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Introduction

The Problem

Blackboard's LMS platform has many excellent features, controlled by a simple, user-friendly interface. The ease by which Blackboard Administrators can configure their system without specialist knowledge is advantageous, but it does have a few small drawbacks.

One such example is the process by which self-enrolment is handled. Enrolment can, and should, be handled by the snapshot process, but in reality, many institutions don't have readily accessible records of who the academic is for each course; which are the teaching assistants; who is grading course assessments, who is mentoring groups and so on. Therefore the Blackboard system must allow these academics the freedom to self-enrol onto their courses, or allow the current course instructor to add the TAs, course builders etc themselves. However, therein lies a problem. The current Blackboard system does allow self-enrolment, but only as a student and adding users to a course can be a long laborious task that is prone to human error. Any method of limiting the potential for error but still delegating more freedom and responsibility to the teaching staff should be welcomed with open arms.

Another limitation of the Blackboard system is in the "My Courses" module (displayed on the My Institution portal entry page). This module lists the current user's courses, their role within that course and new announcements, and does allow some customisation by the user. However, in today's typical Blackboard system, one often finds past courses from previous semesters (terms) or even years, which, considering that a typical student may study six modules in each semester for three to five years, means a list of a least thirty-six courses could be displayed by default. Academics can also suffer if they require access to courses they've taught in the past, especially when the said courses have near identical names and course codes. Mistaking an historic Blackboard course for the current course then editing and uploading content could be difficult to spot. What would be useful is a portal module that distinguishes between different groups of courses and gives the users greater freedom to choose what courses are listed as current or relevant to them.

Building Blocks

Much like desktop operating systems, the Enterprise Edition of Blackboard's LMS has a public API, allowing developers to create plugins (add-on) software that can be installed into the main application by Blackboard Administrators. Using this API it is possible to create new tools for managing course enrolments, a new My Courses portal module and many other applications besides.

Applications written for Blackboard in this way are known as Building Blocks and academic and commercial institutions have already developed a number of these across the globe. Blackboard provide a catalogue of most publicly available Building Blocks at <http://www.blackboard.com/addons/b2/catalog.htm?ShowData=Yes#Results>.

The Solution

A number of institutions have developed bespoke Blackboard Building Blocks in-house to solve the issues with course enrolment and the My Courses portal module amongst others. However, developing such solutions requires technical knowledge of Blackboard, additional hardware and software licenses, which can put a significant strain on those operating Blackboard on a tight budget. The solution is an out-of-the-box Building Block that can be customised to meet the needs of every institution and sold at a reasonable price.

Meeting the requirements of a large number of institutions offers up a new challenge. How and what data is used and structured can be very different for each institution. Some enrol students and academics using the snapshot routines, others upload users using the batch upload process. Many institutions create new courses for each year and semester; while others simply recycle the course for each instance it is run. More advanced institutions (with Blackboard) use data source keys to distinguish between groups of users, courses and enrolments while others merely append the year and semester onto the Blackboard course id. Any solution designed to handle all the possible scenarios will need a considerable degree of customisation.

Rules

To address the need for such a wide range of scenarios I have designed a rule-based configuration tool that can be re-used time and again with a variety of different Building Blocks. The tool can be configured to take your typical Blackboard object, such as a user, course or enrolment and apply a set of constraints. The constraints make up a "rule" and can then be applied to a list of objects, filtering out those that do not meet all the criteria. Each constraint will generally refer to a particular field in the relevant object, such as the user's name, user_id, portal role or a course's start or end date.

For example, imagine that rather than allowing course instructors the ability to add any user within the Blackboard system to their course, we can use rules to limit the set of users that can be enrolled. Effectively, the building block provides an alternative to the existing "Enroll User" function in the Blackboard control panel, but searches within a limited set of users.

OLD LINK

NEW LINK

The course instructor can search for a user as with the original, but the building block uses the rules created by an administrator to return a limited set of results. Therefore, where the original might return students, academics from other departments, support staff and the like, the new filtered list may only return the academics within the instructor's own department.

I've also taken this a stage further and included the roles each user can be given when the instructor enrolls them onto the course. This could be particularly useful if PhD Students or support staff can be enrolled to a course in a teaching capacity, but shouldn't be anything more than a TA or course builder. When using the new "Enroll User" facility, the instructor is given a drop down list of course roles to assign to the selected user, which can be different for each user in the returned list.

Enroll User(s)

SEARCH

SEARCH

Search By: Last Name Username Course Id

Search Students: Yes No

Show users I cannot enroll: Yes No

Show current course members: Yes No

2 user(s) located
Displaying records 1-2

Name	User Id	Institution Role	Email	New Role
Pilot Lord	bsp11	Alumni	fff@vlegenius.co.uk	...please select...
Kerrie Lord	csk11	Staff	8@vlegenius.co.uk	...please select... teaching assistant course builder grader ...please select...

Cancel Submit

Using Rules

In the original My Courses module there are a number of sections, "Courses I Am Teaching", "Courses I Am Studying" and so on, which list a user's courses based on the course role. It is possible to replace this module with a building block that defines sections using rules. These rules can then be extended to produce something like the following;

The screenshot shows a window titled "My Courses" with a blue header. Below the header are two links: "Expand All" (with a green plus icon) and "View All" (with a yellow folder icon). The main content is divided into several sections, each with a title and a red up/down arrow icon on the right:

- Courses I Am Teaching**: A table with three columns: Title, Code, and Role.

Title	Code	Role
Applied Maths	MA3001	Instructor
Maths Basics 2	MA1002	Course Builder
Supply and Demand	BS1042	TA
Test Course MA102	2004 MA102	Course Builder
Test Course MA104	2004 MA104	Course Builder
Test Course MA107	2004 MA107	Course Builder
- My Degree/Major**: A table with three columns: Title, Code, and Role.

Title	Code	Role
Test Course MA103	2004 MA103	Student
Test Course PY392	2004 PY392	Student
- 2005-2006 Courses**: A text label "No Courses Found".
- Courses I Am Studying**: A table with three columns: Title, Code, and Role.

Title	Code	Role
Test Course MA103	2004 MA103	Student
Test Course PY392	2004 PY392	Student

In this example, all teaching roles have been grouped into one "Courses I Am Teaching" section. You'll also notice that new sections have been created for degree programmes and next year's courses, all of which have been defined using a rule. Essentially, the building block fetches a list of all of the current user's courses, creates a section for each rule declared and runs through each of the courses to determine under which heading(s) it should be displayed.

Creating Rules

Blackboard administrators can create the rules in the Building Block configuration panel, available via the properties button from the *Manage System Extensions* or *Manage Building Blocks* option on the *System Admin* panel. In order to make the process of configuring these building blocks as easy as possible, the layout and design uses Blackboard provided templates to maintain the same look and feel as the rest of the Blackboard application.

Using the My Courses module as an example, the interface for managing and creating rules will look something similar to the following;

ADMINISTRATION PANEL > COURSE CONSOLE CONFIGURATION > COURSE SECTIONS

Course Sections

[Add Section](#)
[Enable All](#)
[Disable All](#)
[Previous Folder](#)

Current Sections

Enabled	Rule Name	
<input checked="" type="checkbox"/>	Courses I Am Teaching	Modify Delete Copy
<input type="checkbox"/>	Courses I Am Teaching	Modify Delete Copy
<input checked="" type="checkbox"/>	My Degree/Major	Modify Delete Copy
<input checked="" type="checkbox"/>	2003-2004 Courses	Modify Delete Copy
<input checked="" type="checkbox"/>	2005-2006 Courses	Modify Delete Copy
<input checked="" type="checkbox"/>	Courses I Am Studying	Modify Delete Copy
<input checked="" type="checkbox"/>	Programmes/Majors I Support	Modify Delete Copy
<input checked="" type="checkbox"/>	Courses I Am Studying 2003-2004	Modify Delete Copy

OK

Each rule declared above refers to one section in the My Courses module. However, in the image shown above, there are two rules called "Course I Am Teaching". The system recognises this when rendering the My Courses module and rather than create two lists under the same heading, the courses for each are combined under the one section. One obvious use for this feature is where all teaching roles should be combined under the one heading, but only instructors should see unavailable courses.

The following image shows the rule form for a My Courses section.

vlegenius the building block experts
Home Help Logout
Developer Copy

My Institution
Courses
System Admin
vlegenius.com

ADMINISTRATION PANEL > COURSE CONSOLE CONFIGURATION > COURSE SECTIONS

Course Sections

1 Identify Section

Section name:

Display section if empty:

2 Set Section Options

Enable section: Yes No

3 Select User Constraints

User System Roles:
SYSTEM_ADMIN
SYSTEM_SUPPORT
COURSE_CREATOR

User Portal Roles:
Student
Faculty
Staff

User DataSource batchUids:
INTERNAL
SYSTEM
REPLICATED

User department regular expression:

Username regular expression:

4 Select Course Constraints

Course DataSource batchUids:
INTERNAL
SYSTEM
REPLICATED

Course ServiceLevel types:
COMMUNITY
FULL
REGISTERED

Course Pace types:
INSTRUCTOR_LED
SELF_PACED

Course key regular expression:

Ignore unavailable courses: Yes No

Ignore courses not running: Yes No

5 Select Course Membership Constraints

Course roles:
STUDENT
INSTRUCTOR
TEACHING_ASSISTANT

DataSource batchUids:
INTERNAL
SYSTEM
REPLICATED

6 Submit

Click "Submit" to finish. Click "Cancel" to abort this process.

Done

More Information

More information about rule-based building blocks can be found at www.vlegenius.com

Credits

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