

ICS 362 Distributed Systems

Distributed Systems: Part 4

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Client Server Architectures

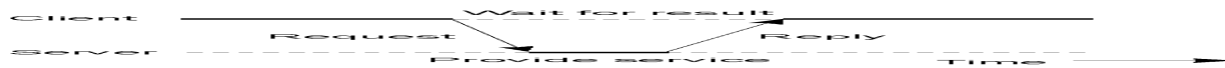
- A popular distributed system model is the client server architecture.
 - Clients represent the machines users use to request services offered by servers.
- Client Server interaction is a simple, request-reply relationship, where clients send a request for a service, including appropriate inputs to the process, the server then replies with the completed service.

Client Server Architecture

- Client/Server architectures often use a connectionless protocol, assuming the underlying network is reliable (such as a LAN).
- Connectionless protocols rely on messages not getting lost or corrupted.
 - Suppose the request was “Transfer 100,000 from my bank”
 - Or “What is my bank balance?”
- If there is no response from the server, messages are usually resent, without knowing if the request was lost, or slow.

Client Server

General interaction between a client and a server.

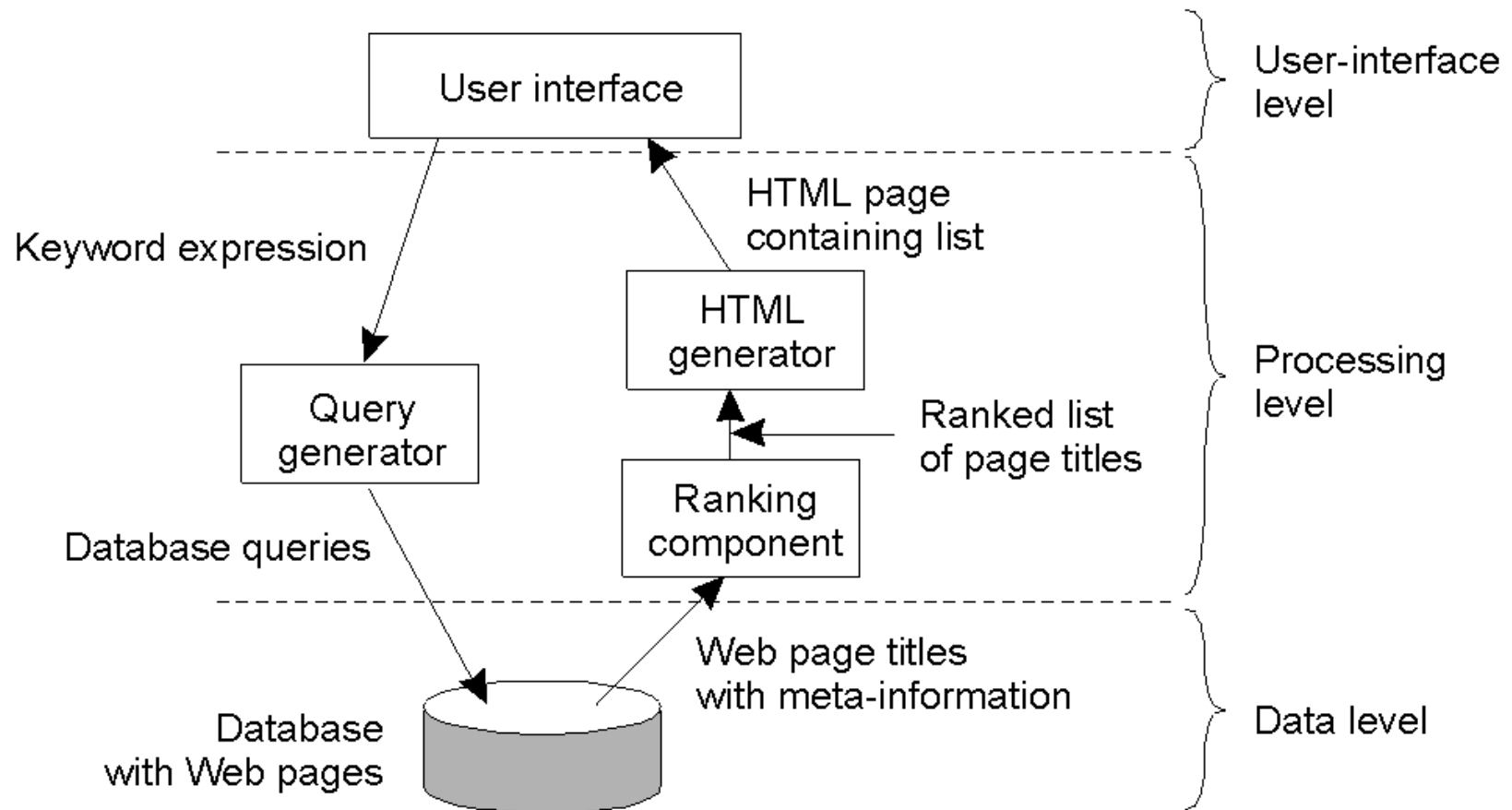


Client Server Architectures

- There are several layers in a client server architecture, with choices about where processes should occur;
 - User-Interface Level
 - Processing Level
 - Data Level
- Choices have to be made, particularly whether the processing level should occur on the client or the server - or possibly on a further tier, in a multi-tiered architecture.

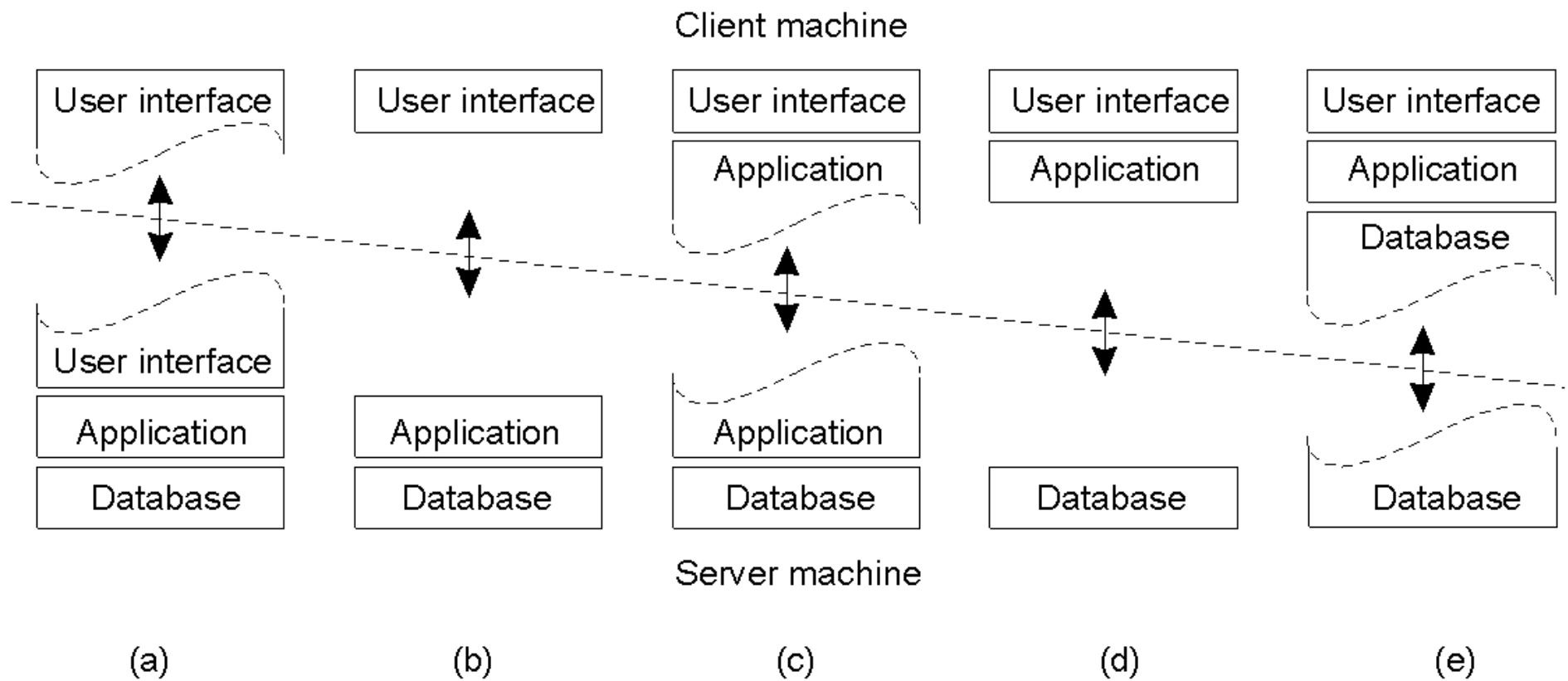
Processing Levels

The general organization of an Internet search engine into three different layers



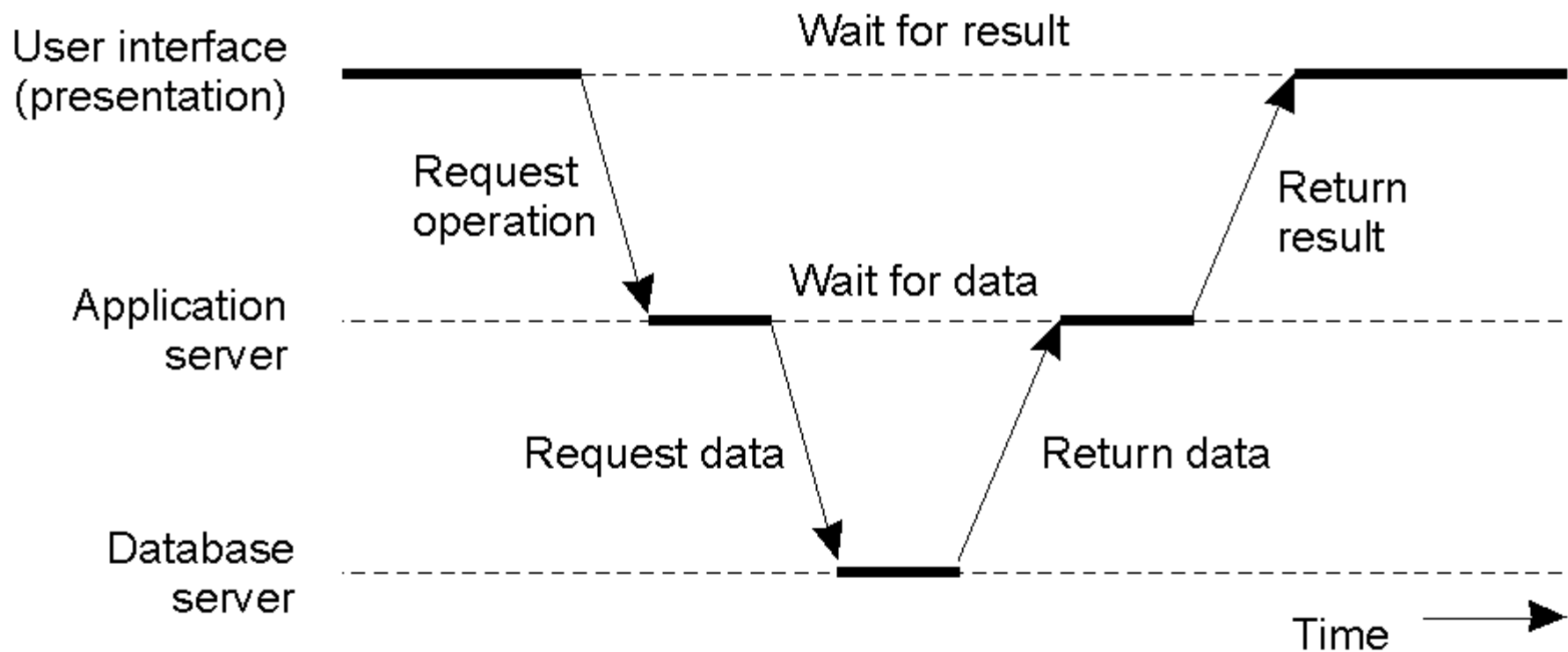
Multitiered Architectures

Alternative client-server organizations (a) – (e).



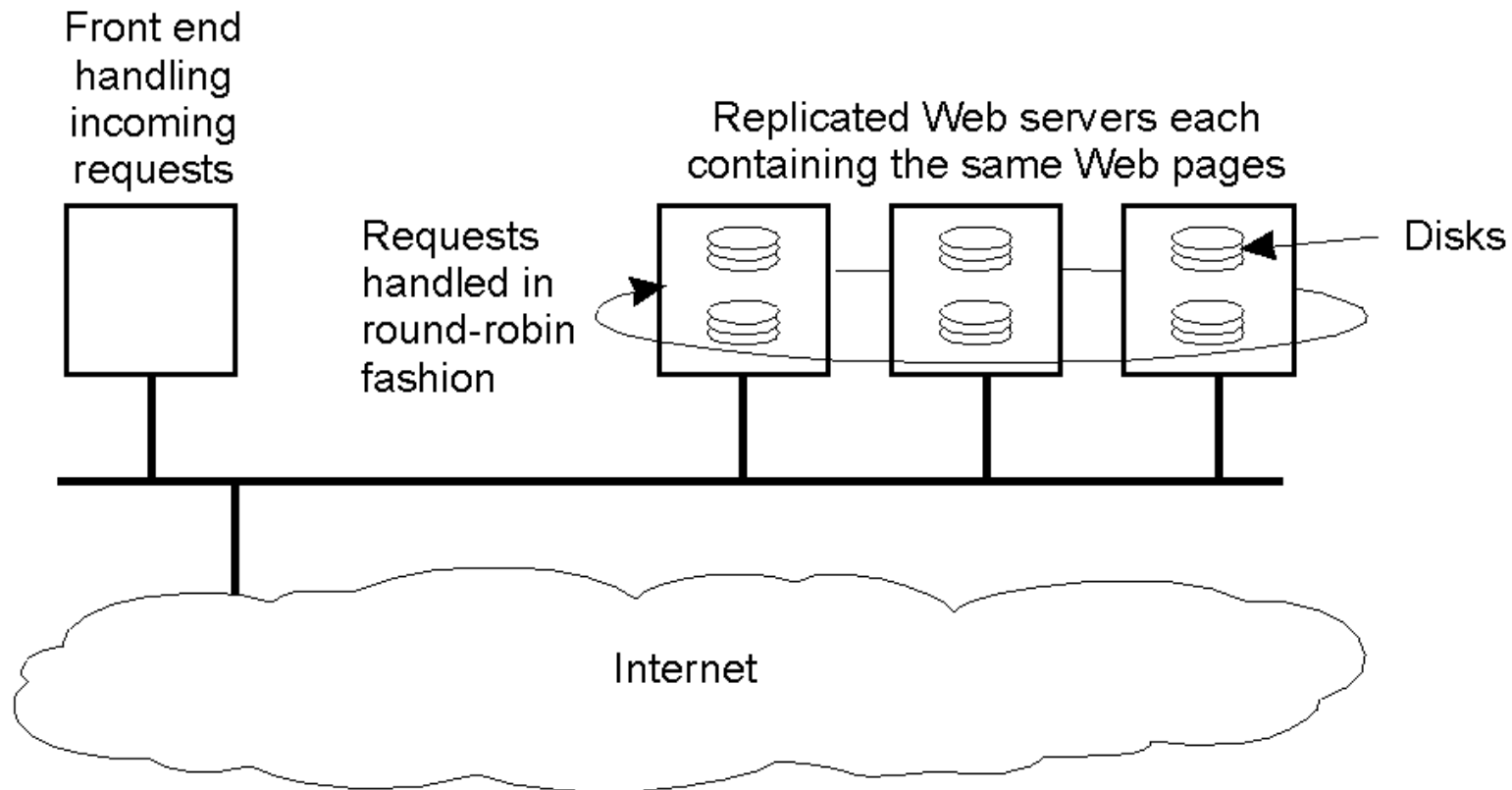
Multitiered Architectures

An example of a server acting as a client.



Horizontal Architecture

An example of horizontal distribution of a Web service.



Real-life examples

- Look at the following examples of distributed systems...
- Are they DOS, NOS or Middleware?
- What type of architecture do they have?
- Where do the three levels of processing occur?

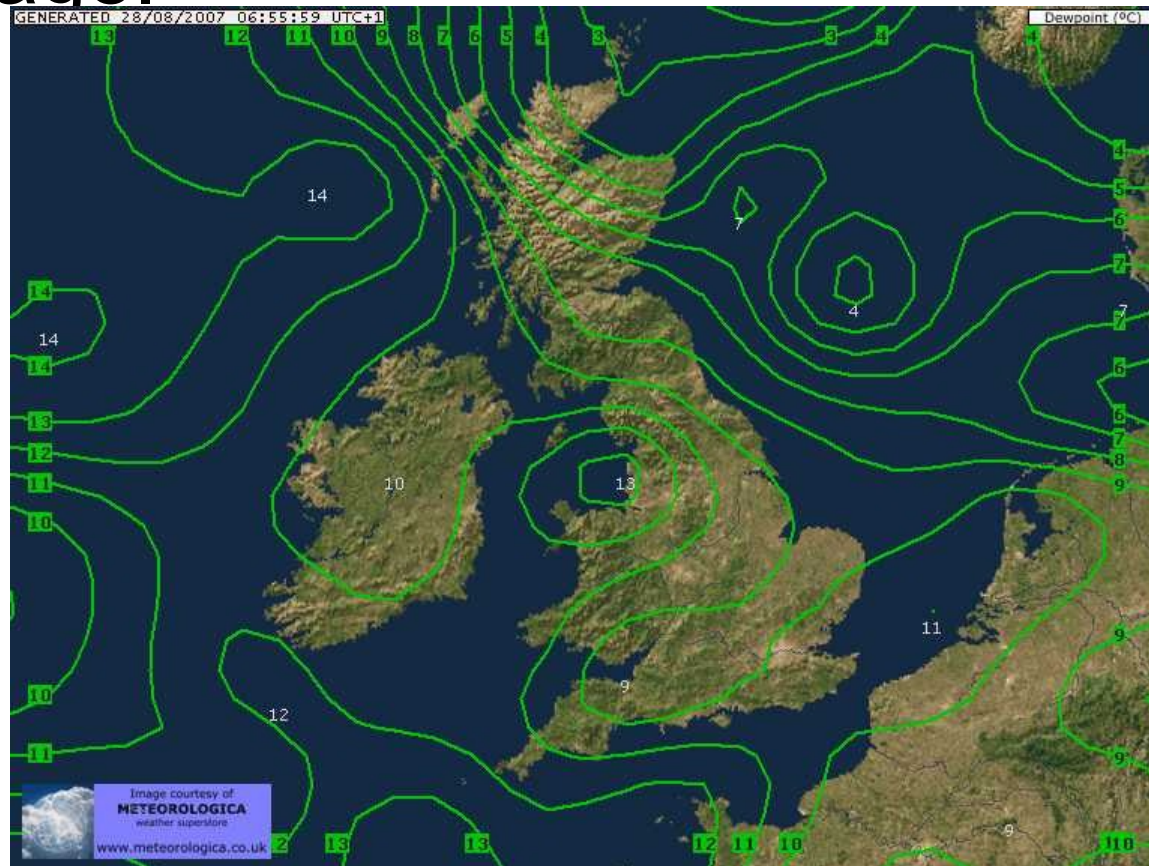
British Airlines Cargo Handling System

- Links over 40,000 computer terminals in 32 countries, the computers do not have to be the same type or OS.



UK Meteorological Office weather prediction system

- This system is based in Exeter UK and uses multicomputers to distribute data processing and storage.



Payap University library catalog system

- This system allows users on any of the terminals in the library building to search for books.



Homework!



For next lesson find:

- A real-life example of a distributed system.
 - Give the class a short presentation on this system
 - Include details such as:
 - transparency
 - openness
 - scalability
 - NOS/DOS/Middleware?
 - network architecture