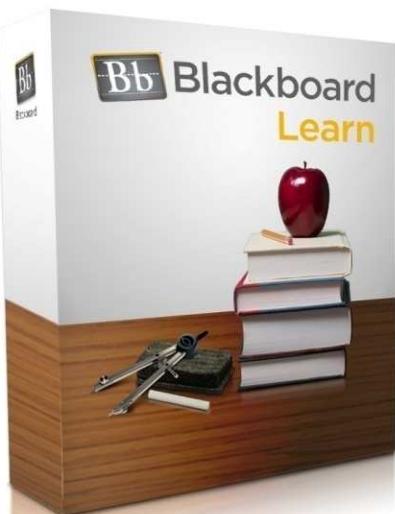


Getting Started With Blackboard Building Blocks™ (Part 1)

Rusty Klophaus

Technology Product Manager
Blackboard®, Inc.



About Me

- Rusty Klophaus
- Technology Product Manager
in Product Development
- Almost two decades of
software development
experience



About You

- Technically inclined
- Knowledge of Java, Servlets, and Java Server Pages (.jsp)
- Desire to extend the functionality of Blackboard Learn™
- Not sure how to start



Software Prerequisites

- IDE (Eclipse, IntelliJ IDEA, etc.)
- Blackboard SDK:
 - <http://www.edugarage.com>
 - Blackboard APIs
 - Documentation (Developer Guide, etc)
 - Sample code
- An installation of Blackboard Learn that you can use to deploy and test your Building Blocks

Agenda

- Intro to EduGarage™
- Intro to OSCELOT
- What is a Blackboard Building Block?
- Create a Building Block Project
- Get the Blackboard Look and Feel
- Read and Modify Blackboard Data
- Questions

Getting Started with Building Blocks

Intro to EduGarage

EduGarage: Front Page (edugarage.com)

Home - Blackboard Developers Network - Confluence - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.edugarage.com/display/BBDN/Home

edugarage by Blackboard

Home View Log In

Search:

Site Map

- Getting Started
- Documentation
- Tutorials
- Forums
- Downloads
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- Community
- Archives
- FAQ
- Business Resources
- Calendar
- Contact

Upcoming Events:

July 14-16: BbWorld

Dashboard > Blackboard Developers Network > Home

Home

Added by George Kroner, last edited by George Kroner on 22 Apr 2009 01:39 AM
Labels: (None)

Developers Conference 2009

The [2009 Blackboard Developers Conference](#) is coming this year to Blackboard's hometown - Washington, DC. Register by June 19th to receive the Early Bird discount to this event. Join us to:

- Gain exposure to new industry concepts, standards, and trends
- Obtain detailed tactical & technical information about how to customize & extend your Blackboard learning platform to meet your specific e-learning needs
- Learn from others who have successfully integrated Blackboard with other campus systems
- Acquire advanced system administration tips, tricks, and practices

**Blackboard®
DEVELOPERS
CONFERENCE** 
@BbWorld®

JULY 16-17 | GAYLORD NATIONAL | WASHINGTON DC

OSCELOT's (Open Source Community for Educational Learning Objects and Tools) [Open Source Day 4.0](#) follows DevCon and will be held at George Washington University. Attend this event to learn how to collaborate with other schools to develop open source educational tools, including those that plug into Blackboard products.



EduGarage: Getting Started

Getting Started - Blackboard Developers Network - Confluence - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.edugarage.com/display/BBDN/Getting+Started

edugarage by Blackboard

B² + =

Home View Log In

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- Documentation
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Upcoming Events:

July 14-16: BbWorld

Dashboard > Blackboard Developers Network > Home > Getting Started

Getting Started

Added by George Kroner, last edited by George Kroner on 27 Jan 2009 02:32 AM
Labels: (None)

Overview

- [About Building Blocks and PowerLinks](#)
- [About EduGarage](#)
- [Introduction for Enterprise Clients](#)

For instructional technologists

- [Understanding where and how you can customize the Blackboard Learn platform \(Release 9 and above\)](#)
- [Understanding where and how you can integrate with the Blackboard Academic Suite \(prior to Release 9\)](#)
- [Understanding where and how to integrate with Blackboard products \(Vista and CE licenses\)](#)
- [Building Blocks Functional API overview](#)
- [PowerLinks Functional API overview](#)

For developers

- [Technical Building Blocks API overview](#)
- [Technical PowerLinks API overview](#)

EduGarage: Documentation

Documentation - Blackboard Developers Network - Confluence - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.edugarage.com/display/BBDN/Documentation

edugarage by Blackboard

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- Projects
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- Archives
- FAQ
- Business Resources
- Calendar
- Contact

Upcoming Events:
July 14-16: BbWorld

Documentation Labels: (None)

[Building Blocks APIs](#)

- [Building Block / Platform APIs v6.3](#)
[v7.3](#) [v8.0](#) [v9.0](#)
- [Integration APIs](#) [v7.3](#) [v8.0](#) [v9.0](#)
- [Content System](#) [v7.3](#) [v8.0](#) [v9.0](#)
- [.NET APIs](#) [v7.3](#) [v8.0](#)
- [Content Web API](#) [v9.0](#)
- [Context Web API](#) [v9.0](#)
- [Gradebook Web API](#) [v9.0](#)
- [Utility Web API](#) [v9.0](#)

[PowerLinks APIs](#)

- [SDK APIs](#) [v4.2.1](#)

[Language Packs](#)

- [Administrator Manual](#) [v7.3](#) [Vista 4.2](#)
[v9.0](#)

[PowerLinks Developer Documentation](#)

- [Programmer's Guide](#) [Vista 4.2/CE 6.2](#)
- [Automatic Signon / Inbound Authentication Module Guide](#) [Vista 4.2/CE 6.2](#)
- [PowerSight Guide](#) [Vista 4.2/CE 6.2](#)
- [Content Interoperability Specification](#)

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EduGarage: Archives

Archives - Blackboard Developers Network - Confluence - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.edugarage.com/display/BBDN/Archives

edugarage by Blackboard

B² + C = Lightbulb

Home View Log In

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Upcoming Events:

July 14-16: BbWorld

Dashboard > Blackboard Developers Network > Home > Archives

Archives

Added by George Kroner, last edited by George Kroner on 15 May 2009 12:27 AM
Labels: (None)

Conference Presentations	Webinars
<ul style="list-style-type: none">Blackboard Developers Conference 2009 presentationsBlackboard Developers Conference 2008 presentations<ul style="list-style-type: none">Conference ProgramKeynote: Dr. Michael WeschLearn the BasicsEducational ToolsExtending the PlatformIntegrationManaging and Optimizing the SystemBonus PresentationsBlackboard Developers Day at BbWorld Europe 2008Blackboard Developers Conference 2007	<p>Getting Started with Building Blocks: Your Development Environment <i>Mark O'Neil</i> PPT Audio</p> <p>Getting Started with Building Blocks: Accessing User and Course Information <i>Mark O'Neil</i> PPT Audio</p> <p>Intermediate Building Block Development III: MVC, JSP, and Java <i>Mark O'Neil</i> PPT Audio</p>

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Getting Started with Building Blocks

Intro to OSCELOT

OSCELOT: Front Page (oscelot.org)

OSCELOT - Mozilla Firefox

File Edit View History Bookmarks Tools Help

· Home · Get Involved! · Get Events! · Get Projects! · Get Developing! · Get Stuff! ·



OSCELOT

Open Source Community for Educational Learning Objects and Tools

OSCELOT is a community that creates innovative open-source solutions for the challenges facing the eLearning community.

Home

Get Involved!

- Non-technical Users
- Technical Users
- Developers
- Donate!

Get Events!

Get Projects!

Get Developing!

Get Stuff!

About OSCELOT

OSCELOT is a community that creates innovative open source solutions for the challenges facing the eLearning community. At its core OSCELOT is about four things: Community, Collaboration, Collective Resources and Infrastructure and Communication.

[Learn more...](#)

OSCELOT Success Stories

The OSCELOT community can boast a number of successful projects, face-to-face events and releases of innovative open source software.

[Learn more...](#)

Open Source Day 4.0 GWU

The fourth conference for people interested in any aspect of Open Source development will be held at George Washington University, Washington DC on the 17th and 18th of

Latest News

updated 2009-03-27

Open Source Day 4.0 GWU
July 17, 2009 and July 18, 2009
[Read about the conference...](#)

[Keynotes confirmed...](#)

[Register now...](#)

Blackboard Launches EduGarage!
[Read the press release...](#)

New Projects

Done

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OSCELOT: Projects

gforge5 > Project Browse - Mozilla Firefox

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OSCELOT PROJECTS

Home My Stuff Users Search Projects Snippets Log in | Register new account

Home » Project Browse

Full name	Account name (lowercase)	Description
WordPress Integration Kit	wct-wordpress	Takes Blackboard users to a WordPress blog and logs them in automatically. The blog can also link to and embed content from the Blackboard content repository (a.k.a., file manager).
Who's Online	sen-whosonline	This Blackboard-based building block displays Who's Online in a Blackboard system.
Welcome module for custom tabs	welcomemodule	The Welcome module is an add-on for the Community System which provides the "Welcome, [firstname]" header to any (custom) tab.
WebCT Proxy Tool Registry	ptregistry	Do you have deployable components which need a permanent storage area for simple data values? The Proxy Tool Registry provides a simple utility to add this functionality to your tool.
WebCT ProxyToolbox	proxytoolbox	This PowerLink provides a framework within which separate tools can be made available to users via a single proxy tool instance. A tool can be any functionality; three tools are provided with the toolbox and users can write their own to be added.
WebCT Data Access Objects	webctdao	This package provides PowerLinks developers with access to data objects relating to users and learning contexts. The initial release is equivalent to the com.webct.platform.sdkext.authmoduledata available from Blackboard (but with known bugs fixed).
WebCT CE/Vista CAS SSO Module	wct-cas	This code is an inbound authentication module that allows organizations to use the CAS protocol as a Single Sign-On system for WebCT Vista.
WebCT and QM Perception integration	connect2qmp	This PowerLink allows an assessment hosted by QuestionMark Perception to be accessed directly from a WebCT section. User details are passed securely to the Perception server so there is no need for users to be pre-registered or for them to log in.
WebCT and MediaWiki Integration	mw_vista	This PowerLink allows a Section Designer to automatically create and manage wiki spaces in MediaWiki, adding links to these spaces within WebCT. User accounts are automatically added to the wiki when staff and students connect. The code incorporates 'farming' of wiki sites which allow common source code to be shared between each MediaWiki instance.
WebCT and Confluence integration	confluencesso	This PowerLink allows a Section Designer to automatically create and manage wiki spaces in Confluence, adding links to these spaces within WebCT. User accounts are automatically added to the wiki when staff and students connect.
Web Appointment Scheduling System	wass	WASS is a web based system for creating and managing an appointments calendar. WASS includes notification and an optional Blackboard web service which limits scheduling based on course enrollment.

Done

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Getting Started with Building Blocks

What is a Building Block?

What is a Building Block?

- Mini-application that runs within Blackboard Learn
- Looks like the rest of Blackboard
- Exposed through certain places in the UI

This screenshot shows the Blackboard Learn interface. At the top, there's a navigation bar with links for 'My Institution', 'Community', 'Courses', 'Content Collection', 'Services', and 'System Admin'. Below this is a 'Notifications Dashboard' section. On the left, there's a sidebar titled 'Tools' containing links for Announcements, Tasks, View Grades, Send Email, User Directory, Address Book, Personal Information, and Calendar. Another sidebar titled 'Hot Links' shows 'No items available'. A third sidebar titled 'Hot Spots' also shows 'No items available'. In the center, there's a 'Module Example' card for 'edugarage' which is described as a free, open, wiki-based repository for resources, information, collaboration, sample code, getting started information, and more for developers of Blackboard Building Blocks, Blackboard PowerLinks and Blackboard Language Packs. There's also a 'Quick Tutorials Catalog' and a 'Pending Outcomes Artifacts and Portfolios' section. A red circle highlights the 'edugarage' module example.

This screenshot shows a 'Course Tool Example' dialog box overlaid on the Blackboard Learn interface. The dialog has a yellow header bar with the title 'Course Tool Example'. It contains a warning message: 'Indicates unsaved changes.' with a small exclamation mark icon. Below this is a step 1 form with fields for 'Text' (a text input box), 'Radio' (radio buttons for 'One', 'Two', or 'Three'), and 'Checkbox' (a checkbox). Step 2 is labeled 'Submit' with the instruction 'Enter your values and press submit.' and two buttons: 'Cancel' and 'Submit'. In the bottom right corner of the dialog, there's a logo for 'DEV CON 103 @BbWorld' consisting of a grid of colored squares.

Course Tool Building Block

Blackboard Learn - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Your Institution UNIVERSITY

My Places Home Help Logout

My Institution Courses Community Services System Admin

Force Course Tools

Announcements Journals

Blogs Messages

Calendar My Grades

Collaboration

Course Tool Example

Indicates unsaved changes.

1. Step 1

Tax:

Radio: One Two Three

Checkbox:

2. Submit

Enter your values and press submit.

Cancel Submit

DEV CON '09
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The screenshot shows the Blackboard Learn interface. On the left, there's a sidebar with 'Force Course' and 'Tools' selected. Below that is the 'Control Panel' with sections like 'Course Tools', 'Course Links', 'Evaluation', etc. The main area is titled 'Tools' and lists several course tools: Announcements, Journals, Blogs, Messages, Calendar, and My Grades. A modal window titled 'Course Tool Example' is open, showing a form with fields for Tax (text input), Radio (radio buttons for One, Two, Three), and Checkbox (checkbox). It also has a 'Submit' button and a note about unsaved changes. At the bottom right, there's a logo for 'DEV CON '09' and '©BbWorld'.

Course Control Panel Building Block

The screenshot shows the Blackboard Learn interface with the "Course Control Panel Example" building block integrated into the course control panel.

Left Sidebar (Control Panel):

- Course Tools
 - Announcements
 - Blackboard Scholar®
 - Blogs
 - Collaboration
 - Contacts
 - Course Calendar
 - Course Control Panel Example** (highlighted with a red oval)
 - Discussion Board
 - Glossary
 - Journals
 - Messages
 - SafeAssign
 - Self and Peer Assessment
 - Send Email
 - Tasks
 - Tests, Surveys, and

Main Content Area:

- My Tasks:** No tasks due.
- What's New:** No Notifications.
- Needs Attention:** (Empty)
- To Do:**
 - What's Past Due: All Items (0)
 - What's Due:
 - Select Date: 06/12/2009
 - Actions button
 - Today (0): Nothing Due Today
 - Tomorrow (0)
 - This Week (0)
 - Future (0)
- Alerts:** (Empty)

Course Control Panel Example (Modal Window):

Indicates unsaved changes.

- Step 1:**

Tax:

Radio:
 One
 Two
 Three

Checkbox:
- Step 2:**

Submit

Enter your values and press submit.

Group Tool Building Block

Blackboard Learn - Mozilla Firefox

File Edit View History Bookmarks Tools Help

My Places Home Help Logout

Your Institution UNIVERSITY

My Institution Courses Community Services System Admin

Force Course Groups > My Test Group

Force Course Control Panel Quick Unenroll

COURSE MANAGEMENT

Add Course Module Add Group Module

Customize Page

My Test Group

Group Properties

Group Description

Group Members

Frank Student

Group Tools

- > Collaboration
- > File Exchange
- > Group Blog
- > Group Discussion Board
- > Group Journal
- > Group Tasks
- > **Group Tool Example**
- > My Scholar Home
- > Scholar Course Home
- > Send Email

Blackboard Learn - Mozilla Firefox

File Edit View History Bookmarks Doc Help

MyPlaces Home Help Logout

Your Institution UNIVERSITY

MyInstitution Courses Community Services SystemAdmin

Group Tool Example

Indicates unsaved changes.

1. Step 1

Tax:

Radio:

One

Two

Three

Checkbox:

2. Submit

Enter your values and press submit.

Cancel Submit



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System Tool Building Block

Blackboard Learn - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Your Institution UNIVERSITY

My Places Home Help Logout

My Institution Courses Community Services System Admin

Courses Course Settings Course Catalog Copy Files to Collection

Organizations Organizations Organization Settings Organization Catalog Copy Files to Collection

Communities Tabs and Modules Brands and Themes Discussion Boards Communities Settings eCommerce eMarketplace Domains

System Admin Portfolios Learning Objects Catalog Display Options Content Management Settings Technical Settings Administrator Search Feature and Tool Management Content Area Management

Outcomes Assessment Template Builder Person Records Batch Reporting

Tools and Utilities Announcements Messages Calendar Email Spell Check Text Editor Language Packs System Reporting System Configuration Logs Tools Chalk Titles Avatars Notifications Blackboard Scholar® API Tester **System Tool Example**

Hot Spots No items available.

Hot Links No items available.

Cancel Submit

Blackboard Learn - Mozilla Firefox

File Edit View History Bookmarks Doc Help MyPlaces Home Help Logout

Your Institution UNIVERSITY

MyInstitution Courses Community Services SystemAdmin

System Tool Example

Indicates unsaved changes.

1. Step 1

Tax

Radio One Two Three

Checkbox

2. Step 2

Enter your values and press submit.

Cancel Submit

DEV CON 103
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User Tool Building Block

The screenshot displays the Blackboard Learn interface with several tool building blocks integrated into the dashboard.

Tools Panel: A sidebar on the left lists various tools: User Tool Example (circled in red), Announcements, Tasks, View Grades, Send Email, User Directory, Address Book, Personal Information, and Calendar. The "User Tool Example" link is highlighted with a red oval.

Quick Tutorials Catalog: A panel titled "Pending Outcomes Artifacts and Portfolios". It contains a message about pending submissions, links to Create, Modify, and Show All, and tabs for Artifacts (0) and Portfolios (1). It also states "Currently there are no artifact templates pending."

My Courses: A panel showing course-related information.

Quick Tutorials: A panel titled "Quick Tutorials - New Product Enhancements".

My Calendar: A panel stating "No calendar events have been posted for the next 7 days." with a "more..." link.

My Outcomes Evaluations: A panel stating "Submissions that are pending evaluation are listed below. Click on the name of the instrument to view the instrument, or click Evaluate to view and evaluate the submissions." with tabs for Artifacts (0) and Portfolios (0). It also states "No submissions pending evaluation."

My Announcements: A panel stating "No Institution Announcements have been posted in the last 7 days." and "No course announcements have been posted in the last 7 days." with "more...." links.

My Organizations: A panel stating "You are not currently participating in any organizations."

User Tool Example Panel: A modal window titled "User Tool Example" containing two steps: Step 1 (Text input field, Radio buttons for One, Two, Three, Checkbox), Step 2 (Submit button). It includes a note about unsaved changes and "Cancel" and "Submit" buttons.



Content Type Building Block

The screenshot shows the Blackboard Learn interface. On the left, there's a sidebar with a tree icon and various course management links like Home Page, Information, Content, Discussions, Groups, Tools, and Help. Below this is a COURSE MANAGEMENT section with a Control Panel button and a Quick Unenroll link. The main area is titled "Content" and contains a "Create Item" button, a "Build" dropdown, an "Evaluate" dropdown, a "Collaborate" dropdown, and a "More" dropdown. A red oval highlights the "More" dropdown menu, which is open and shows an option labeled "Add Content Type Example".

A modal dialog box titled "Creating Custom Content" is displayed. It contains two steps: 1. Enter Information, which has a "Title" input field; 2. Submit, which has "Cancel" and "Submit" buttons. The dialog box has a "Cancel" and "Submit" button at the top right.



Module Building Block

Blackboard Learn - Mozilla Firefox

File Edit View History Bookmarks Tools Help

My Places Home Help Logout

Your Institution UNIVERSITY

My Institution Courses Community Services System Admin

Add Module Notifications Dashboard Personalize Page

Tools

- > Announcements
- > Tasks
- > View Grades
- > Send Email
- > User Directory
- > Address Book
- > Personal Information
- > Calendar

Hot Links

No items available.

Hot Spots

No items available.

Module Example

 **edugarage** by Blackboard

Edugarage is a free, open, wiki-based repository for resources, information, collaboration, sample code, getting started information, and more for developers of Blackboard Building Blocks, Blackboard PowerLinks and Blackboard Language Packs.

Edugarage Search

Quick Tutorials Catalog

The Outcomes Artifacts and Portfolios that are pending submission are listed below. Click Create to navigate to My Portfolios to begin building the Artifact or Portfolio. To edit the Artifact or Portfolio, click Modify. Click Show All to navigate to My Portfolios to view all Artifacts and Portfolios.

Artifacts (0) Portfolios (1)

My Courses

Quick Tutorials

Quick Tutorials - New Product Enhancements

My Outcomes Evaluations

Submissions that are pending evaluation are listed below. Click on the name of the instrument to view the instrument, or click Evaluate to view and evaluate the submissions.

Artifacts (0) Portfolios (0)

No submissions pending evaluation.

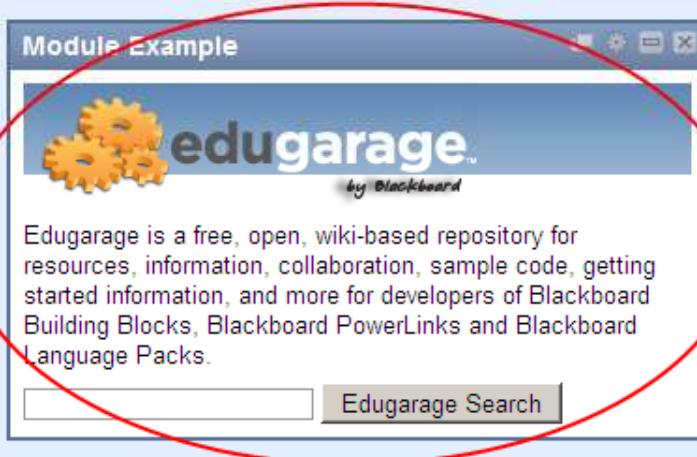
My Calendar

No calendar events have been posted for the next 7 days.

My Announcements

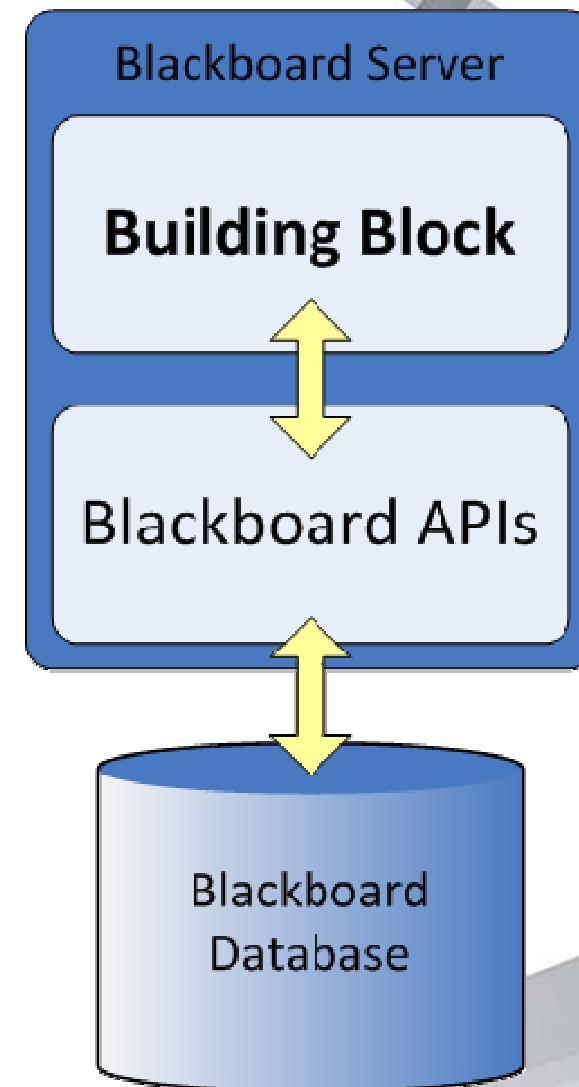
No Institution Announcements have been posted in the last 7 days.

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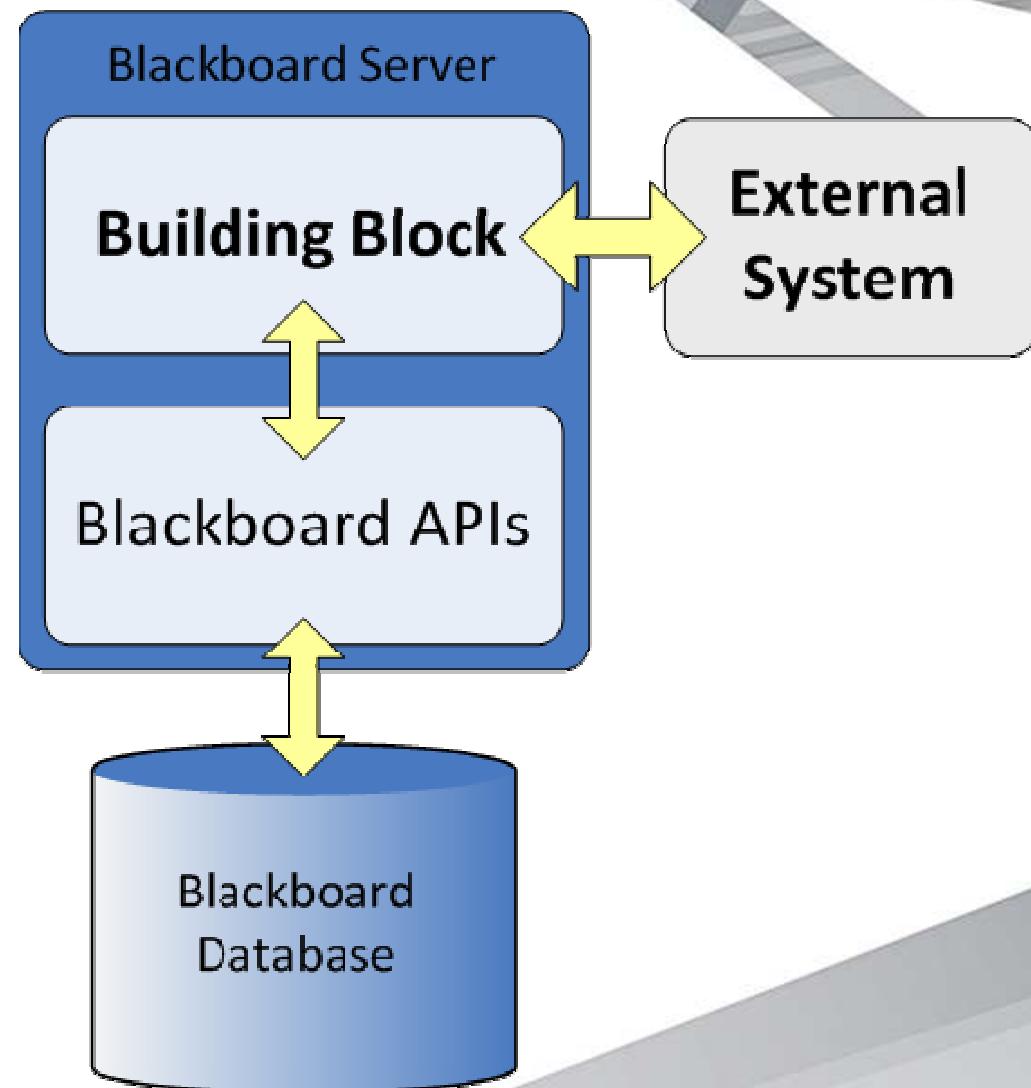
Basic Architecture

- Servlet-based
- Extensive APIs
- Supports Java-style permissions
- Install, manage, and remove without restarting



Advanced Architecture

- Bridge to an external system
- Pull in content, call web services, etc.



Getting Started with Building Blocks

Create a Building Block Project

Get Eclipse

Eclipse Downloads - Mozilla Firefox

File Edit View History Bookmarks Tools Help

eclipse Galileo ARRIVES IN 2 WEEKS

Visit other Eclipse Sites

Home Users Members Committers Downloads Resources Projects About Us Google™ Custom Search Search

Eclipse Downloads

You will need a Java runtime environment (JRE) to use Eclipse (Java 5 JRE recommended). All downloads are provided under the terms and conditions of the [Eclipse Foundation Software User Agreement](#) unless otherwise specified.

Eclipse Packages Member Distros Projects Development Builds

Ganymede Packages (based on Eclipse 3.4.2) - [Compare Packages](#)

Looking for [Older Versions or Source Code?](#)

Eclipse IDE for Java EE Developers (163 MB)
Tools for Java developers creating JEE and Web applications, including a Java IDE, tools for JEE and JSF, Mylyn and others. [More...](#)
Downloads: 1,530,685

Eclipse IDE for Java Developers (85 MB)
The essential tools for any Java developer, including a Java IDE, a CVS client, XML Editor and Mylyn. [More...](#)
Downloads: 841,613

Eclipse IDE for C/C++ Developers (68 MB)
An IDE for C/C++ developers with Mylyn integration. [More...](#)
Downloads: 372,686

IBM Featured Member Distro
IBM Free, no-registration-necessary Ganymede bundles ready-to-use. Let IBM help you jump-start your next Eclipse project.

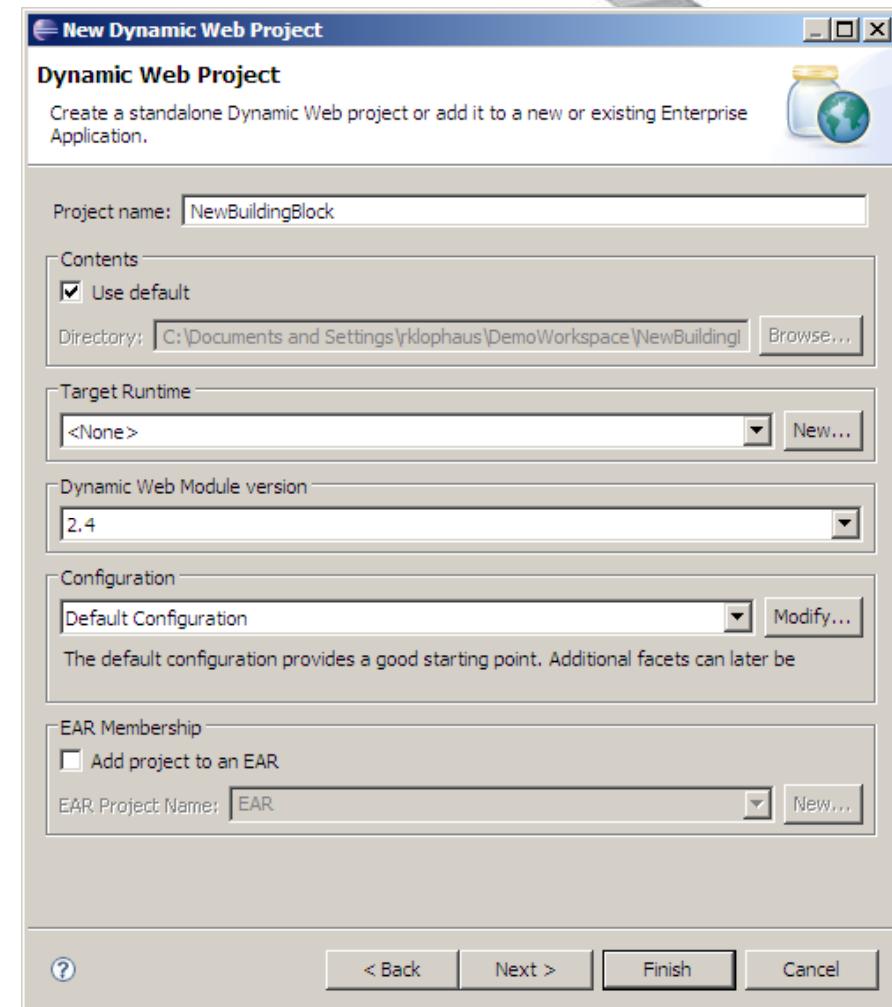
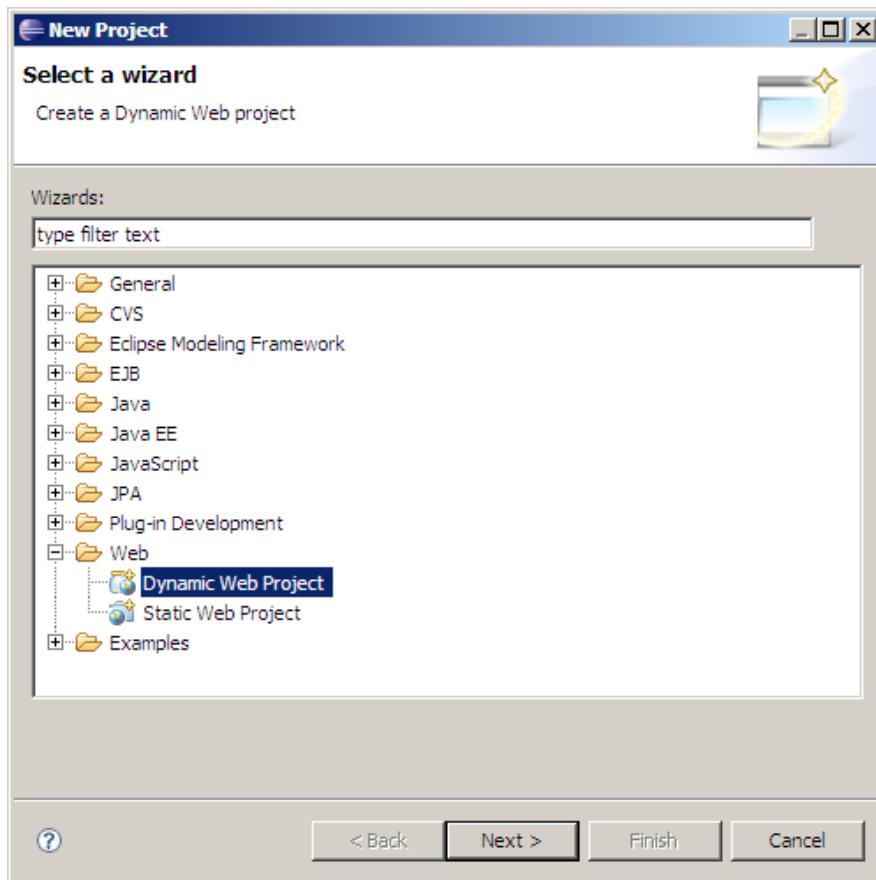
Eclipse Modeling Tools (includes incubating components) (212 MB)

Become a Friend of Eclipse

jazz Innovation through Collaboration

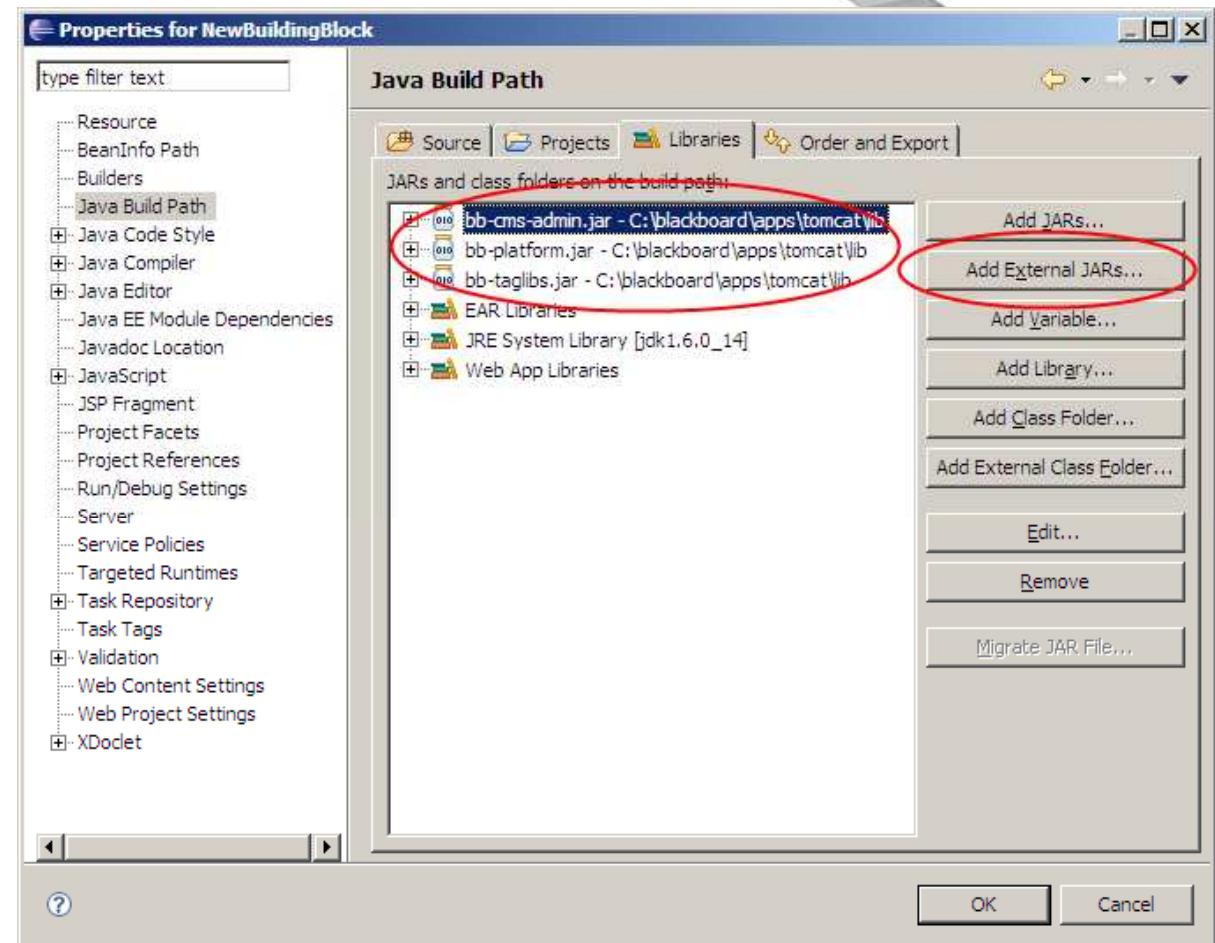
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Create a New Dynamic Web Project



Add Blackboard Libraries

- bb-cms-admin.jar
- bb-platform.jar
- bb-taglibs.jar



Add a *bb-manifest.xml* file under WEB-INF

Describe the Building Block

Describe the Vendor or Organization

Where will it sit in Blackboard?

Set Permissions

```
<?xml version="1.0" encoding="UTF-8"?>
<manifest>
    <plugin>
        <name value="Course Tool Example" />
        <description value="" />
        <handle value="bb-example-coursetool" />
        <version value="1.0.0" />
        <requires>
            <bbversion value="9.0.0" />
        </requires>

        <vendor>
            <id value="bb" />
            <name value="Blackboard Inc." />
            <url value="http://www.blackboard.com" />
            <description value="Blackboard Inc." />
        </vendor>

        <application-defs>
            <application handle="coursetoolexample" name="Course Tool Example Application"
                is-course-tool="true" is-org-tool="false" can-allow-guest="true" use-ssl="false">
                <description lang="en_US">Course Tool Example Application
                </description>
                <links>
                    <link>
                        <type value="tool" />
                        <name value="Course Tool Example" />
                        <url value="tool.jsp" />
                        <description value="Course Tool Example Description" />
                        <icons>
                            <listitem value="/images/tool50.gif" />
                        </icons>
                    </link>
                </links>
            </application>
        </application-defs>

        <permissions>
        </permissions>
    </plugin>
</manifest>
```

Bb Manifest: B2 Information

```
<name value="Course Tool Example" />
<description value="" />
<handle value="bb-example-coursetool" />
<version value="1.0.0" />
<requires>
    <bbversion value="9.0.0" />
</requires>
```

Bb Manifest: Vendor Information

```
<vendor>
  <id value="yi" />
  <name value="Your Institution" />
  <url value="http://www.yourinstitution.edu" />
  <description value="Description of Your Institution." />
</vendor>
```

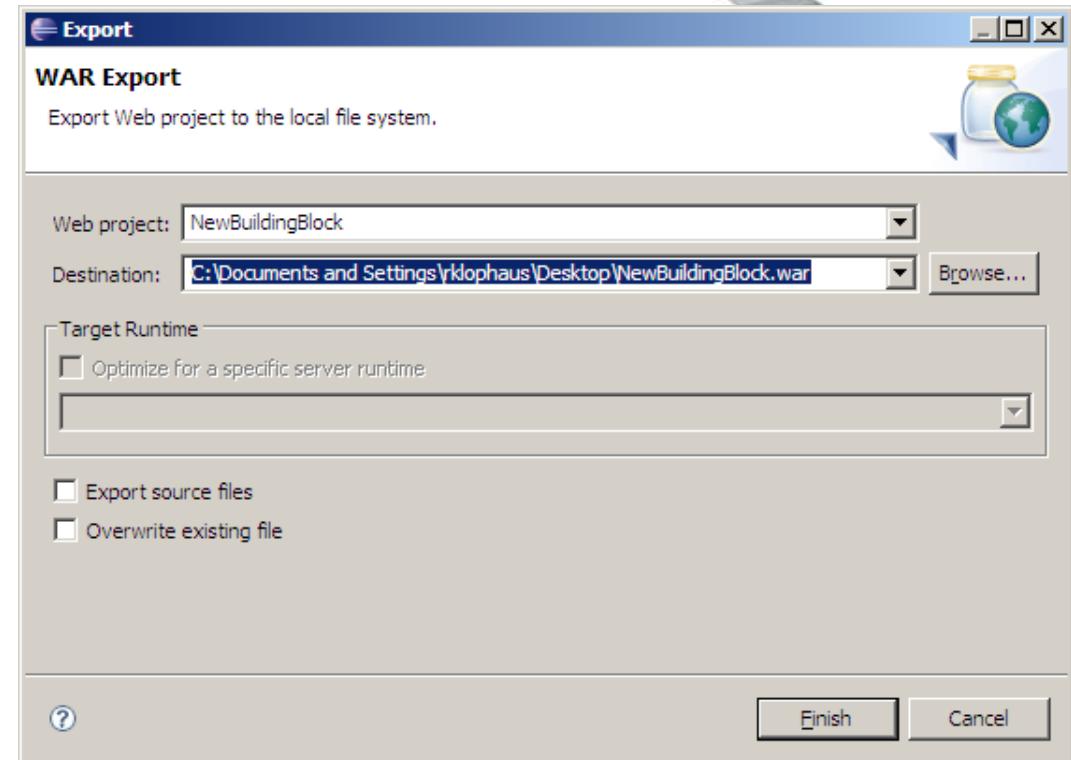
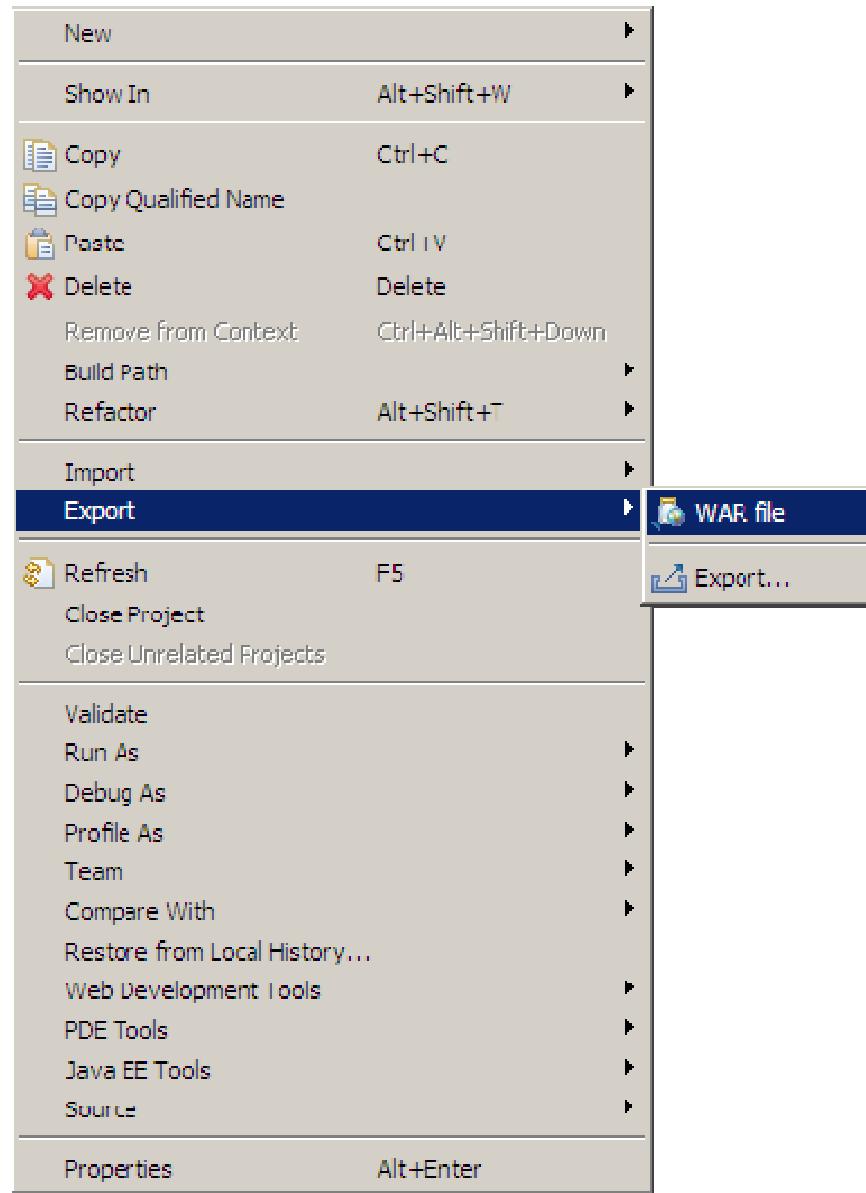
Bb Manifest: Describe Entry Points

```
<application-defs>
  <application
    handle="coursetoolexample"
    name="Course Tool Example Application"
    is-course-tool="true" is-org-tool="false"
    can-allow-guest="true" use-ssl="false">
    <description lang="en_US">Course Tool Example Application
    </description>
    <links>
      <link>
        <type value="tool" />
        <name value="Course Tool Example" />
        <url value="tool.jsp" />
        <description value="Course Tool Example Description" />
        <icons>
          <listitem value="/images/tool50.gif" />
        </icons>
      </link>
    </links>
  </application>
</application-defs>
```

Add your *tool.jsp* file under *WebContent*

```
<%@ page language="java" pageEncoding="UTF-8" %>
<html>
<head>
    <title>Hello DevCon!</title>
</head>
<body>
    <h1>Hello Blackboard Developer Community!</h1>
</body>
</html>
```

Package to a .WAR file



Install the Building Block

Blackboard Learn - Mozilla Firefox

File Edit View History Bookmarks Tools Help

My Places Home Help Logout

Your Institution UNIVERSITY

My Institution Courses Community Services System Admin

Administrator Panel Building Blocks > Installed Tools

Building Blocks

Upload Building Blocks Find and Download Building Blocks

Name	Vendor	Version	Availability	Course/Org Default			
API Tester	Blackboard Inc.	1.0.0	Available	Unavailable	View Components	Delete	
Astrology	Astrology.com	1.1.0	Available	Unavailable	View Components	Delete	
Blackboard Scholar	Blackboard Inc	2.0.13	Available	Available	View Components	Settings	Delete
Blackboard Sync	Blackboard Inc.	2.0.9	Available	Available	View Components	Settings	Delete
CE4 Learning Environment Connector	Blackboard Inc.	1.0.0	Available	Unavailable	View Components	Delete	
Course Package Import Extensions	Blackboard Inc.	1.0.0	Available	Unavailable	View Components	Delete	
Course Tool Example	Blackboard Inc.	1.0.0	Available	Available	View Components	Delete	
GoogleModule	Google	1.1.0	Available	Unavailable	View Components	Delete	
HETemplateModules	Blackboard Inc.	1.0.0	Available	Unavailable	View Components	Delete	
Integrated Learning System Gateway	Blackboard Inc.	1.1.0	Available	Unavailable	View Components	Settings	Delete
Maps	Mapquest	1.1.0	Available	Unavailable	View Components	Delete	

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Results

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Hello Blackboard Developer Community!

Find: Next Previous Highlight all Match case

Done

V D ! @BbWorld

Getting Started with Building Blocks

Get the Blackboard Look and Feel

Bb TagLibs

- XML tags that cause Tomcat to execute a Java class
- Rendered into HTML/Javascript
- Encapsulate common Blackboard controls into reusable components
- Automatically adds theme support
- All new tag libraries in Blackboard 9.0!
- Search for “Tag Library Guide” on EduGarage.com

Bb TagLibs Example

Blackboard Learn - Mozilla Firefox

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 Course Tool Example

 Indicates unsaved changes.

1. Step 1

Text

Checkbox

2. Submit

Enter your values and press submit.

Cancel Submit

Done



TagLibs: Page Chrome

```
<%@ page language="java" pageEncoding="UTF-8" %>
<%@ taglib uri="/bbUI" prefix="bbUI" %>
<%@ taglib uri="/bbData" prefix="bbData" %>
<%@ taglib uri="/bbNG" prefix="bbNG" %>

<bbData:context id="ctx">
    <bbNG:genericPage title="Course Tool Example">
        <bbNG:pageHeader>
            <bbNG:pageTitleBar title="Course Tool Example" />
        </bbNG:pageHeader>
        <bbNG:form action="tool.jsp">

            <!-- Start of page content. -->
            ...
            <!-- End of page content -->

        </bbNG:form>
    </bbNG:genericPage>
</bbData:context>
```

TagLibs: Controls

```
<!-- Start of page content. -->
<bbNG:dataCollection markUnsavedChanges="true" >
  <bbNG:step title="Step 1">

    <bbNG:dataElement label="Text">
      <input name=mytextbox type="text" />
    </bbNG:dataElement>

    <bbNG:dataElement label="Checkbox">
      <bbNG:checkboxElement name="mycheckbox" value="checkbox1"/>
    </bbNG:dataElement>

  </bbNG:step>

  <bbNG:stepSubmit instructions="Enter your values and press submit.">
  </bbNG:stepSubmit>
</bbNG:dataCollection>
<!-- End of page content -->
```

Getting Started with Building Blocks

Read and modify Blackboard Data

The Blackboard API

Overview (Building Blocks API) - Mozilla Firefox

File Edit View History Bookmarks Tools Help

All Classes Packages

[blackboard.base](#)
[blackboard.data](#)
[blackboard.data.announcement](#)
[blackboard.data.calendar](#)
[blackboard.data.content](#)

All Classes

[AbstractAnnouncementProv](#)
[AbstractAuthenticationProvi](#)
[AbstractContentSystemProv](#)
[AbstractIntegrationEventList](#)
[AbstractIntegrationProvider](#)
[AbstractMigrationProvider](#)
[AbstractNavigationProvider](#)
[AbstractPortletProvider](#)
[AbstractSupportProvider](#)
[Aggregate](#)
[AggregateReviewStatus](#)
[AggregateReviewStatusDbL](#)
[AggregateReviewStatusDbL](#)
[AggregateReviewStatusDef](#)
[Announcement](#)
[Announcement_Type](#)
[AnnouncementDbLoader](#)
[AnnouncementDbLoader_De](#)
[AnnouncementDbPersister](#)
[AnnouncementDbPersister_I](#)
[AnnouncementProvider](#)

Overview Package Class Use Tree Deprecated Index Help
PREV NEXT FRAMES NO FRAMES

Building Blocks API

Packages

blackboard.base	Provides common classes and utility classes used throughout the platform API.
blackboard.data	Provides the base classes for the persistence layer of platform API.
blackboard.data.announcement	Provides classes used to store "announcements" in the Blackboard system.
blackboard.data.calendar	Provides classes used to store entries in the course, system, and personal calendars in the Blackboard system.
blackboard.data.content	Provides the classes used to store course content in Blackboard.
blackboard.data.course	Provides the classes used to interact with course definitions in Blackboard.
blackboard.data.discussionboard	
blackboard.data.discussionboard.datamanager	
blackboard.data.gradebook	Provides the public implementation classes for Gradebook subsystem.
blackboard.data.navigation	
...	

Find: avail Next Previous Highlight all Match case Reached end of page, continued from top

Done

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10,000 Foot View

- **blackboard.platform.context**
Holds the “state” of the current user/request
- **blackboard.data**
Java objects to hold Course, User, Content, etc.
- **blackboard.persist**
Persistence framework to read Course, User, Content, etc. from the database.
- **blackboard.platform**
Interact with resources: Logging, Files, Session, Localization

Simple API Examples

```
<%@page language="java" pageEncoding="UTF-8" %>
<%@page import="blackboard.data.user.User"%>
<%@taglib uri="/bbData" prefix="bbData" %>

<bbData:context id="ctx">
<%
    // Get the user from the current context...
    User user = ctx.getUser();

    // Get the user's name...
    String givenName = user.getGivenName();
    String birthName = user.getFamilyName();
    out.println("Hello " + givenName + " " + birthName + "!");
%>
</bbData:context>
```

Simple API Examples

```
<%@page language="java" pageEncoding="UTF-8" %>
<%@page import="blackboard.persist.Id"%>
<%@page import="blackboard.data.course.Course"%>
<%@page import="blackboard.base.*"%>
<%@page import="blackboard.persist.course.CourseDbLoader"%>
<%@taglib uri="/bbData" prefix="bbData" %>

<bbData:context id="ctx">
<%
    // Get the user's enrolled courses...
    CourseDbLoader courseLoader = CourseDbLoader.Default.getInstance();
    Id userId = ctx.getUser().getId();
    BbList<Course> courses = courseLoader.loadByUserId(userId);

    // Print them out...
    for (int i=0; i<courses.size(); i++) {
        Course c = courses.get(i);
        out.println("Enrolled in: " + c.getTitle() + "\n");
    }
%>
</bbData:context>
```



Wrapping Up

Questions?
Comments?
Suggestions?

Thanks for attending!

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www.oscelot.com

