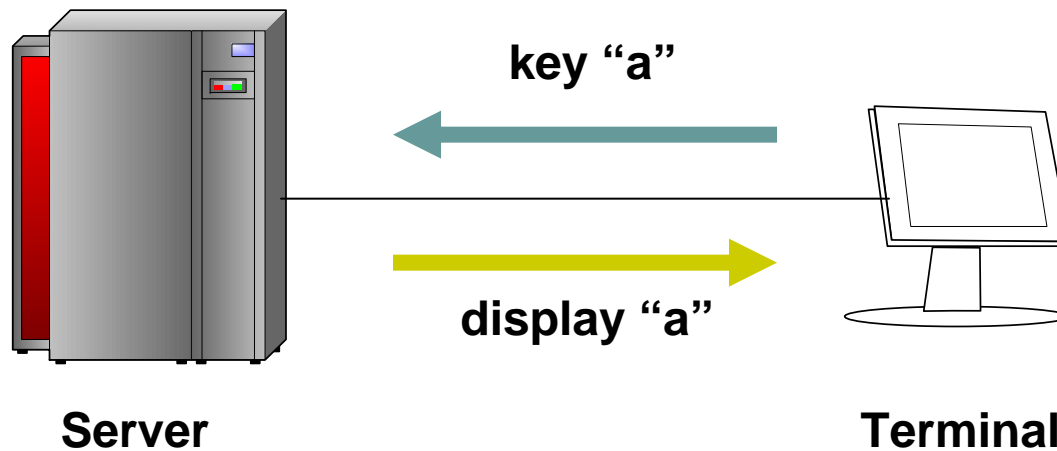
# Functional Components

- Presentation Logic: User Interfaces.
- Business Logic: Application Programs and Services.
- Data Logic: Databases.



# Dumb Terminal (single-tier)

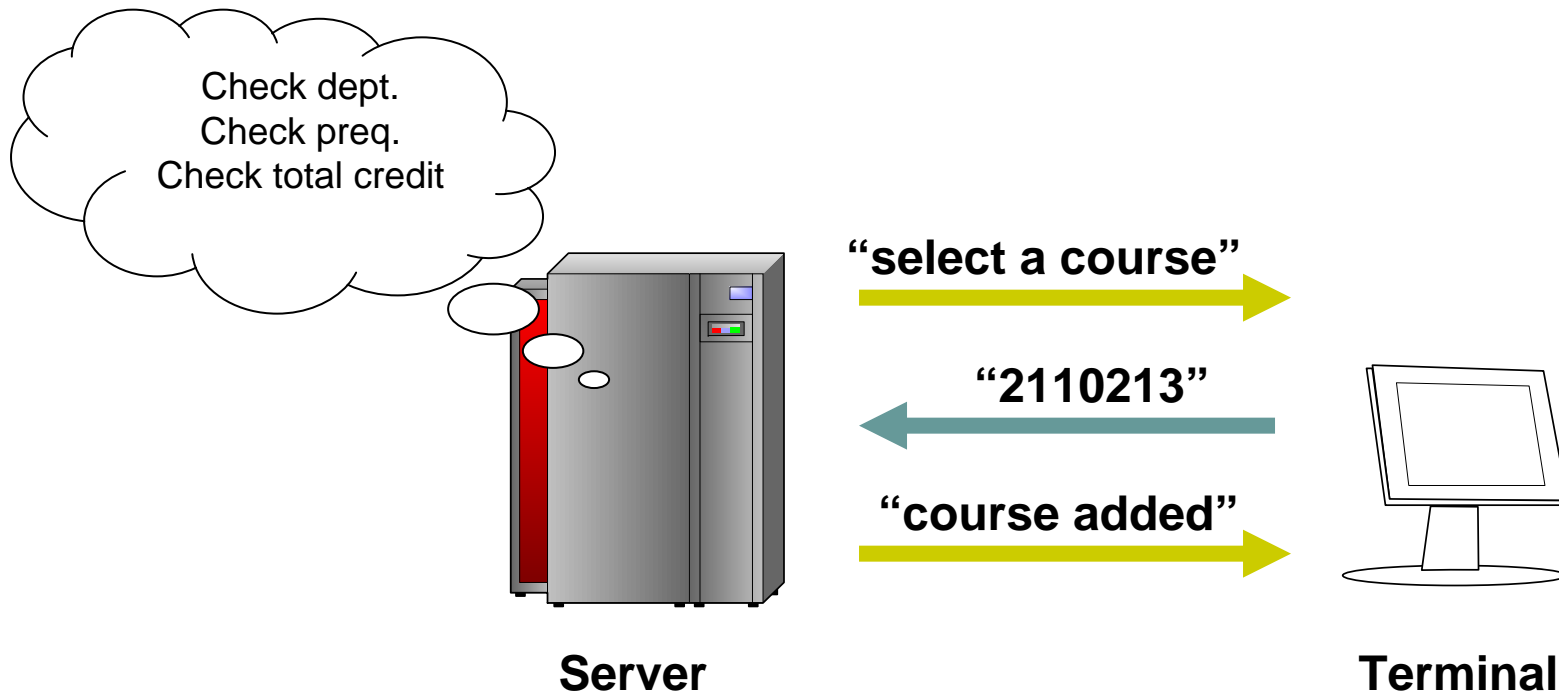
- Server with “dumb” terminals.



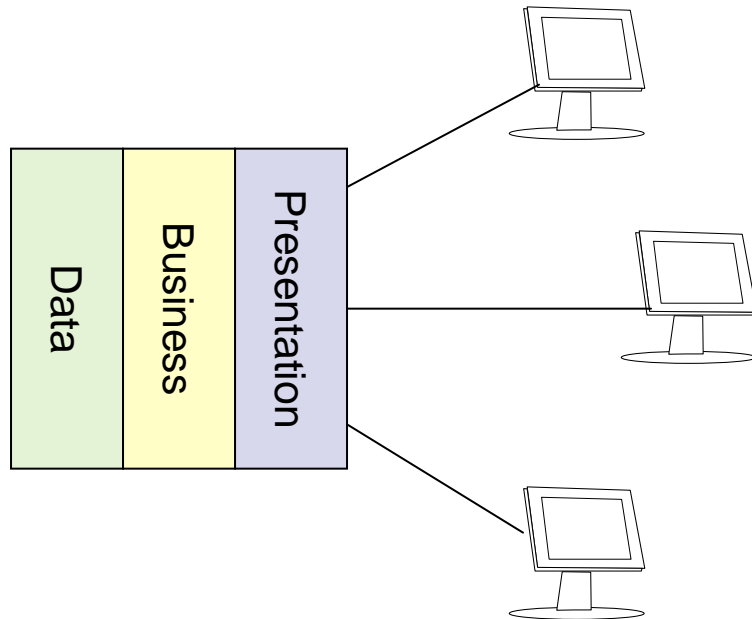
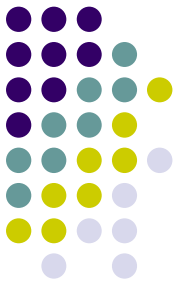


# Example: Registration System

- Add a course:

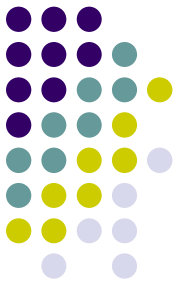


# Pros and Cons



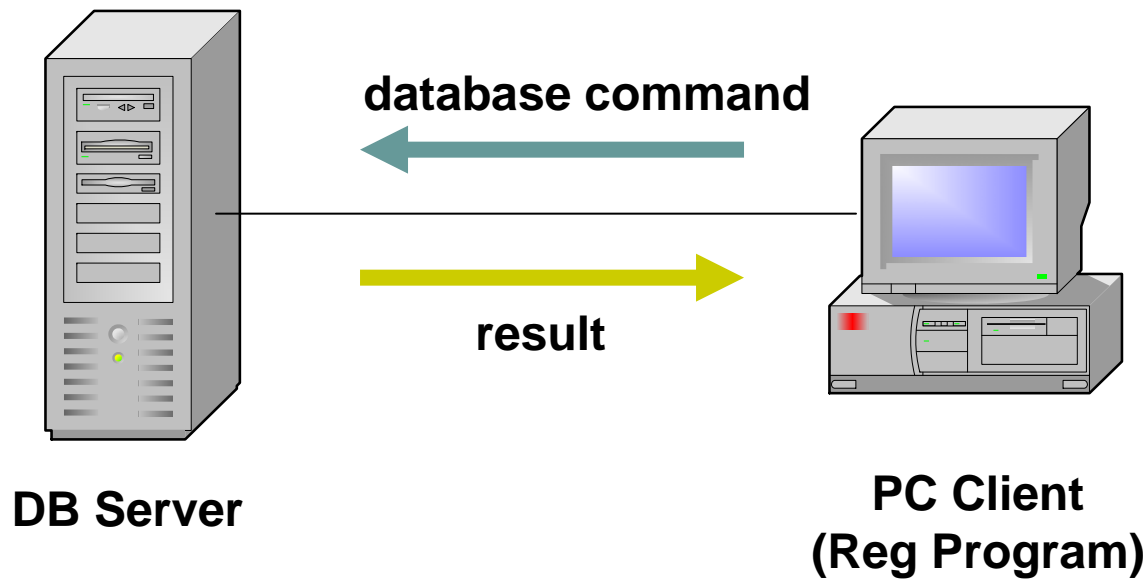
- Pros:
  - Single place, easy to control.
- Cons:
  - Expensive, big spaghetti bowl, inflexible, lack of applications, take long time to develop.





# Dumb Server (Two-Tier)

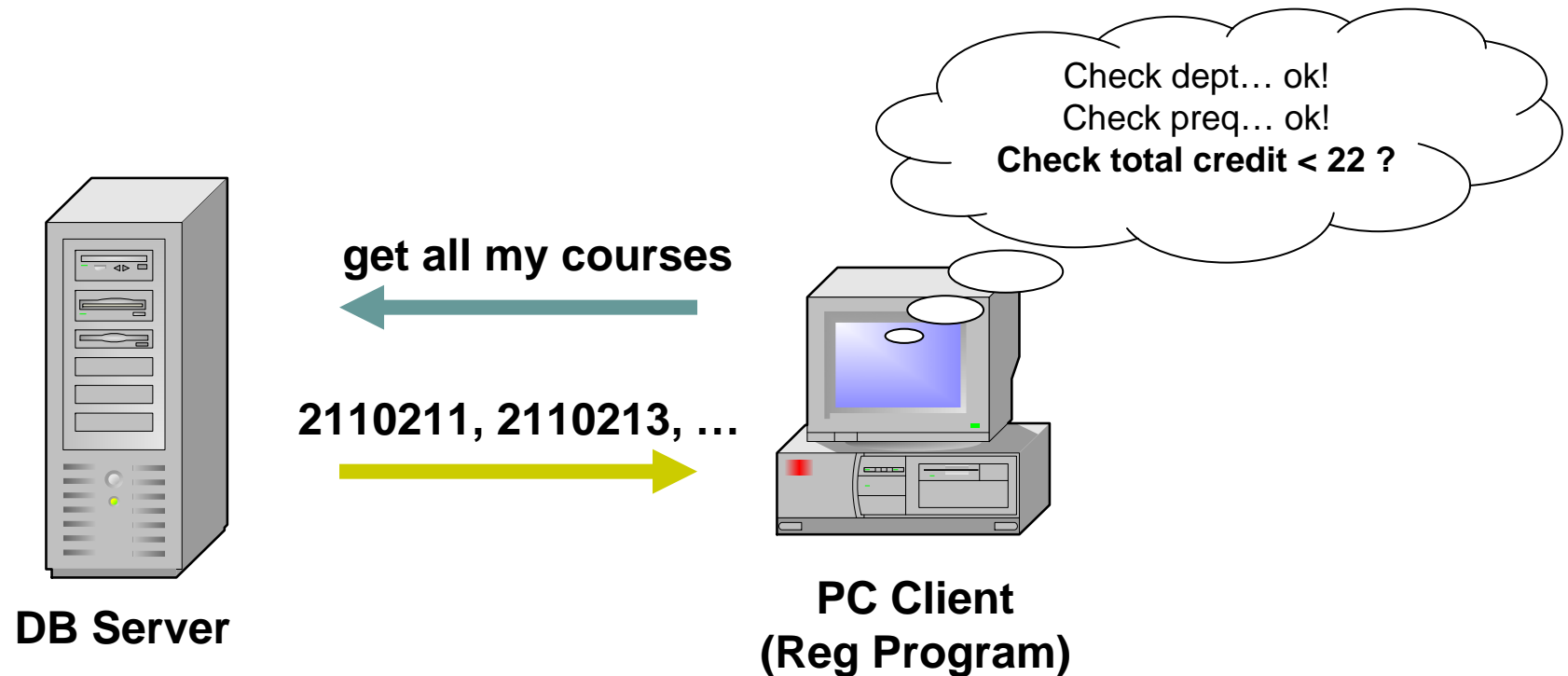
- Database server with fat clients
  - VB / Developer 2000 client program + SQL database.



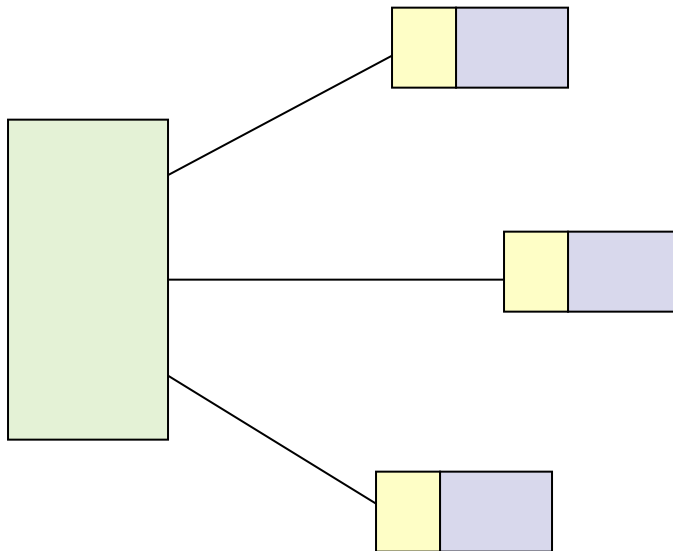
# Example: Registration System



- Add a course:



# Pros and Cons

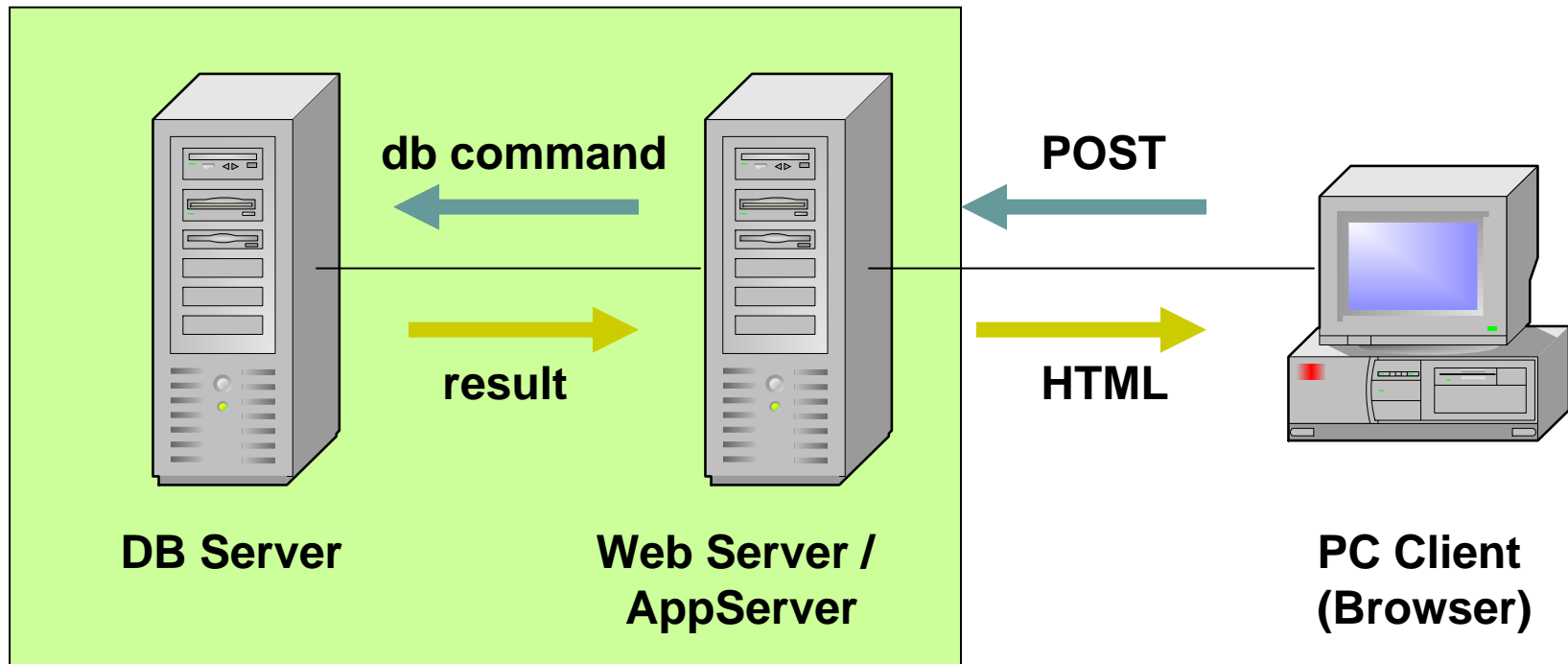


- Pros:
  - Simple to develop (initially).
- Cons:
  - Poor scalability.
  - Poor manageability and deployability.

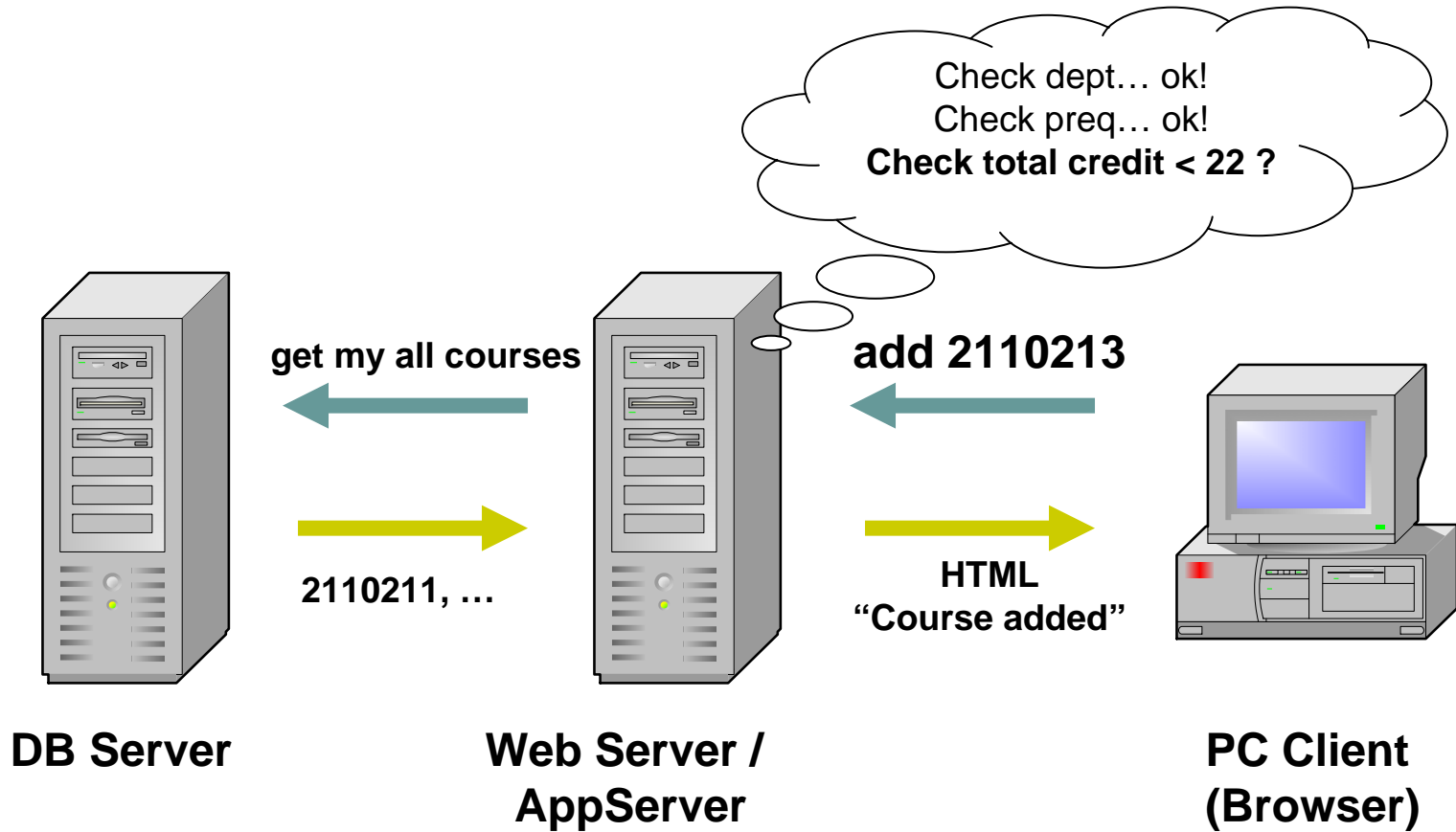
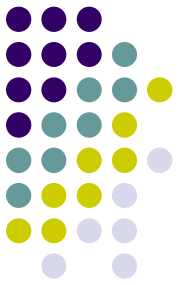


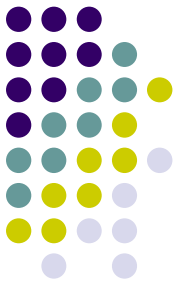
# Shared Processing (Three-Tier)

- Database + Web server / App server + Browsers (Thin clients).

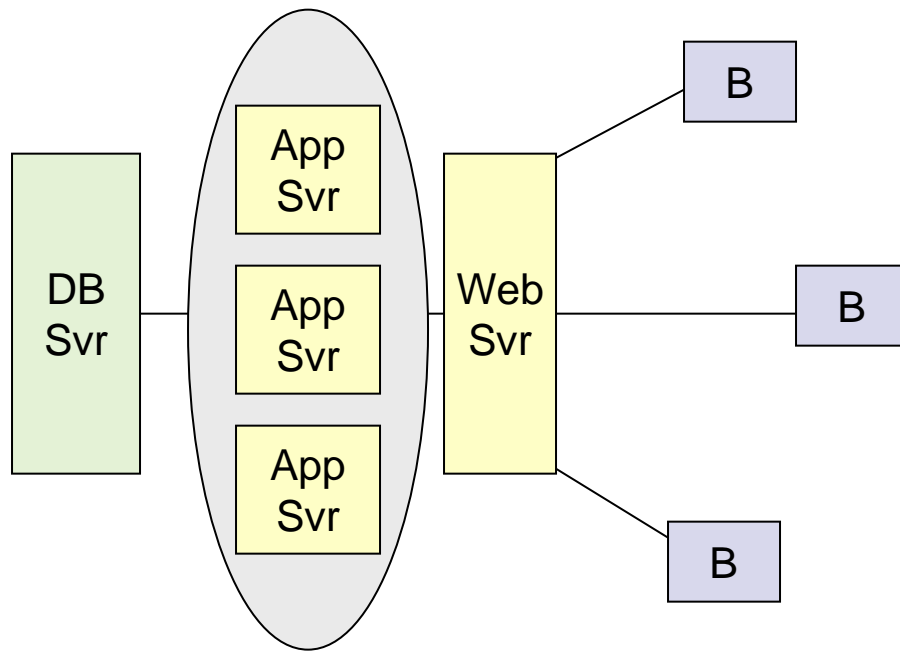


# Example: Registration System





# Pros and Cons



- Pros:
  - Scalability.
  - Flexible.
  - Simple to manage.
  - Great for integration.
- Cons:
  - Slightly difficult to develop (initially).