

B345 Internet Science and Technology

Week 10 lecture 1

Today's Lecture Learning Objective

- Understand the concepts and relationships between *data*, *metadata* and *programs* as it relates to the Internet.

Data and Programs

- Classical Computer Science (from Wirth):
 - Data Structures + Algorithms = Programs
- Are the distinctions still clear cut?

Data

- Knowledge, Information and Data.
- The point of the Internet is to transfer data?
 - What about Creating, Modifying, Processing, Storing?

Databases

- Static and Dynamic databases.
- Data Models
 - Hierarchical
 - Network
 - Relational
- Databases on the web.
 - On the back-end.

Programs

- All the operations on data are done by 'programs'.
- Programs at multiple levels
- Modern technologies (eg. .NET and J2EE) are built on creating infrastructure to support more sophisticated programs.
 - Programs to support programs.

Tiers in the IT Infrastructure

- 3-tier Web Applications.
- N-tiers.
- Middleware
 - Tiers mainly to enable modularity and integration.

MetaData

- The emergence of metadata.
- Support for programs (or "services") offered over the Internet.

MetaData

- Some examples of metadata schemes:
 - Dublin Core
 - Resource Description Framework (RDF)
 - <http://staff.library.mun.ca/staff/toolbox/standards.htm>

From www.it.murdoch.edu.au

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
    "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
...
<meta name="DC.Title" content="School of Information Technology
Courses, Murdoch University" />
<meta name="DC.Creator" content="Webmaster" />
<meta name="DC.Subject" content="Home Page of Information
Technology Programme at Murdoch University" />
<meta name="DC.Description" content="Home Page of Information
Technology Programme at Murdoch University" />
<meta name="DC.Publisher" content="Murdoch University" />
<meta name="DC.Format" content="HTML" />
<meta name="DC.Identifier" content="http://www.it.murdoch.
edu.au/index.html"/>
<meta name="DC.Language" content="English" />
<meta name="DC.Type" content="Text"/>
...
```

What is Data, MetaData and Program?

- Consider a web page containing, HTML, <META> tags, JavaScript and PHP.
 - Can you tell when something is data, metadata and program?