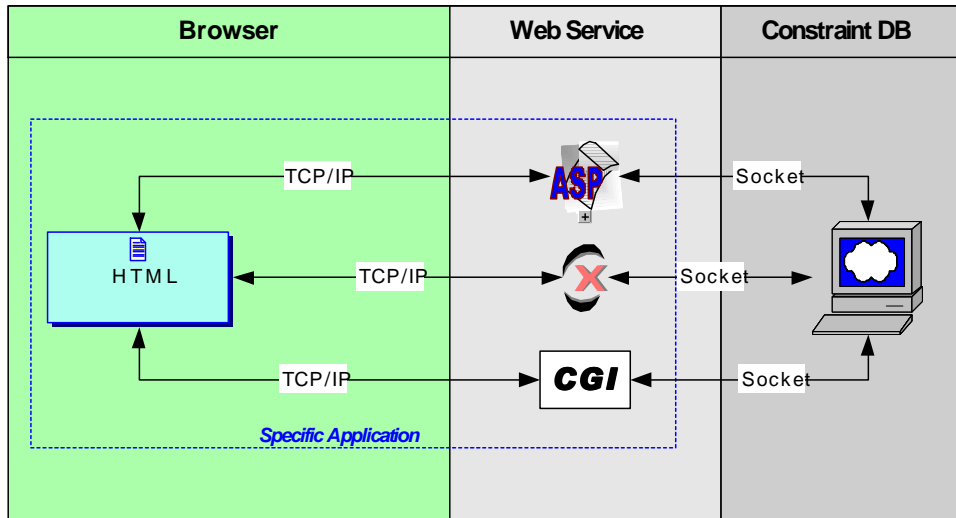


Implementing Web Applications in MLPQ System

Shasha Wu (shwu@cse.unl.edu)

I. Designing web applications in MLPQ System

1. Designing Infrastructure.



2. Responsibilities for three tiers:

Browser	Web Service	CDB
<ul style="list-style-type: none"> • User interfaces. • Send user's requests to Web Server. • Accept results from Web Service. • Display the results. 	<ul style="list-style-type: none"> • Accept requests from the browser. • Parse the request to CDB acceptable command and arguments. • Send commands to CDB. • Accept result from CDB. • Explain the result (Optional) • Return result to Browser. 	<ul style="list-style-type: none"> • Accept commands and arguments from Web Server. • Activate related operations according to the command and arguments. • Return the results to Web Service.

3. Commands and arguments for CDB:

Command	Arguments	Actions on CDB	Result

Open	<user> <filename>\$	Create a view for the user and open a CDB data file.	0 (success) 1 (fail)
Close	<user> <filename>\$	Close the view of the user.	0 (success) 1 (fail)
SQLBasic	<user> <filename> <relation name> #<select>#<from>#<where>\$	Execute a SQL query on the user's view.	File.txt# 1 (fail)
SQLAggregate	<user> <filename> <relation name> #<select>#<from>#<where> #<group>#<having>\$	Execute a SQL query on the user's view.	File.txt# 1 (fail)
SQLSet	<user> <filename> <relation name> #<select1>#<from1>#<where1> #<set_op> #<select2>#<from2>#<where2>\$	Execute a SQL query on the user's view.	File.txt# 1 (fail)
SQLNested	<user> <filename> <relation name> #<select1>#<from1>#<where1> #<nest_op> #<select2>#<from2>#<where2>\$	Execute a SQL query on the user's view.	File.txt# 1 (fail)
Datalog	<user> <filename> <datalog string>\$	Execute a Datalog query on the user's view.	file.txt# 1 (fail)
Include	<user> <filename> <relation name> <color>\$	Highlight the relation by its name and assign a color for it in the view.	0 (success) 1 (fail)
Clear	<user> <filename>\$	Deselect all relations	0 (success) 1 (fail)
GetImage	<user> <filename>\$	Copy the image of the view in screen and save to disk.	File.bmp# 1: fail

ColorRelation	<user> <filename> <relation_name>\$	Do color relation on given relation.	
Zoom	<user> <filename> <x> <y> <w> <h>\$	Zoom the image.	
GetAnimation	<user> <filename> <Start> <End> <Step>\$	Generate serious animation images	

*color: 0=black; 1=red; 2=green; 3=blue.

The default environment settings are saved in mlpq_nt.cfg file and the values of the settings are displayed in following table. The system administrator can modify these settings in the file to configure the server.

Name and Value	Description
WorkDir = "c:\inetpub\wwwroot\dbs\",	Define the directory to load constraint database files by the server.
OutPut = "c:\inetpub\wwwroot\dbs\",	Define the directory for the server to output its result file.
Port = "2222".	Define the value of socket port

4. Sample codes in middle tier:

```

Open Sam Police.txt$
SQLBasic Sam Police.txt view1#Contains.Street, Contains.x, Contains.y#
    Contains# Contains.Street= "Vine"$
Datalog Sam Police.txt view2(id, x, y):- Contains(id, x, y), id="Oak"$
Include Sam Police.txt Contains 0$
Include Sam Police.txt view1 2$
Include Sam Police.txt view2 1$
GetImage Sam Police.txt$
ColorRelation Sam test6.txt test6$
Zoom Sam test6.txt 300 20 100 60$
GetAnimation Sam torpedo.txt 0 25 1$

```

II. Implementing the Web Application

1. Server Installation and Implementation

- 1) Get the MLPQ Web Access package and extract mlpq_nt.exe to any local directory.
- 2) Extract w3Socket.zip and install it to any local directory.
- 3) Install **IIS** (Internet Information Server) and **PWS** (Personal Web Server) if they are not available in your machine. IIS 5.0 is not a default installation in Windows 2000 Professional. But they are all included in your Windows Install CD (Same situation in Windows XP Professional). You can install them from “**Start**” → “**Settings**” → “**Control Panel**” → “**Add/Remove Programs**” → “**Add/Remove Windows Components**”. You can find the **IIS** option from the component list box. Selecting IIS from the box and click “**Details**”, you can find “**Personal Web Manager**” item in the component list. Make sure you already checked it and click “**OK**” to continue the installation. When installing PWS, please use the default settings and set the root directory to “c:\inetpub\wwwroot”. (Notice: Windows XP Home version does not support IIS and PWS, so you can not run your web server in a machine that only has Windows XP Home operating system.)
- 4) If you already installed **IIS** and **PWS** but the root directory is not the same as we asked. You can change the root setting through the **PWS** manager, which can be loaded from “**Start**” → “**Settings**” → “**Control Panel**” → “**Administrative Tools**” → “**Personal Web Server**”. There are three choices on the left side of the **PWS** window. Please select “**Advanced**” from them. Or you can also select it from the “**View**” menu. In the advanced view, you can

see a “**Virtual Directory**” box on the top and three buttons on the right of the box. Select “<**Home**>” item in the box and click button “**Edit**” to change the root directory.

- 5) Extract wwwroot.zip to “c:\inetpub\wwwroot”.
- 6) Create a sub-directory “\dbs” under “c:\inetpub\wwwroot” and copy police.txt to the directory.
- 7) Run mlpq_nt.exe and select “listen” item from its “help” menu.
- 8) Make sure the **PWS** service already started up in your server. To check the status of **PWS**, you can open the **PWS** manager from “**Start**” → “**Settings**” → “**Control Panel**” → “**Management Tools**” → “**Personal Web Server**”.

2. Client Execution

- 1) Open IE in client machine.
- 2) Input the Server's IP address followed with “login.html”. For example:
"http://139.1.2.3/Login.html" or "http://localhost/Login.html".
- 3) Input a user name to login.
- 4) Do what you want by the function buttons in the bottom.
- 5) If you run the mlpq_nt.exe and the browser at the same machine, please make sure the MLPQ window are not covered by any other windows when you are querying. Otherwise, it may return blank graph. You can minimize the MLPQ window before you do the queries in your browser. The MLPQ will automatically popup after you sent out your queries and make sure you can get the correct answer.