Organizing Project Code for Digital Library Applications

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Target Audience
Target Achievement
The Way We’ll Travel

- Alleviating the worst pain first
- Drawing out principles
- Looking at Patterns
- Looking at Antipatterns
- Applying to Digital Library projects
The Way We’ll Travel
Escaping the Hazards
Escaping the Hazards

- Intermixed user interface and program code
- Dynamic data delivery throughout project
- Data calls throughout code
- Co-mingled more or less secure code
- Personal coding “conventions”
Escaping the Hazards

Doing anything and everything anywhere and everywhere as the need arises, without careful forethought, and with an inability to adapt to the unexpected as needs evolve.
Project Parts

- User interface
- Data handling
- Program work
- Managing the "mechanics"
User Interface
Witness to the Early American Experience

New York City has always played a central role in the history of the United States. The century and a half between the establishment of the original Dutch colony of New Amsterdam in 1624 and the end of the Revolutionary War in 1783 was a turbulent time for the city. During this period New York changed from a Dutch colony to a British one, then became a British military stronghold during the American Revolution.

The digital images of original documents presented in this web site contain the words of hundreds of individuals who were eyewitnesses to these massive changes. The letters, newspapers, broadsides, legal records, and maps presented here record events large and small from the early years of the Dutch settlement of New Amsterdam, through the political crises of the 1760s, and on through the British occupation of the city during the American Revolution.

- What can I find here?
- Browse the Early American Experience
- Search the Early American Experience
- Take a Guided Tour of the Early American Experience
- Resources for teachers (coming soon)
- Other resources about Early American History and Life
- Where can I find the original documents?
Search Screen

Witness to the Early American Experience

Search entire Collection

By searching across all three types of material it is possible to pull together a variety of sources related to a single event. Searching for a place name, such as White Plains, will retrieve letters written at White Plains as well as maps of the vicinity. By searching for a particular date, you can retrieve newspapers, broadsides, and manuscripts published or written on that date. By searching on "note" you can retrieve documents where the collection archivist has used your entered search text in their description of the item. Bear in mind that you cannot search the contents of these materials, so a search for Benedict Arnold will retrieve letters by him but not newspaper articles about him.

Search on:
- term Washington
- OR date (YYYY)
- OR note

Document type: All types

Archive: Entire collection

Submit
### Witness to the Early American Experience

Here are the records containing: Washington

<table>
<thead>
<tr>
<th>Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irving, Washington, 1783-1859., ALS (Sunnyside, July 15, 1859).</td>
<td>2 pages</td>
</tr>
<tr>
<td>Irving, Washington, 1783-1859., ALS (Sunnyside, October 1, 1846).</td>
<td>2 pages</td>
</tr>
<tr>
<td>National Intelligencer, Washington Advertiser, newspaper (Washington City, PA, June 11, 1810).</td>
<td>4 pages</td>
</tr>
<tr>
<td>Washington, George, 1732-1799., LS (Harlem Heights, October 13, 1776).</td>
<td>4 pages</td>
</tr>
<tr>
<td>Washington, George, 1732-1799., ADS (Dobbs Ferry, July 13, 1781).</td>
<td>4 pages</td>
</tr>
<tr>
<td>Washington, George, 1732-1799., ALS (Newburgh, May 10, 1782).</td>
<td>2 pages</td>
</tr>
<tr>
<td>Washington, George, 1732-1799., LS (Headquarters, June 24, 1782).</td>
<td>4 pages</td>
</tr>
<tr>
<td>Washington, George, 1732-1799., LS (Skippock Camp, October 11, 1777).</td>
<td>2 pages</td>
</tr>
<tr>
<td>Washington, George, 1732-1799., LS (White Plains, August 13, 1778).</td>
<td>4 pages</td>
</tr>
<tr>
<td>Washington, George, 1732-1799., LS (White Plains, August 3, 1778).</td>
<td>2 pages</td>
</tr>
<tr>
<td>Washington, George, 1732-1799., LS (White Plains, July 21, 1778).</td>
<td>2 pages</td>
</tr>
</tbody>
</table>
Washington, George, 1732-1799, LS (Harlem Heights, October 13, 1776), 4 pages

**Description:** To Artemas Ward. Reports that 'yesterday the enemy landed at Frogs Point.' Body in hand of Robert Hanson Harrison, signed by Washington. folded half sheet, multiple repairs

**Creation Information:** Harlem Heights

**Date:** October 13, 1776

**Format:** 23.0 cm. wide by 37.0 cm. high, 4 pages

**Identifier:** 055-002-a-0446

055-002-a-0447

055-002-a-0448
Washington, Oct. 13, 1776

being surrounded by water, I have posted

a part of our forces on the paper leading

from it, I have detected some small box

to be thrown up for their security.

Sam. L.

for most bde.
Project Components

HTML Form → Search Servlet → DB

DB → ShowResults Servlet → HTML

ShowResults Servlet → METS Files → HTML

ShowResults Servlet → Style Sheet → HTML
Servlets and JSP

- Servlet - Java code that receives a request, does its work and returns a response
- Servlet container - intercepts a request, routes it to the servlet, receives a response and routes it to the user
- Java ServerPages (JSP) - web pages with Java code in them
Potential Gotchas
1st Gotcha - Database Access
Database Access

- Restrict database connectivity
- Centralize database functionality
- Separate database access and interaction to its own component
- Pattern — Data Access Object (DAO)
- Separate code that receives data requests and returns data objects
2nd Gotcha - Results Display
Results Display

- Isolate display from program code
- Separate results display and interaction to its own component
- Pattern — Front Controller
- Java ServerPages (JSP) receives results from servlet and returns a display
- Potential use of JSP to submit request from client to servlet
Project Components

Diagram:

- Data Bean
- Search DAO
- DB
- HTML Form
- Search Servlet
- searchResults JSP
- ShowResults Servlet
- HTML
- METS Files
- Style Sheet
3rd Gotcha - Code in Display
Code in the Display

- Relegate as much of the code in the servlet as possible
- Delegate JSP to non-programmers
- Use custom tags where practical
Architecture

- N-tier development model
- Pattern — Model-View-Controller (MVC)
Project Components

- Data Bean
- Search DAO
- DB
- METS DAO
- Data Bean
- DB2METS
- METS Java Toolkit
- Tag Library
- METS Files
- Style Sheet
- ShowResults Servlet
- HTML
- HTML Form
- Search Servlet
- JSP
- Search Servlet
- HTML
New User Interface

Witness to the Early American Experience

ARCHIVE

The digital preservation of original documents in this archive contain the words of hundreds of individuals who were eyewitnesses to these massive changes. The letters, newspapers, broadsides, legal records, and maps presented here record events from the early years of the Dutch settlement of New Amsterdam, through the political crises of the 1760s, and on to the British occupation of the city during the American Revolution...

FEATURE

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.

LEARN

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.

TOUR

New York City has always played a central role in the history of the United States. The guided tour will give a brief overview of New York City during the colonial and revolutionary periods. The tour is arranged in chronological order with each page including a single relevant example from the thousands of...
New Search Screen

Witness to the Early American Experience

Search the Experience

By searching across all types of material it is possible to pull together a variety of sources related to a single event. Searching for a place name, such as White Plains, will retrieve letters written at White Plains as well as maps of the vicinity. By searching for a particular date, you can retrieve newspapers, broadsides, and manuscripts published or written on that date. By searching on "note" you can retrieve documents where the collection archivist has used your entered search text in their description of the item.

Please note that you cannot search the full text of the materials in this archive. For example, a search for Benedict Arnold will retrieve letters by him but not newspaper articles about him.

Keyword Search

search for: 
in all fields

Browse Search

browse the archives by: genre
limit to all types

submit search
New Results Screen

Witness to the Early American Experience

Search the Archives

your search for **place: New York** in all items retrieved **15** records

displaying records 1 - 5

creator: Allen, Stephen
date: June 16, 1821
place: New York
title: Allen, Stephen, 1767-1852., DS ([New York], June 16, 1821), 1 page

double click image to preview

creator: Andros, Edmund, Sir
date: June 11, 1679
place: New York
title: Andros, Edmund, Sir, 1637-1714., DS (New York, June 11, 1679), 2 pages

double click image to preview

creator: Bayard, Nicholas, Edmund, Sir
New Object Display

Witness to the Early American Experience

- **Title**: An hymn to be sung by the charity scholars, on Sunday, the 12th of October, 1783, at St. George's Chapel, after the charity sermon for the benefit of the school.
- **Place**: [New York]
- **Genre**: Broadsides. Hymns.
- **Physical Description**: AN HYMN
  To be sung by the charity scholars.
Patterns

- Architectural origins
- The “Gang of Four” (GoF)
- Pattern catalogs
- Patterns in Java
- Pattern proselytism
J2EE Patterns
J2EE Patterns
J2EE Patterns
Antipatterns
“I like learning from my mistakes… but I would much rather learn from your mistakes”

Bruce Tate
Bitter Java
Antipatterns

- The “Magic Servlet”
- The Round-Tripping antipattern
- Y2K
Further Work

- Other Gotchas…
- Other Patterns…
- Other Antipatterns…
Further Work

- Further separating business logic from component navigation and control
- Managing access to overall application
- Aliasing virtual addresses and paths
- Further abstracting out user interface
- Extending approach to other projects, programmers and teams
A Glorious Future!
Bibliography


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http://java.sun.com/blueprints/core/j2eepatterns/Patters/index.html

Guidelines, Patterns and code for end-to-end Java applications.

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Java design patterns 101 and 201

“Amaze your developer friends with design patterns,” JavaWorld, October 12, 2001
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