Lecture 7: Introduction to the Demo Information Processing System
(03-17-2010)

(Reading: Lecture Notes)
<u>Lecture Outline</u>

```
1. Introduction
2. The front end
3. The interfaces
4. The back end
5. Notes
```

1. Introduction

(1) Motivations

    a. An example application of dynamic HTML contents

    b. Integration of all concepts & techniques introduced in the class so far

    c. Demo is implemented in three flavors

        (a) The three flavors are:
            · C/C++ plus Perl
            · Java Servlet, assisted by Java JSP
            · MySQL plus PHP

        (b) These different flavors are compared and their advantages and weaknesses are contrasted

(2) The overall structure: Fig.19.

    a. The demo is a typical two-tiered application. It can be easily a three-tiered application if access of other remote database servers are allowed.

    b. The application has three portions:

    (a) The front end: the HTML pages

    (b) The interface: CGI or Java Servlets

    (c) The back end: embedded (Oracle) C/C++ programs, or Java servlets, or PHP programs

    c. The interface and the back end can be an integrated part with certain web tools and languages.
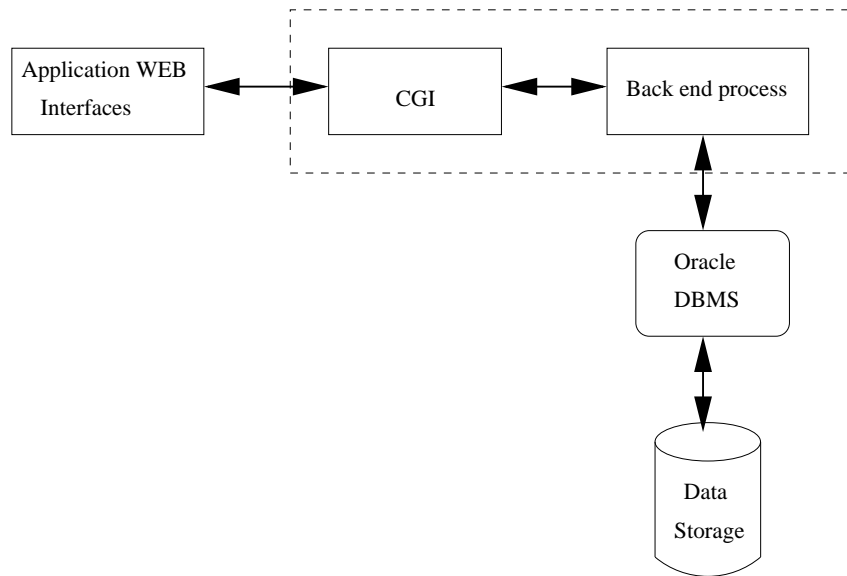
2. The front end: the HTML pages

Figure 19: Structure of the demo application

(1) The front end consists of a collection of HTML pages. These pages are the *faces* of the application.

    a. The HTML pages can be static or dynamic, depending upon the nature of the specific pages.

    b. The generation of dynamic pages depends on the interface and sometimes the back end used.

(2) Notes: design of qualigy HTML pages is not part of this class. It involves WEB programming. To ome degree good WEB page design also requires in depth human factor knowledge.

3. The interfaces: the CGI/Servlet/JSP programs/scripts/PHP scripts

(1) The interfaces function as bridges that connect the front end and the back end.

    a. The interface can be a separate part of the whole application (such as Perl CGI), or be an integrated part of the application (normally part of the backend).

    b. Regardless of the format of the interface, its functionalities are the same.

(2) Besides Perl, other CGI scripting languages include PHP (Hypertext Preprocessor) and JavaScripts.

4. The back end: (Oracle Pro*) C/C++ programs/Java Servlets/PHP programs

(1) The back end is mainly responsible for performing the *information processing* action.

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(2) Depending on the nature of the interfaces, the back end may include components that perform the function of the interface to dynamically format HTML pages.

5. Notes

Lecture 8: The C++/Perl Version of the Demo Information Processing System
(03-17-2010)

(Reading: Lecture Notes)
<u>Lecture Outline</u>

```
1. Introduction
2. Microsoft Visual Studio .NET
3. The Windows version
4. UNIX version
5. Notes
```

1. Introduction

  (1) This flavor of the application employs Perl as the CGI tool, and C++ as the back end processing language.

  (2) The Oracle Pro C/C++ is used as database access/processing language.

2. Microsoft Visual Studio .NET and Microsoft Visual Studio 6

  (1) Microsoft Visual Studio .NET

      a. The user interface

      b. Create a project

      c. Add include directories

      d. Add library files

      e. Build a project

  (2) Microsoft Visual Studio 6

      a. The user interface

      b. Create a project

      c. Add include directories

      d. Add library files

      e. Build a project

3. The Windows version

  (1) Structure of the application

(2) The window version of Apache HTTP server

(3) The HTML pages

(4) The CGI scripts

(5) The C++ programs

      a. The structure: data structures and classes

      b. The header files

      c. The C++ files

4. The UNIX version

(1) Structure of the application

(2) The UNIX environment for Oracle Pro C/C++ applications

(3) The UNIX version of Apache HTTP server

(4) The HTML pages

(5) The CGI scripts

(6) The C++ programs: same as in windows version

Lecture 9: The Servlet/JSP Version of the Demo Information Processing System
(04-09-2009)

(Reading: Lecture Notes)
<u>Lecture Outline</u>

```
1. Introduction
2. Java Servlet, JSP, and JDBC
3. Java Servlet overview and architecture (Chpt.9, Deitel)
4. Handling Servlet get and post requests
5. Java JSP overview and architecture (Chapter 10, Deitel)
6. Apache Tomcat Java Servlet container
7. Servlet version of the demo on SUN Solaris UNIX
8. Servlet version of the demo  on Windows
```

1. Introduction

(1) The advantages and problems of CGI scripts based information processing

    a. Main advantages

      (a) Flexible CGI scripts: each script can be easily modified and updated without affecting other parts.

      (b) The backend programs can be written in many different types of languages efficiently.

    b. Disadvantages

      (a) Complex CGI scripts.

      (b) Non-trivial interactions between CGI scripts and the backend programs.

(2) Advantages of Java Servlets

    a. Unified interface and backend program.

    b. Portability of Java makes it more appealing.

(3) Levels of networking utilities

    a. Basic networking APIs: BSD socket API. In Java, the corresponding API is provided by the classes and interfaces of the **java.net** packages.

    b. Higher level networking facilities: RPC and RMI

    c. Servlets: special high-level facilities that extend server capabilities in client-server applications.