IBM

IBM Training

IBM TRIRIGA 10.3 Application Platform I SPVC

Student Exercises

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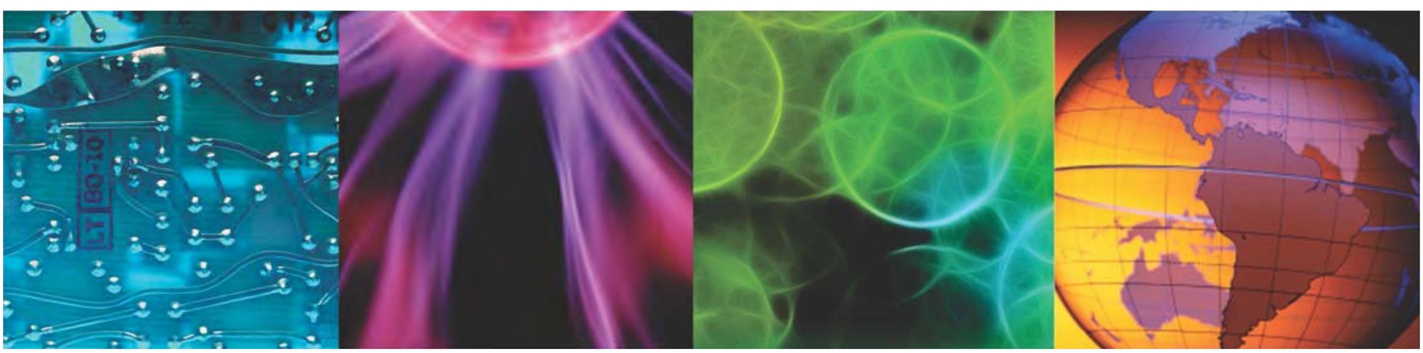

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Contents

1 Architectural overview exercise

This unit provides an overview of the IBM TRIRIGA Application Platform.

You create a user ID to access the platform, and take an introductory tour of it.

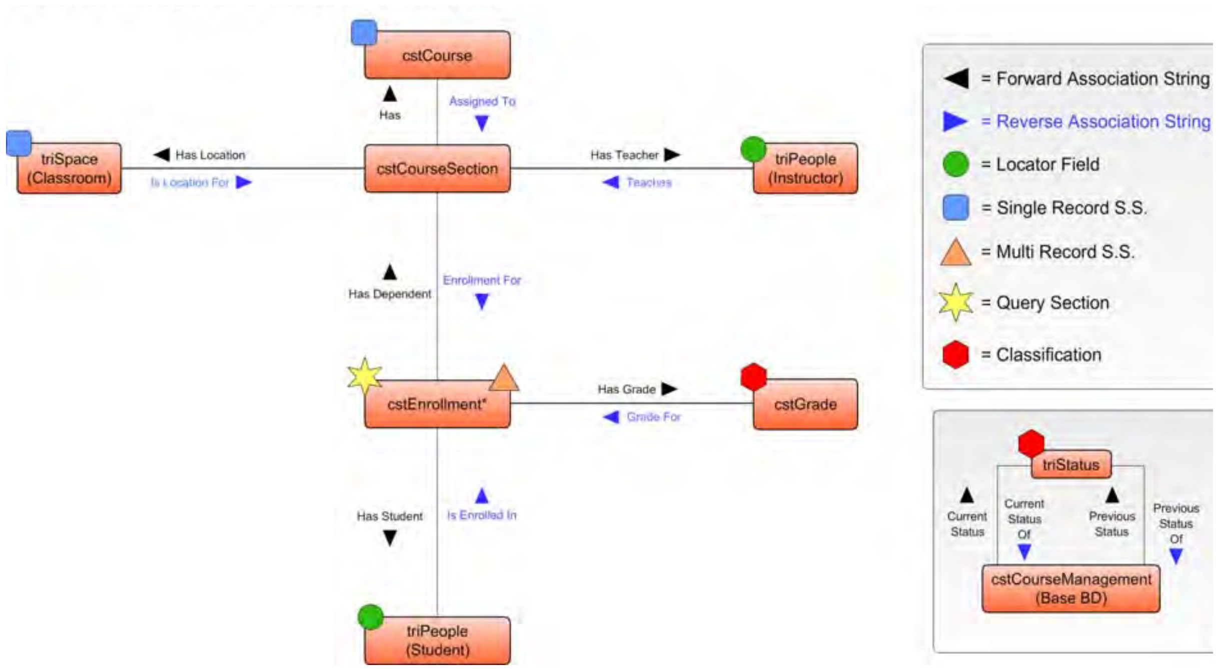
Exercise 1. Creating a user ID

In this exercise, you create a user ID in the IBM® TRIRIGA® platform with the following characteristics:

- A user ID that is not the same as any user ID that you currently use (to avoid using your real password by force of habit)
- Active User is selected
- Has Application Builder home page
- Has TRIRIGA global menu
- Sitemap property is selected
- Member of Admin group
- Has all licenses

2 Business scenario exercises

Review the following Association diagram for the proposed application.



3 Data models and the Data Modeler exercises

This unit describes data models and shows you how to create one using the Data Modeler tool.

In these exercises you use the Data Modeler to create the foundation of the course management application.

Exercise 1. Exploring the Data Modeler

In this exercise, you work with the Data Modeler tool.

Perform the following tasks:

1. Open the Data Modeler.
2. Choose any module in the Object Browser and expand it.
3. Open a business object in that module.
4. Ensure that the Properties, Field list, and Association panels are displayed. If any are not, click **View** and select that panel from the list to open it.
5. Practice these activities:
    a. Moving panels around.
    b. Changing panel size by clicking the side or bottom and dragging it.
    c. Changing panel size by holding the Shift key and dragging the header.
    d. Moving a panel too high in the display so that you cannot click the header. Use **View > Reset** to return all panels to their default size and position.

Exercise 2. Creating a module

Create the cstCourseManagement module with the properties that are listed in the following table.

Property	Description
Module Name	cstCourseManagement
Hierarchy Module	No

Exercise 3. Creating a base business object

Create the cstCourseManagement base business object with the properties that are listed in the following table.

Property	Description
BO Name	cstCourseManagement
Display Name	Course Management
BO Type	Stand Alone

Use the **Find** command to add the following fields to the business object.

Add or find	Type	Name	Label	Other
Tip: For the following fields, Filter by Type=System Read Only				
Find	Sys RO	triBusinessObjectIdSY	System Business Object ID	
Find	Sys RO	triBusinessObjectLabelSY	Business Object Label	
Find	Sys RO	triBusinessObjectNameSY	Business Object Name	
Find	Sys RO	triCreatedSY	Created Date/Time	
Find	Sys RO	triFormIdSY	System Form ID	
Find	Sys RO	triFormLabelSY	Record Form	
Find	Sys RO	triFormNameSY	Form Name	
Find	Sys RO	triModifiedSY	Modified Date/Time	
Find	Sys RO	triRecordIdSY	System Record ID	

Add or find	Type	Name	Label	Other
Find	Sys RO	triRecordNameSY	Record Name	
Find	Sys RO	triRecordStateSY	Record State	
Tip: For the following fields, Filter by Type=All				
Find	Classif.	triStatusCL	Status	Do not Auto Populate. Read Only.
Find	Classif.	triPreviousStatusCL	Previous Status	Do not Auto Populate. Read Only.
Find	Ctrl. No.	triControlNumberCN	Control Number	
Find	Text	triDescriptionTX	Description	Do not Auto Populate.
Find	Text	triNameTX	Name	Set to **NOT** Required. Do not Auto Populate.
Find	Text	triIdTX	ID	Do not Auto Populate.
Find	Text	triUserMessageTX	Attention!	Do not Auto Populate. Read Only.
Find	Text	triUserMessageFlagTX	!	Do not Auto Populate. Read Only.

Exercise 4. Adding associations

Add associations to the Base business object with the properties that are listed in the following table.

Module	Business Object	Association	Associate module	Associate business object	Reverse association
cstCourse Management	cstCourse Management	Current Status	Classification	triStatus	Current Status Of
cstCourse Management	cstCourse Management	Previous Status	Classification	triStatus	Previous Status Of

Exercise 5. Adding association properties to Classification fields

Follow these steps to connect the associations that you created to the **Status** and **Previous Status Classification** fields:

1. From the **Field** list, click **triStatusCL**.
2. From the **Association String** list, select **Current Status**, and click **Save Field**.
3. From the **Field** list, click **triPreviousStatusCL**.
4. From the **Association String** list, select **Previous Status**, and click **Save Field**.

4 State families exercises

You learn about the life cycle of a record and how it is defined in the state family of a business object in this unit.

In the exercises you import a template state family into the base business object and publish the business object. You also create the *course* business object.

Exercise 1. Creating a state transition family for the Base business object

In this exercise, you create a State Transition family for the cstCourseManagement business object by following these steps. Make sure to apply or save your changes as needed.

1. Import the **triDataRevise** template.
2. Relabel the **Final Approval Hidden** action to **Approve.** Make it visible.
3. Relabel the **Return Draft Hidden** action to **Return Draft.** Make it visible.
4. Relabel the **Return Revision Hidden** action to **Return Revision.** Make it visible.
5. Save your changes.
6. Add sub actions to all transitions that change states. These sub actions capture the value of **Status** and **Previous Status** fields by using the values that are defined in Table 1.

Table 1. Common states and corresponding status values

State	Status
null	When coming from null, leave it blank. When going to null, use Deleted.
triDraft	Draft
triReview	Review In Progress Note: All words are capitalized, including *In*.
triActive	Active

Table 1. Common states and corresponding status values

State	Status
triRevision	Revision In Progress Note: All words are capitalized, including *In*.
triRetired	Retired
triUploadError	Upload Error

When completed, the State Transition family is displayed as shown in Figure 1.

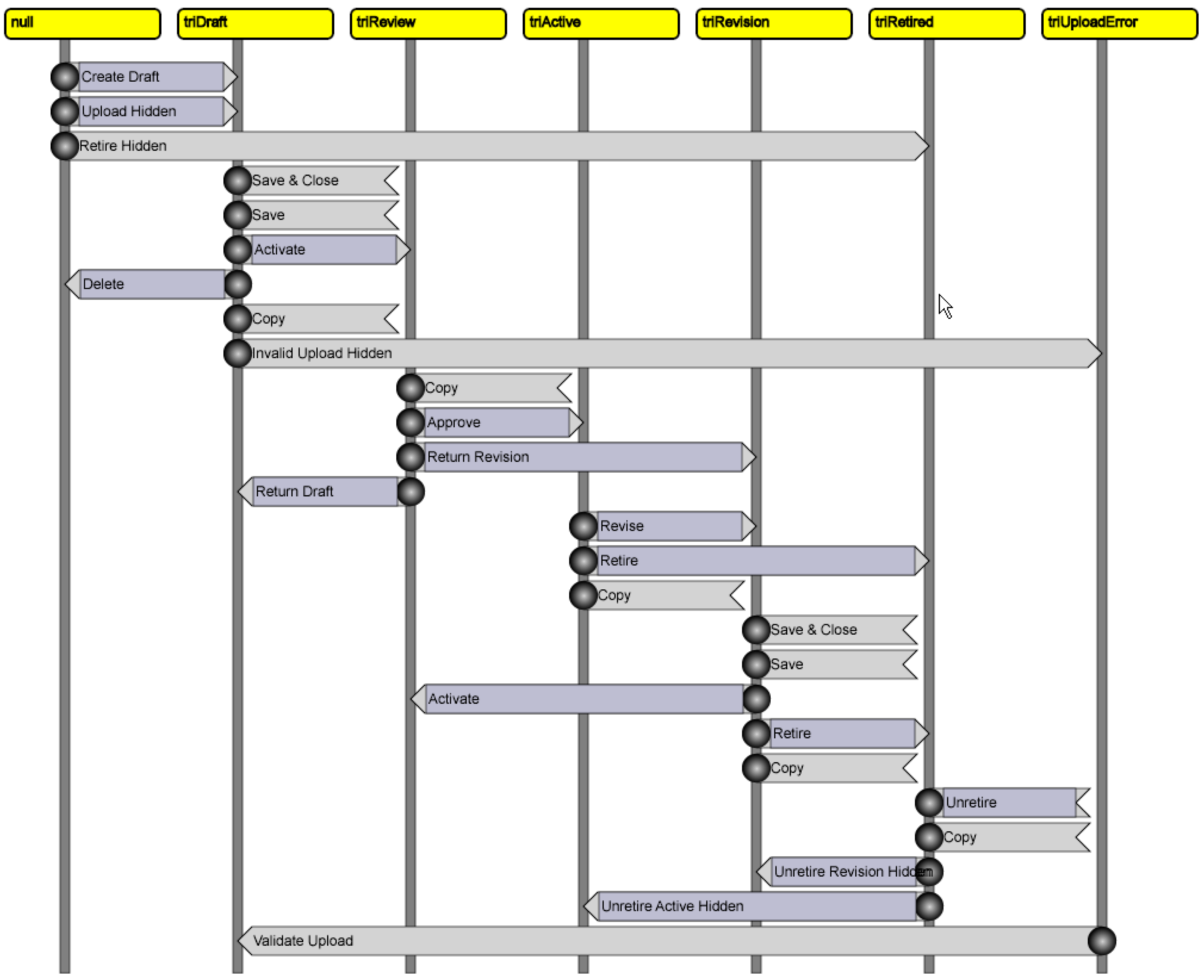


Figure 1. Base business object state transition family

Exercise 2. Publishing the Base business object

In this exercise, you define the business object mapping for the Base business object and publish it. Use the following properties for the business object mapping:

- The Publish Name of the Base business object is **Name** (triNameTX).
- The control number has a **Start With** value of 1000000.

Exercise 3. Creating the Course business object

In this exercise, you create the cstCourse business object with the properties that are listed in the following table.

Property	Description
BO Name	cstCourse
Display Name	Course
BO Type	Stand Alone

Exercise 4. Adding fields to the Course business object

Add the following fields to the Course business object.

Add or find	Type	Name	Label	Other
Add	Text	cstCourseNumberTX	Course Number	**Required**; Do Not Auto Populate; Result Column: Column sequence = 1; Size = 10
Add	Text	cstCourseTitleTX	Course Title	**Required**; Do Not Auto Populate; Result Column: Column sequence = 2
Add	Number	cstCreditHoursNU	Credit Hours	Do Not Auto Populate; UOM List = Time; Default UOM = hours; Use Custom UOM Precision and Mask = checked. Display Mask = #.# Storage Precision = 1
Add	Number	cstMaxEnrollmentNU	Max Enrollment	Do Not Auto Populate; Validation = Accept Only Number.
Add	Number	cstFeeNU	Fee	Do Not Auto Populate; UOM List = Currency; Default UOM = US $.

Exercise 5. Publishing the Course business object

In this exercise, you define the business object mapping for the cstCourse business object and publish it. Use these properties for the business object mapping.

- The Publish Name is **Course Number - Course Title**.
- The Control Number has a **Start With** value of 1000000.

5 Forms and the Form Builder exercises

You learn about the presentation of data in this unit.

In the exercises you create a form for the base business object, and copy it to create the form for the *course* business object.

Exercise 1. Creating a base business object form

In this exercise, you create a form to display the base business object (cstCourseManagement). This form serves as a template for creating the other forms in the cstCourseManagement module. It has common elements that are used by all forms in the module.

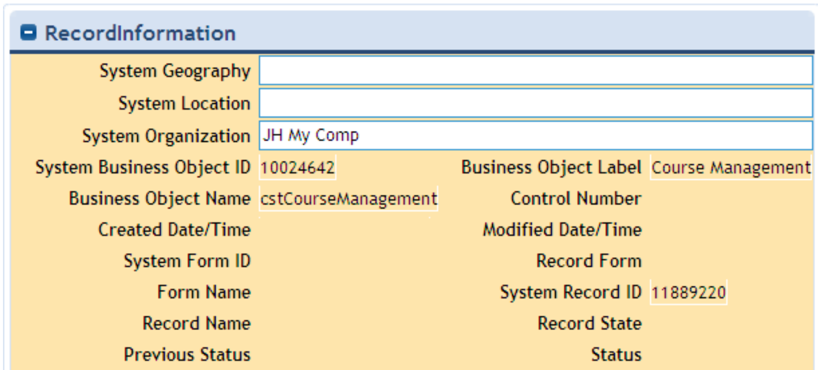
1. Create a form in the cstCourseManagement module with these properties:
   - BO: **cstCourseManagement**
   - Label: **Course Management**
   - Check the boxes for the following properties:
     - Default form
     - Allow bookmark to create record
     - Allow bookmark to specific record
     - Show Association
     - Show Workflow Instance
2. Add a tab with these properties:
   - Name: **cstGeneral**
   - Label: **General**.
3. Add a section to the **General** tab with these properties:
   - Name: **cstAttention**
   - Label: **Attention**!

- Title Bar color: <*Top row, third from the right*>
- Visible: <*Cleared*>

4. Add the **triUserMessageTX** field to the **Attention** section and set these properties:
   - Data Style Class: **datastyleclass2**
   - Row Span: **3**
   - Label: <*hidden*>
5. Add a tab with these properties:
   - Name: **cstSystem**
   - Label: **System**
   - Tab Information: **Optional**
   - Instruction: **Review the system record information**
6. Copy the Attention section from the **General** tab to the **System** tab.
7. Add a section to the **System** tab with these properties:
   - Name: **cstRecordInformation**
   - Label: **Record Information**
8. Add the **GeographyName** field to the cstRecordInformation section. Change the name to **System Geography** and make it full width.
9. Add the **LocationName** field to the cstRecordInformation section. Change the name to **System Location** and make it full width.
10. Add the **OrganizationName** field to the cstRecordInformation section. Change the name to **System Organization** and make it full width.
11. Add the following fields to the cstRecordInformation section in the specified order:
    - **triBusinessObjectIdSY**
    - **triBusinessObjectLabelSY**
    - **triBusinessObjectNameSY**
    - **triControlNumberCN**
    - **triCreatedSY**
    - **triModifiedSY**
    - **triFormIdSY**
    - **triFormLabelSY**
    - **triFormNameSY**
    - **triRecordIdSY**

- **triRecordNameSY**
- **triRecordStateSY**
- **triPreviousStatusCL**
- **triStatusCL**

The Record Information section looks like the following image.



12. Publish the form.

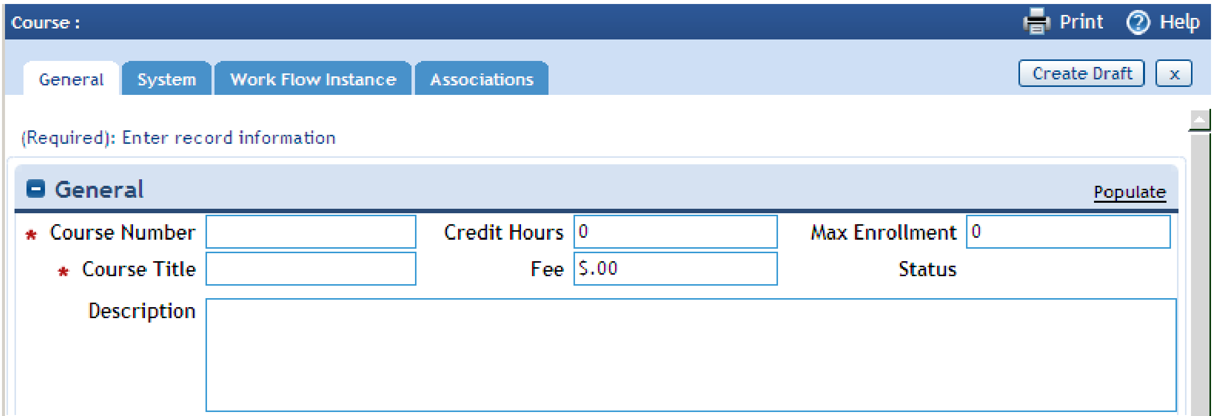
Exercise 2. Creating the Course form

In this exercise, you create a form to display course records (from the cstCourse business object).

1. Copy the cstCourseManagement form with these properties:
   - BO: **cstCourse**
   - Name: **cstCourse**
2. Open the copied form.
3. Change the Label of the form to **Course** and select the **Default Form** check box. Click **OK** in the notification window.
4. Add a section to the **General** tab with these properties:
   - Name: **cstGeneral**
   - Label: **General**
5. Add the following fields from the **Component** list:
   - **cstCourseNumberTX**
   - **cstCreditHoursNU**
   - **cstMaxEnrollmentNU**

- **cstCourseTitleTX**
- **cstFeeNU**
- **triStatusCL**
- **triDescriptionTX**

6. Position the fields as shown in the following image.



7. Publish the form.

6 Navigation exercises

In this unit you learn how to create menu items and move around the platform. This is only part of the information required to put items into the platform navigation.

There are no student exercises for this unit.

7 Portals exercises

In this unit you learn how to create menu items and move around the platform.

In the exercises you create the navigation elements required to access the *Course* form and create records. You then validate that the status and previous status values are being captured correctly.

Exercise 1. Creating navigation components to the Course form

In this exercise, you create the navigation components that are necessary to use the *Course* form to create records. Use the following steps to create these components:

1. Open the Navigation Builder tool.
2. Create a navigation collection with the following properties:
   - Name: **cstCourseManagement - Quick Links - Course Management**
   - Label: **Course Management.**
   - Type: **Quick Links**
3. Open the Navigation Items library.
4. Create a navigation item with the following properties:
   - Name: **cst Master / Detail Courses**
   - Label: **Courses**
   - Target Type: **Master/Detail Default Query**
   - Module: **cstCourseManagement**
   - Form: **cstCourse**
   - In the Default Query Columns section, select all fields except the Image field
   - Add actions for System Add, named Add, and System Delete, named Delete
5. Add the navigation item to the navigation collection.
6. Save and close the navigation collection.

7. Open the Portal Builder tool.
8. Select the Portfolio - Portfolio Landing Page portal, and click the **Edit** action.
9. Open the Portal Sections Library.
10. Create a portal section with the following properties:
    - Name: **cst Quick Links - cstCourseManagement - Course Management**
    - Label: **Course Management**
    - Type: **Quick Links**
    - Quick Links collection: **cstCourseManagement - Quick Links - Course Management**
11. Save the portal section. Use the filters to search the Portal Sections Library for the portal section.
12. Select the portal section and click the **Add to Portal** button.
13. Save and close the portal. Click the Portfolio tab.

When you finish creating these components, the portal section as seen on the portal resembles Figure 2.

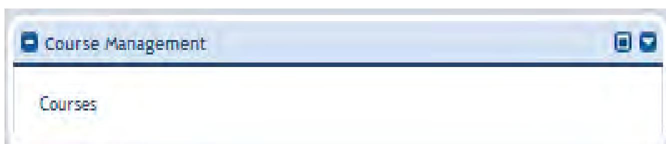


Figure 2. Completed Course Management section

Exercise 2. Validate status and Previous status

This exercise is to verify that the Status and Previous Status are captured correctly.

1. Create a Course record.
2. Enter values in the fields and click **Create Draft**.
3. Click the **System** tab.
4. Verify that the Status value is **Draft** and that Previous Status is blank.
5. Click **Activate**.
6. Verify that the Status is **Review In Progress** and that Previous Status is **Draft**.
7. Click an action button to move the record to another state. Verify that the status and previous status values are captured correctly, as specified in the table provided in Chapter 4 Exercise 1, "Creating a state transition family for the Base business object".

8. Continue to move the record from state to state and verify that status and previous status are captured correctly.

Note: After a record is in Retired status, it cannot be unretired without a workflow (which is outside the scope of this class). If you Retire a record while testing, you must create a new one to continue testing.

9. Correct any errors that you find in both the **cstCourse BO** state family and in the **cstCourseManagement** state family.

8 Basic reporting exercises

This unit teaches you how to create basic reports using the Report Manager.

In the exercises you create a custom query to view *course* records and change the navigation item to put the custom query in place of the default *course* query.

Exercise 1. Creating a Course manager query

In this exercise, you create a custom query to display courses and replace the default query in the navigation item with your custom query.

Create a query with the following properties:

- **General** tab
  - Name: **cstCourse – cstCourse – Manager Query**
  - Header (Title): **Courses**
  - ID: **CUSTOM**
  - Description: **Course manager query**
  - Type: **Query**
  - Data Scope: All Projects
  - Show as Community Report: <*cleared*>
- **Business Objects** subtab **Business Object** section
  - Module: **cstCourseManagement**
  - Business Object: **cstCourse**
  - Form: **cstCourse**
- **Columns** tab fields in this order:
  - **Course Number**
  - **Course Title**
  - **Credit Hours**

    - **Fee**
    - **Max Enrollment**
    - **Status**
- **Order & Group** tab, Order By section fields in ascending order
    - **Course Number**
    - **Course Title**
- **Filters** tab:
    - System filter with these properties:
        - Field: **Status**
        - Operator**: In**
        - Value**:** '**Draft'**, **'Review In Progress'**, '**Active'**, '**Revision In Progress'**.
    - Properties in the following table to create User filters.

Field label	Field name	Filter operator
Course Number	cstCourseNumberTX	Contains
Course Title	cstCourseTitleTX	Contains
Credit Hours	cstCreditHoursNU	More Than or Equals
Description	triDescriptionTX	Contains
Fee	cstFeeNU	More Than or Equals
Fee *	cstFeeNU	Less Than or Equals
Max Enrollment	cstMaxEnrollmentNU	More Than or Equals
Status	cstStatusCL	Contains

* Copy the first filter on **Fee** and change its properties for the second filter on **Fee**.

Save the report, and click **Run Report** to view and verify it.

Exercise 2. Replacing the default Course query in navigation

Follow these steps to replace the default Course query with the custom query:

1. Edit the navigation collection **cstPortfolio – Quick Links – Course Management**.
2. Edit the **Master Detail – Courses** navigation item.
3. Make the following changes:
   a. Change **Target Type** to **Master/Detail Query**.
   b. In the **Target Title** list, change the text to **Courses**.
   c. From the **Modules** list, select **cstCourseManagement**.
   d. From the **Business Object** list, select **cstCourse**.
   e. From the **Rep**orts list, select **cstCourse – cstCourse – Manager Query**.
   f. From the **Modules** list, select **cstCourseManagement**.
   g. From the **Forms** list, select **cstCourse**.
4. Add **Add** and **Delete** actions.

9 Lists and classifications exercises

The unit describes lists and classifications and how they are used in the platform.

The exercises have you create a new list, and add values to another list. You then begin creation of a new business object for *course sections*.

Exercise 1. Creating a schedule list

In this exercise, you create the cstSchedule list with these items:

- Properties
  - Name: **cstSchedule**
  - Label: **Schedule**
  - Module: **cstCourseManagement**
  - Source Type: **Manual**
- Values:
  - M, W, F
  - M, W
  - W, F
  - Tu, Th

Exercise 2. Adding association strings

In this exercise, you add the association strings, shown in the following table, to the Association Types list. All associations that are created in the platform use this list for their association strings.

Association string
Has Teacher
Teaches
Enrollment For
Has Grade
Grade For
Has Student
Is Enrolled In

Exercise 3. Creating a course section business object

In this exercise, you create a Course Section business object, which combines the various components that you develop during class.

Table 2. Creating a course section business object: Properties

Property	Description
BO Name	cstCourseSection
Display Name	Course Section
BO Type	Stand Alone

Table 3. Creating a course section business object: Field list

Add or find	Type	Name	Label	Other
Add	Number	cstCurrentEnrollmentNU	Current Enrollment	Read Only. Do not Auto Populate; Validation: Accept Only Number.
Add	Text	cstInstructorTX	Instructor	Do not Auto Populate
Add	List	cstScheduleLI	Schedule	Choose the List named cstSchedule from the cstCourseManagement Module. Do not Auto Populate.
Add	Text	cstSectionNumberTX	Section #	**Required**; Size: 15 characters. Do not Auto Populate.
Find	Number	cstMaxEnrollmentNU	Max Enrollment	Validation: Accept Only Number. Do not Auto Populate.
Find	Text	triEmailTX	Email	Do not Auto Populate.
Find	Date	triEndDA	End Date	Do not Auto Populate.
Find	Date	triStartDA	Start Date	Do not Auto Populate.

Table 3. Creating a course section business object: Field list

Add or find	Type	Name	Label	Other
Find	Time	triEndTimeTI	End Time	Do not Auto Populate. Set to NOT Required.
Find	Time	triStartTimeTI	Start Time	Do not Auto Populate. Set to NOT Required.

10 Data Integrator exercises

Data Integrator is a tool used to load data that is contained in text files into the platform.

This exercise has you load location and person data.

Exercise 1. Loading data by using Data Integrator

This exercise loads predefined text files by using the Data Integrator. Use the following settings for all files:

- Import Type: **Add**
- Action: **triUploadHidden**
- File Type: **Tab Delimited** (*.txt)
- File Char Set: **UTF-8**

Use the following settings for the specified files.

Type of data	Module	Business object	Form	File name	Number of lines
Properties	Location	triProperty	triProperty	Properties.txt	1
Buildings	Location	triBuilding	triBuilding	Buildings.txt	3
Floors	Location	triFloor	triFloor	Floors.txt	6
Spaces	Location	triSpace	triSpace	Spaces.txt	30
Instructors	triPeople	triPeople	triEmployee	Instructors.txt	5
Students	triPeople	triPeople	triExternalContact	Students.txt	12

11 Object migration: Import exercises

Object migration is the process of transferring business objects from one IBM TRIRIGA environment to another.

In this exercise you import the objects for the Grades package into your platform environment.

Exercise 1. Importing cstGrades

In this exercise, you import the Grades Object Migration package by following these steps:

1. Open the Object Migration tool.
2. Click **New Import Package**.
3. Click **Browse** and locate the **Grades 10.0.zip** file. It is on the Windows Desktop in the **Class Data - Platform I** folder, in the **Grades Classification OM Package folder**.
4. Click **OK**.
5. With the guidance of your instructor, explore the features of the Object Migration tool.
6. Click **Import** to import the package.

12 Associations exercises

Associations are the connections between records. They typically must be defined at the business object level before they can be created at the record level.

This exercise has you define associations at the business object level,

Exercise 1. Creating associations

Create associations with the information shown in the following table.

Table 4. Creating associations

Module	Business Object	Association	Associate module	Associate Business Object	Reverse association
cstCourse Management	cstCourseSection	Has Location	Location	triSpace	Is Location For
cstCourse Management	cstCourseSection	Has	cstCourse Management	cstCourse	Assigned To
cstCourse Management	cstCourseSection	Has Teacher	triPeople	triPeople	Teaches
Location	triSpace	Is Location For	cstCourse Management	cstCourseSection	Has Location
cstCourse Management	cstCourse	Assigned To	cstCourse Management	cstCourseSection	Has
triPeople	triPeople	Teaches	cstCourse Management	cstCourseSection	Has Teacher

13 Smart sections and locator fields exercises

Smart sections and locator fields are direct connections from one record to another.

These exercises have you create smart sections and locator fields in the *course section* business object.

Exercise 1. Creating a Smart section for cstClassroom

Create a Smart section with the information shown in the following table.

Property	Description	
Section Name	cstClassroom	
Section Label	Classroom	
Associated Business Object	Location - Has Location - triSpace	
Other Properties	Associate One Record Reference Only Live Link	
Field List	**Label**	**Name**
	Capacity	triCapacityNU
	Name* *set to NOT required	triNameTX
	Hierarchy Path	triPathTX
	Status	triStatusCL

Exercise 2. Creating a Smart section for cstCourse

Create a Smart section with the information shown the following table.

Property	Description	
Section Name	cstCourse	
Section Label	Course	
Associated Business Object	cstCourseManagement - Has - cstCourse	
Other Properties	Associate One Record Reference Only No Live Link	
Field List	**Label**	**Name**
	Course Number	cstCourseNumberTX
	Course Title	cstCourseTitleTX
	Credit Hours	cstCreditHoursNU
	Description	triDescriptionTX
	Fee	cstFeeNU
	Max Enrollment	cstMaxEnrollmentNU

Exercise 3. Setting up the instructor Locator field

Create a Locator field with the information in this table:

Property	Value	
Field Name	cstInstructorTX	
Locator Field	Checked	
Locator Module	triPeople	
Business Object Name	triPeople	
Associated String	Has Teacher	
Locator Field mapping	General::Name	
Additional field mapping	**Existing field**	**Source field**
	General::Email	General::eMail

14 Formulas exercises

Formulas are a mechanism that is used to add business logic to an application.

In these exercises, you complete the creation of the *course section* business object and publish it. You then create a form and query for the *course section*, and add them to the navigation. Then you create an *enrollment* business object and do the same for it.

Exercise 1. Creating the Max Enrollment formula

In this exercise, you create a formula to set the Max Enrollment field to be the lesser of the Course capacity or the Classroom capacity.

To create the formula, you perform the following steps:

1. Open the cstMaxEnrollmentNU field properties. Select the **Formula** check box.
2. Select **Extended** for the formula type and click the **Enter** link.
3. In the Extended Formula window, perform the following steps:
   a. Add an Input named **RoomCapacity** to hold the capacity (triCapacityNU) from the Classroom smart section.
   b. Add an Input named **CourseCapacity** to hold the capacity (cstMaxEnrollmentNU) from the Course smart section.
   c. Enter the following information into the formula window:
      if (RoomCapacity < CourseCapacity, RoomCapacity, CourseCapacity)
   d. Save the formula, and save the field.

Exercise 2. Publishing the Course section business object

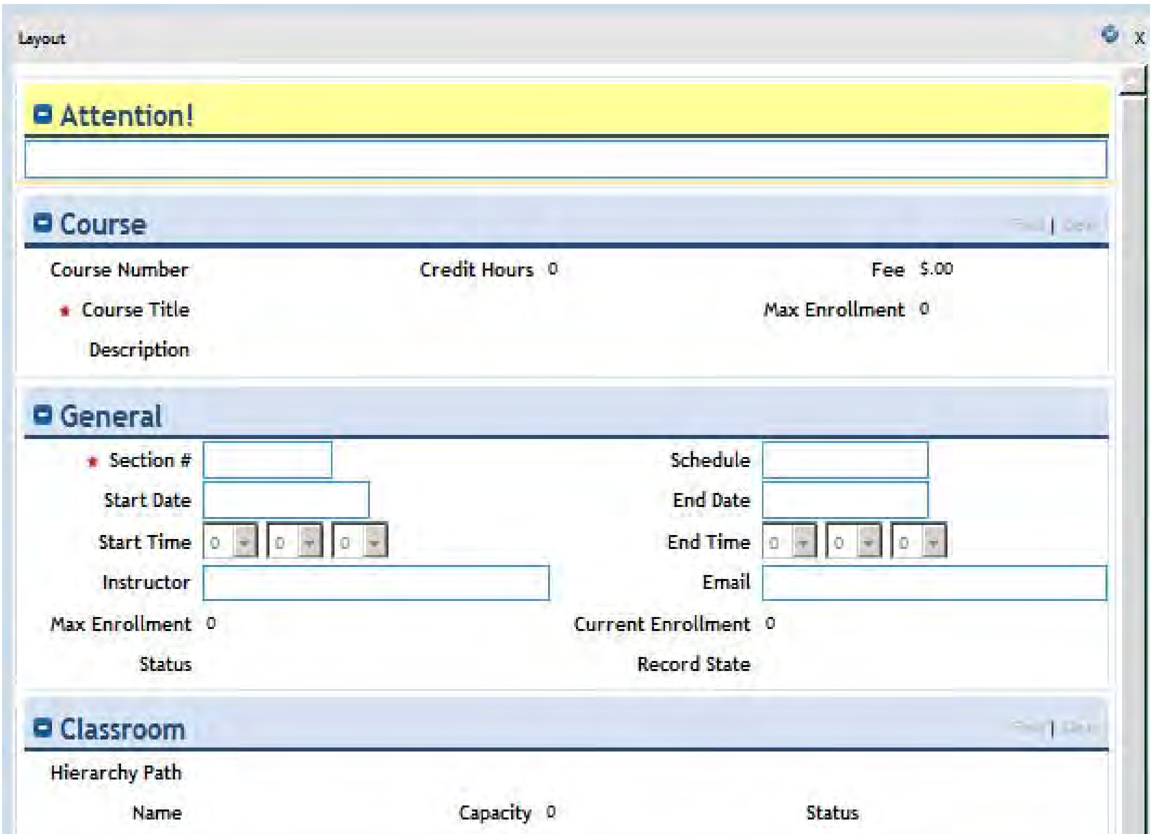
In this exercise, you define the publish name for the Course section business object by using the information that is shown in the following table. Then, you publish the business object.

Table 5. Defining the publish name

Property	Description
BO Name	cstCourseSection
Publish Name	Course Number - Course Title - Section #
Start With	1000000

Exercise 3. Creating the Course section form

Create a Course section form that matches this image. Note that the Course and Classroom sections are both Smart sections. Publish the form.



Exercise 4. Creating a Course Section Manager query

In this exercise, you create a Course Section Manager query. Use the properties that are listed in the following table.

Property	Value
Name	cstCourseSection - cstCourseSection - Manager Query
Header	Course Section
Type	Query

Property	Value
Business Object	cstCourseSection
Columns	Select 6 - 8 fields of your choosing.
Filters	Set user filters for every field in the query.

Exercise 5. Adding Course Section to the portal

Create a navigation item that points to the Course Section query and add it to the Course Management Quick Links navigation collection. Use the properties that are listed in the following table.

Property	Value
Name	cst Master Detail - Course Sections
Label	Course Sections
Target Type	Master/Detail Query
Business Object	cstCourseSection
Report	cstCourseSection - cstCourseSection - Manager Query
Other properties	Select the correct properties for the cstCourseSection BO and Form. Do not forget the Add and Delete actions.

Create some Course Section records to be used in later activities.

Exercise 6. Creating an Enrollment business object

Create an Enrollment business object with the information shown in Table 6 and Table 7 .

Table 6. Creating an enrollment business object: Properties

Property	Description
BO Name	cstEnrollment
Display Name	Enrollment
BO Type	Stand Alone

Table 7. Creating an enrollment business object: Field list

Add or Find	Type	Name	Label	Other
Add	Text	cstStudentTX	Student	**Required**. Do Not Auto Populate.
Add	Classif.	cstGradeCL	Grade	Use **Grades** as Root Classification. Do Not Auto Populate.
Add	Text	cstCourseSectionIdTX	Course Section ID	**Required**. Do Not Auto Populate.
Find	Text	triHomePhoneTX	Home Phone	Search for **HomePhone** if searching by Label; Read Only. Do not Auto Populate.
Modify	Text	triIdTX	Student ID	Change Label to Student ID; Read Only. Do Not Auto Populate.

Exercise 7. Creating associations

Create associations for the Enrollment Business Object with the properties that are listed in the following table.

Table 8. Creating associations

Module	Business Object	Association	Associate Module	Associate Business Object	Reverse association
cstCourse Management	*cstCourseSection	Has	cstCourse Management	cstEnrollment	Enrollment For
cstCourse Management	cstEnrollment	Enrollment For	cstCourse Management	cstCourse Section	Has
cstCourse Management	cstEnrollment	Has Grade	Classification	cstGrades	Grade For
Classification	cstGrades	Grade For	cstCourse Management	cstEnrollment	Has Grade
cstCourse Management	cstEnrollment	Has Student	triPeople	triPeople	Is Enrolled In
triPeople	triPeople	Is Enrolled In	cstCourse Management	cstEnrollment	Has Student

*Dependent association

Exercise 8. Finish the cstGradeCL setup

After you define the association between the cstEnrollment business object and the cstGrade business object, finish the setup of the cstGradeCL field.

Follow these steps:

1. Open the Data Modeler and select the cstEnrollment business object.
2. Select **cstGradeCL** from the **Field** list.

   At the bottom of the properties is the Association String.
3. Select **Has Grade**, and click **Save Field**.

Exercise 9. Defining locator fields

Define the Student and Course Section ID locator fields with the information shown in Table 9 and Table 10 .

Table 9. Properties for the Student locator field

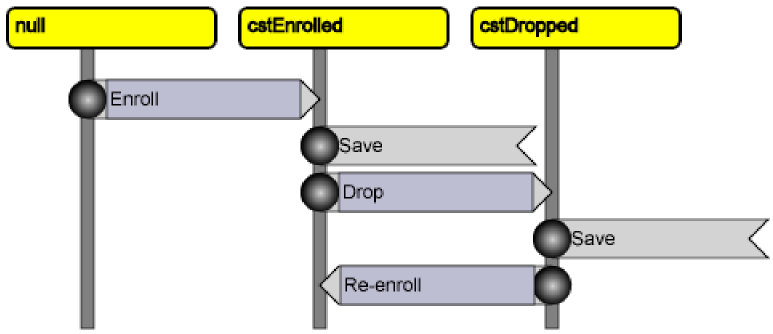
Property	Value	
Field Name	cstStudentTX	
Locator Field	Checked	
Locator Module	triPeople	
Business Object Name	triPeople	
Associated String	Has Student	
Locator Field mapping	General::Name	
Additional field mapping	**Existing field**	**Source field**
	General::Student ID	General::HR ID
	General::Home Phone	General::Home Phone

Table 10. Properties for the Course Section ID locator field

Property	Value
Field Name	cstCourseSectionIdTX
Locator Field	Checked
Locator Module	cstCourseManagement
Business Object Name	cstCourseSection
Associated String	Enrollment For
Locator Field mapping	General::Record Name
Additional field mapping	None

Exercise 10. Creating a state transition family for the Enrollment Business Object

In this exercise, you remove the state family that was inherited from the Base business object and you create a state family. The finished state family looks like the following example.



Create the transitions in the state family with the information shown in the following table.

Begin state	End state	Name	Label	Status	Previous Status
null	cstEnrolled	cstEnroll	Enroll	Enrolled	
cstEnrolled	cstEnrolled	cstSave	Save	Do not capture	Do not capture
cstEnrolled	cstDropped	cstDrop	Drop	Dropped	Enrolled
cstDropped	cstDropped	cstSave	Save	Do not capture	Do not capture
cstDropped	cstEnrolled	cstReenroll	Re-enroll	Enrolled	Dropped

Select **Default Display** and **Close Window** for the Enroll, Drop, and Re-enroll transitions. Then, save, and add sub actions to the Enroll, Drop, and Re-enroll transitions, to capture status.

Exercise 11. Publishing the Enrollment business object

1. Define the publish name for the Enrollment business object by using the information in the following table.

Property	Description
BO Name	cstEnrollment
Publish Name	Student - Student ID - Course Section ID
Start With	1000000

2. Publish the business object.

Exercise 12. Adding status classification records

Add the **Enrolled** and **Dropped** status values to the Status classification hierarchy.

Exercise 13. Creating the Enrollment form

Copy the cstCourseManagement Form to create the form for the cstEnrollment business object, by using cstEnrollment for both the business object and the name. Remember to change the label of the form to Enrollment. Add a cstGeneral section like the one in the following example.

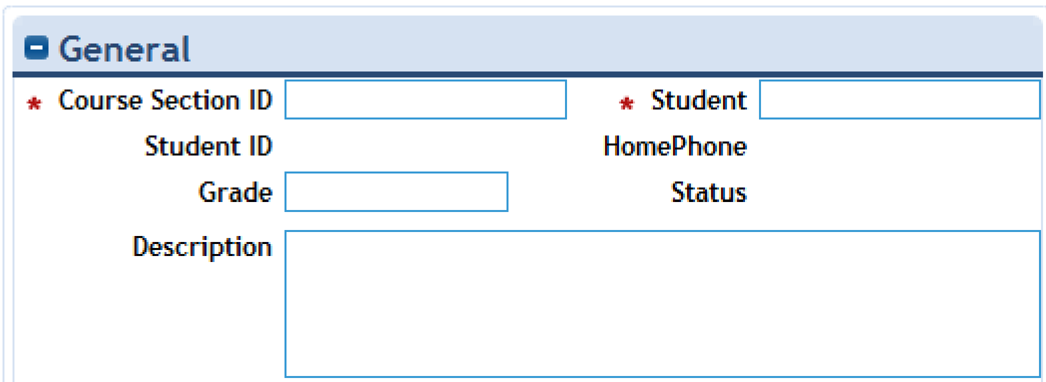


Figure 3. The Enrollment form

After adding the fields to the *General* section of the form, import the modified state family. Importing the modified state family is necessary because none of the original states or actions from the base business object exist in the Enrollment business object state family.

Exercise 14. Creating an Enrollment Manager query

Create a query that shows all available enrollment records by using the properties in the following table.

Property	Value
Name	cstEnrollment - cstEnrollment - Manager Query
Header	Enrollment
Type	Query
Business Object	cstEnrollment
Columns	Course Section ID, Student, Student ID, HomePhone, Grade, Status
Filters	Set user filters for the fields in this list: Course Section ID, Student, Student ID, HomePhone, Grade, Status

Exercise 15. Adding enrollment to the portal

Add a navigation item for the Enrollment query to the Course Management Quick Links navigation collection by using the properties that are listed in the following table.

Property	Value
Name	cst Master Detail - Enrollments
Label	Enrollments
Target Type	Master/Detail Query
Business Object	cstEnrollment
Report	cstEnrollment - cstEnrollment - Manager Query
Other properties	Select the correct properties for the cstEnrollment BO and Form. Do not forget the Add and Delete actions.

To test, create some enrollment records.

15 Workflows exercises

Workflows are used to add business logic to an application. They can perform many tasks and can be called in many ways.

In these exercises you plan out and create several workflows to validate data.

Exercise 1. Creating an Activation validation workflow

In this exercise, you create a workflow to validate Course Section data by following this business requirement: *Course Section records must have an Instructor and a Classroom before they can be activated*.

Follow the guidance of the instructor to create the workflow.

Exercise 2. Triggering the activation validation workflow

The workflow is triggered when the user clicks the Activate action of a Course Section record.

To trigger the workflow in this way, you must go to the Data Modeler, select the Course Section business object, and click **Tools > BO State Transition** to open the state transition editor. You must then modify the sub action on each of the Activate actions to have them call the **cstCourseSection - Synchronous - Activation Validation** workflow.

Exercise 3. Creating a date validation workflow

In this exercise, you create a workflow that enforces this business rule: *The Start date for a Course Section must be less than or equal to the End date*.

A more detailed plan for the workflow contains the following items:

- The workflow is triggered when the user changes the End date.
- The workflow determines whether the Start date is less than or equal to the End date. If it is not, an appropriate message is created.
- If no message is created, no further action is taken. Otherwise, the message is displayed to the user.

Note: One approach to building this workflow is to copy the Activation Validation workflow and modify it.

Exercise 4. Attaching the workflow to the Start date

In the previous exercise, you attached the Date Validation workflow to the End date. In this exercise, you also attach it to the Start date.

As you test this change, notice that the message is generated if either the Start or End date field is empty. Change the workflow so that no message is generated if either date is empty.

Exercise 5. Combining validations

Because the Activation Validation and the Date Validation workflows are separate, you can have invalid dates and activate the record. In this exercise, you call the Date Validation workflow from the Activation Validation workflow. All errors that are detected from either workflow are reported at the same time.

Important: Both workflows start by clearing messages and hiding the Attention section. If you position the call of the Date Validation workflow incorrectly, the messages are lost.

Exercise 6. Workflow for hiding the Attention section

In this exercise, you create an asynchronous workflow to hide the Attention! sections if the user cancels out of a form. This workflow runs only if there is no message that is permanently saved in the record. This workflow is triggered on the **WF WIZARD CANCEL** event.

16 Advanced queries exercises

You can replace default system queries that are used in the platform with custom queries that you create. You can also configure queries so that values can be edited directly in the query.

These exercises have you replace a default Find query with a custom query. You also create several editable reports and connect them together in a related reports chain.

Exercise 1. Creating a Course Find query

In this exercise, you copy the Course Manager query to create a Course Find query. You then attach it to the Course smart section Find action in the Course Section form.

Follow these steps to complete this exercise:

1. Copy the Course Manager query.
2. Open the copy and change the name to **cstCourse - Find.** Save and close.
3. Open the **cstCourseSection** form.
   a. Select the **Course** section. Scroll down to the actions.
   b. Open the **Find** action.
   c. Click the URL picker.
   d. Select the **cstCourseManagement** module, and select the **cstCourse - Find** query.
   e. Click **OK**, and then click **Apply.** Publish the form and test the change.

Exercise 2. Creating a Course editable query

In this exercise, you create an Editable query for courses in Draft status by performing the following steps:

1. Copy the **Course Manager** query.
2. Set the following properties:
   a. For the **Name**, select **cstCourse – cstDraft - Editable.**
   b. For the **Header (Title)**, select **Courses – Draft.**
   c. For the **Description**, select **Draft editable courses.**
   d. On the **Options** subtab, for **Editable**, click **Yes**.
   e. From the **State** list, select **triDraft**.
   f. On the **Columns** tab, select the **Editable** check box for **Course Title**, **Credit Hours**, **Fee**, and **Max Enrollment**.
   g. On the **Advanced** tab, click **Import State Actions**.
3. Select **triActivate** and **triSave**. Click OK. Use the up and down arrows to change the order of the actions, if necessary.
4. On **General** tab, open the **Related Reports** subtab. Add **cstCourse - cstCourse - Manager Query.**
5. Save and close.
6. Open **cstCourse - cstCourse - Manager Query.**
7. On the **General** tab, open the **Related Reports** subtab. Add **cstCourse - cstDraft - Editable.**
8. Save and close.

Exercise 3. Creating an Enrollment editable query

In this exercise, you create an Editable query that displays Enrollment records in the cstEnrolled state. Then, you add the query to the Course Section form as a Query section. The query uses an association filter to select the Enrollment records that are associated to the Course Section record that is displayed in the Course Section form.

Create a query with the properties that are listed in the following table.

Property	Value
Name	cstEnrollment – Display – cstEnrolled – Editable – Currently Enrolled Students
Header (Title)	Enrolled Students
Type	Query
Data Scope	All Projects
Show As Community Report	No
Module	cstCourseManagement
BO	cstEnrollment
Form	cstEnrollment
Editable	Yes
State	cstEnrolled
Order By	Student, Student ID
Fields	Student, Student ID, Description, Grade, Home Phone, Status
User field Filters	All fields, Contains
System field Filters	None
Association Filter	cstCourseManagement, cstCourseSection, Has, No, Record, $$RECORDID$$
Imported State Actions	cstDrop, cstSave

Exercise 4. Creating a Dropped editable query

In this exercise, you create a query to display dropped students and add it as a related report to the Enrolled Students query.

1. Copy the Currently Enrolled Students query.
2. Change the following properties to reflect Dropped status:
   - Name: **cstEnrollment - Display - cstDropped - Editable - Dropped Students**
   - State: **cstDropped** (on the **Options** subtab)
3. On the **Advanced** tab, remove existing actions and these Import State actions:

- **cstReenroll**
- **cstSave**

4. Add the Currently Enrolled Students query as a **Related Report** of this query.
5. Save and close.
6. Open the Currently Enrolled Students query.
7. Add the Dropped Students query as a **Related Report** of the Currently Enrolled Students query.
8. Save and close.

Exercise 5. Adding the Enrollment query to the Course Section form

In this exercise, you create a Query section in the Course Section form and attach the Enrollment Editable query to it. This exercise also hides the default Find action and replaces it with an action named *Add Students*. The action creates a temporary association between the Course Section record and each person that is selected from the list.

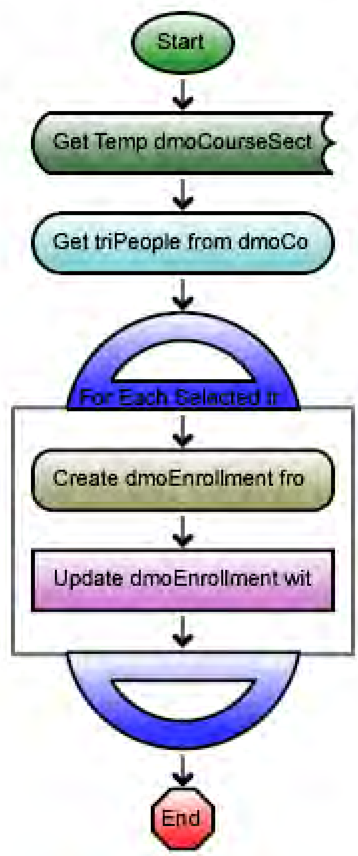
Use the following steps to complete this exercise:

1. Open the cstCourseSection form.
2. Click the **General** tab.
3. Add a section with the following properties:
   - Type: **Query**
   - Name: **cstEnrollment**
   - Label: **Enrollment**
   - Use the Query picker to select the **cstCourseManagement** module and choose the **Currently Enrolled Students** query. Click **OK**.
   - Association Type: **Has**
   - Select Association Type: **Selected**
   - Height: **15**
4. Click **Apply**.
5. Go to Action list (Properties window).
6. Open **Find** action. Remove the label, clear the Visible check box, and click **OK**.
7. Open the **Deassociate** action. Change the label to **Delete**, and click **OK**.

8. Click **Add** to add a custom action with the following properties:
    a. In the **Label** field, enter **Add Students**.
    b. Select the **Popup** check box.
    c. From the **Action Type** list, select **Query**.
    d. From the **Popup Module** list, select **triPeople**.
    e. In the **Popup Query** field, enter **triExternalContact – Find (triPeople)**.
    f. From the **Association** list, select **Temporary**.
9. Click **OK**.
10. Click **Apply**.

Exercise 6. Creating a workflow to add enrollments

When the Add Students action is used, an Enrollment record must be created to connect the Student and the Course Section records. In this exercise, you develop a workflow to accomplish this task. The workflow creates an Enrollment record for each selected person and sets the Locator fields to point to the person record and the Course Section record. An image of the completed workflow is shown in the following example.



The workflow tasks have the following properties:

- Start task
  - Name: **cstCourseSection – Synchronous – Add Enrollments**
  - Concurrence: **Synchronous**
  - Temporary Data: **Temporary**
  - Object Type: **cstCourseSection**
- Get Temp Record task
  - Label: **cst Get Temp cstCourseSection**
- Retrieve Records task
  - Label: **cst Get triPeople from cstCourseSection**
  - Description: **Get people that are selected by the user**
  - of Task: **Get Temp cstCourseSection(cstCourseSection)**
  - Select the **Use any Associated BO from module triPeople** option.

  - From the list, select **triPeople**.
  - For association string type, select **Temporary**.
- Iterator task:
  - Label: **cst For Each Selected triPeople**
  - of Task: **Get triPeople from cstCourseSection**
- Create Record task:
  - Label: **Create cstEnrollment from triPeople**
  - Object: **cstEnrollment**
  - Form: **Enrollment**
  - Action: **cstEnroll**
  - of Task: **For Each Selected triPeople** (**triPeople**)
  - Edit Map settings
    - Click the **Attribute Picker** icon that is next to the **cstStudentTX** field. Select **Source**.
    - Click the **Attribute Picker** icon that is next to the **triHomePhoneTX** field. Select **triHomePhoneTX** from the Detail section.
    - Click the **Attribute Picker** icon that is next to the **triIdTX** field. Select **triIdTX** in the Detail section.
- Modify Records task
  - Label: **cst Update cstEnrollment with cstCourseSection**
  - Map To Records section **of Task** field: **Create cstEnrollment from triPeople** (**cstEnrollment**).
  - Map From Records section, **of Task** field**: Get Temp cstCourseSection** (**cstCourseSection**).
  - Edit Map properties
    - Click the **Attribute Picker** icon that is next to the **cstCourseSectionIdTX** field. Select **Source**.

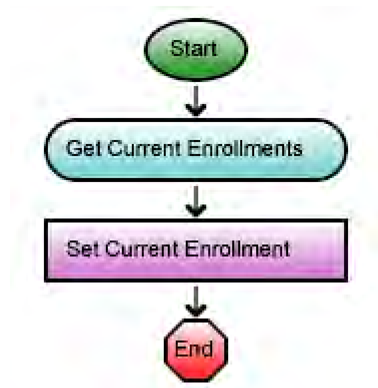
After you enter the task information and publish the workflow, you return to Form Builder, open the **cstCourseSection** form, and follow these steps:

1. Select the **Enrollment** section.
2. Open the **Add Students** action.
3. From the **Workflow** list, select **cstCourseSection - Synchronous - Add Enrollments**.
4. Click **OK.** Click **Apply.**
5. Publish and test.

Exercise 7. Updating the current enrollment workflow (optional)

In this exercise, you create a workflow to automatically recalculate the Current Enrollment value in the Course Section record. You recalculate the value whenever an Enrollment record is associated with the Course Section record. You build three workflows to address the three different actions that can affect the Current Enrollment value: Enroll, Drop, Reenroll.

Creating a workflow for the Enroll action

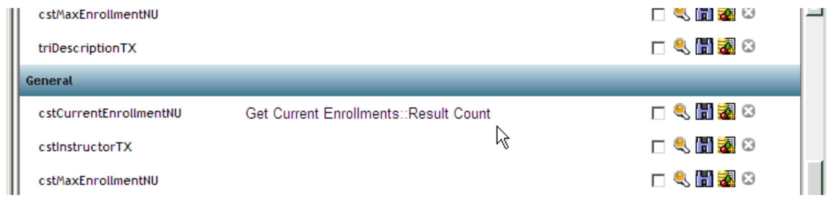


Follow these steps to create the workflow for the Enroll action:

1. Select the following Start task properties:
   - Label: **cstCourseSection – Associate – cstEnrollment – Update Current Enrollment**
   - Concurrence: **Asynchronous**
   - Object type: **cstCourseSection**
   - Event: **Associate**
   - Associated object type: **cstEnrollment**
   - Association: **Has**
2. Insert a Retrieve Records task with the following properties:
   - Label: **Retrieve Current Enrollments**
   - From Records: **Use Its Association**.
   - Select the **cstEnrollment** business object and the **Has** association. Click **Accept**.
   - Add a filter with the following properties:

- **General**
- **triStatusCL**
- **Equals**
- **Constant**
- **Enrolled**

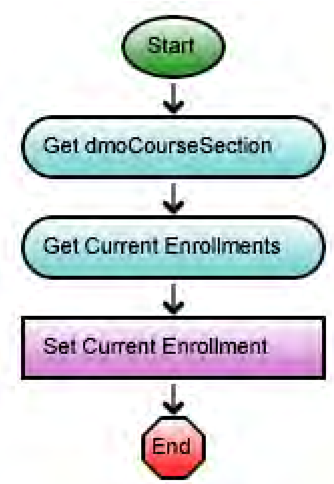
3. Insert a **Modify Records** task.
4. Set Edit Map properties like the ones in the following example.



5. Publish the workflow.

Creating a workflow for the Drop action

The workflow for the Drop action is illustrated in the following image.



Follow these steps to create the workflow for the Drop action:

1. Copy **cstCourseSection - Associate - cstEnrollment - Update Current Enrollment**
2. Open the copy and modify **Workflow Properties** as follows:
   a. Change the name to **cstEnrollment – cstDrop – Update Current Enrollment**.
   b. Change **Object Type** to cstEnrollment, and change Event to **cstDrop**.

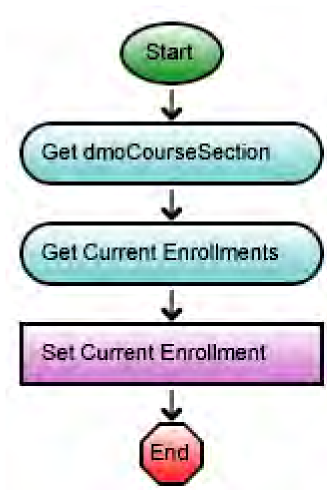
3. Insert a Retrieve Records task with the following properties:
   a. For **Label**, enter **Get cstCourseSection from cstEnrollment.**
   b. Select **Use Its Reference**.
   c. Select **Course Section ID locator**, and click **Accept**.
4. Modify the Get Current Enrollments task as follows:
   a. In the From Records section, from the **Task** list, select **Get cstCourseSection from cstEnrollment (cstCourseSection)**.

Important: This step is critical to finding the correct association in Step c.

   b. In the From Records section, click **Use its Association**.
   c. Select **cstEnrollment** business object with the **Has** association, and click **Accept**. If you do not find this association, refer to Step a.
5. Modify the Select the Set Current Enrollment task as follows:
   a. In the Map To Records section, from the **of Task** list, select **Get cstCourseSection (cstCourseSection)**.
   b. In the Map From Records section, from the **of Task** list, select **Get Current Enrollment (cstEnrollment)**.
   c. Publish the workflow.

Creating a workflow for the Reenroll action

The workflow for the Reenroll action is illustrated in the following image.



Follow these steps to create the workflow for the Reenroll action:

1. **Copy** the **cstEnrollment – cstDrop – Update Current Enrollment** workflow.
2. Change the event to **cstReenroll**.
3. Change the name to reflect the cstReenroll event that starts the workflow.
4. Publish the workflow and test it.

17 Object migration: Export exercises

Object migration is the process of moving your work from one IBM TRIRIGA Application Platform environment to another one.

In this exercise you export a copy of the work that you did in class during the week.

Exercise 1. Creating an Object Migration export package

In this exercise, you create an Object Migration package that contains the various objects that you created during this class.

Follow these steps to create the package:

1. Open the Object Migration tool.
2. Create an Export package. Enter a name and description that you choose, and select **Empty** for the **Mode**.
3. In the Search parameters window, enter **cst** for the Name search and click **Search**.
4. Select the objects that you want and click **Add Selected Objects** at the bottom of the window.

   The system checks for Dependent objects.
5. Select any dependent objects that you want, and click **Add Selected Objects.**
6. Click **Save**, and click **Export**.
7. When prompted, click **Wait**. Click **Save** and choose a place to save the file.

Solution 1 Architectural overview exercise solutions

This unit provides an overview of the IBM TRIRIGA Application Platform.

You create a user ID to access the platform, and take an introductory tour of it.

Exercise 1. Creating a user ID

In this exercise, you create a user ID in the IBM TRIRIGA platform with the following characteristics:

- A user ID that is not the same as any user ID that you currently use (to avoid using your real password by force of habit)
- Active User is selected
- Has Application Builder home page
- Has TRIRIGA Global menu
- Sitemap property is selected
- Member of Admin group
- Has all licenses

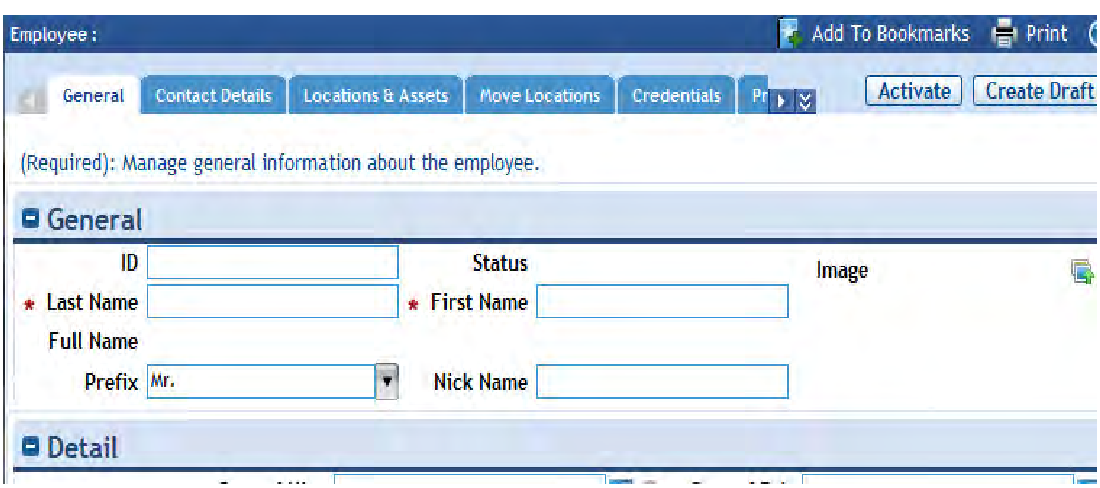
Follow these steps to create the user ID:

1. Log in to IBM TRIRIGA by using the user ID of **system** and the password of **admin**.

2. Navigate to **Portfolio** > **People** > **Employees**.

3. Click **Add** to create an employee.

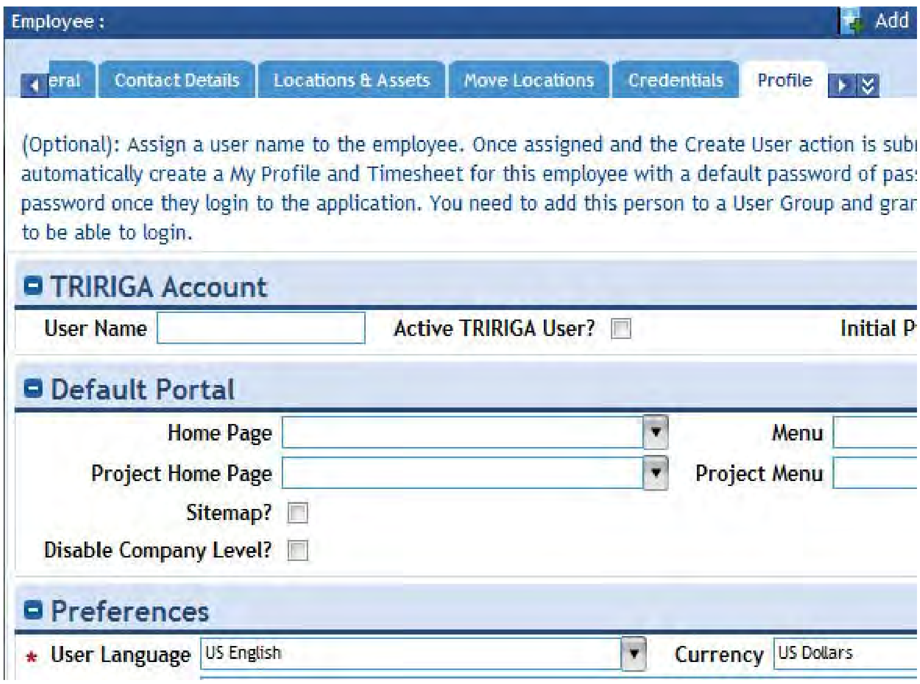
   The **General** tab of the Employee page is displayed.



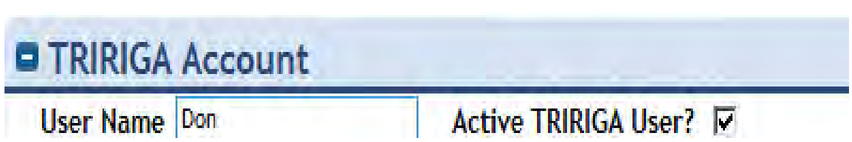
4. In the General section, enter your last name in the **Last Name** field.
5. Press the Tab key to position your cursor in the **First Name** field.

> **Note:** This step triggers an *onChange* workflow that updates the Full Name field and returns you to this field. Wait for the workflow to complete, and press the Tab key.

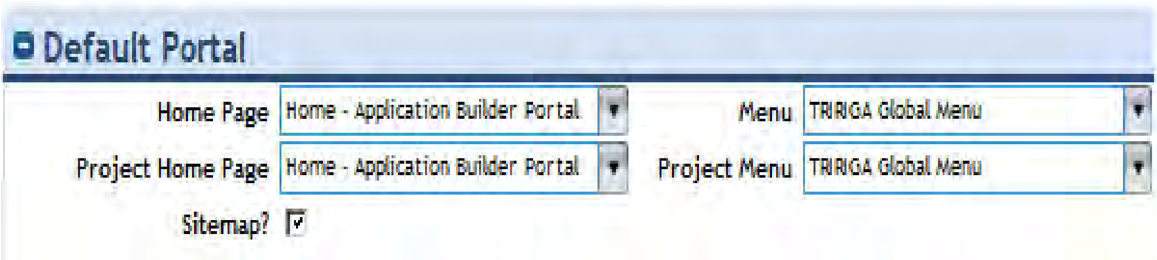
6. Enter your first name in the **First Name** field.
7. Press the Tab key to exit the field and to trigger the *onChange* workflow.
8. Click the **Profile** tab.



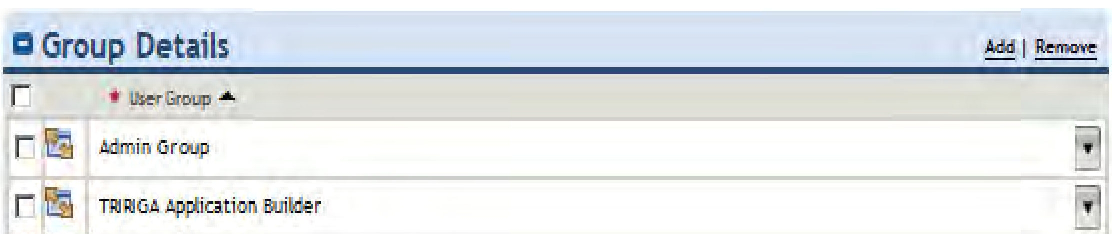
9. In the TRIRIGA Account section, perform the following steps:
   a. Enter a value in the **User Name** field. This value is your user ID in TRIRIGA. Do not use a real user ID because force of habit might cause you to use your real password. The password for this class is always *password*.
   b. Select the **Active TRIRIGA User** check box.



10. In the Default Portal section, select the following values:
    a. For **Home Page** and **Project Home Page**, select **Home - Application Builder Portal.**
    b. For **Menu** and **Project Menu**, select **TRIRIGA Global Menu.**
    c. Select the **Sitemap** check box.



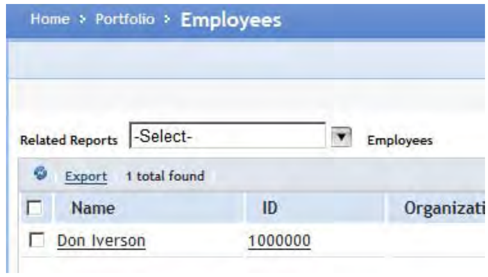
11. In the Group Details section, perform the following steps:
    a. Click **Add**.
    b. Select **Admin Group.**
    c. Click **OK**.



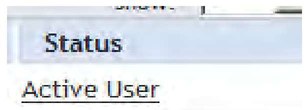
12. In the License Details section, perform the following steps:
    a. Click **Add**.
    b. Select the check box to the left of **Name** to select **all** licenses.
    c. Click **OK**.

13. Click the **Create Draft** button.
14. Click the **Activate** button.

The list of employees is displayed, and your record is now displayed in the list.



15. Observe the status of your record. Click the refresh button until the status becomes **Active User**.



16. Click the **Sign Out** action at the top of the window.

17. Sign in by using your user ID and the password **password**.

SOLUTION 2 Business scenario exercise solutions

This exercise is to review the diagram and has no solution.

SOLUTION 3 Data models and the Data Modeler exercise solutions

This unit describes data models and shows you how to create one using the Data Modeler tool.

In these exercises you use the Data Modeler to create the foundation of the course management application.

Exercise 1. Exploring the Data Modeler

In this practice exercise, you gain familiarity with the tool. There is no solution for this exercise.

Exercise 2. Creating a module

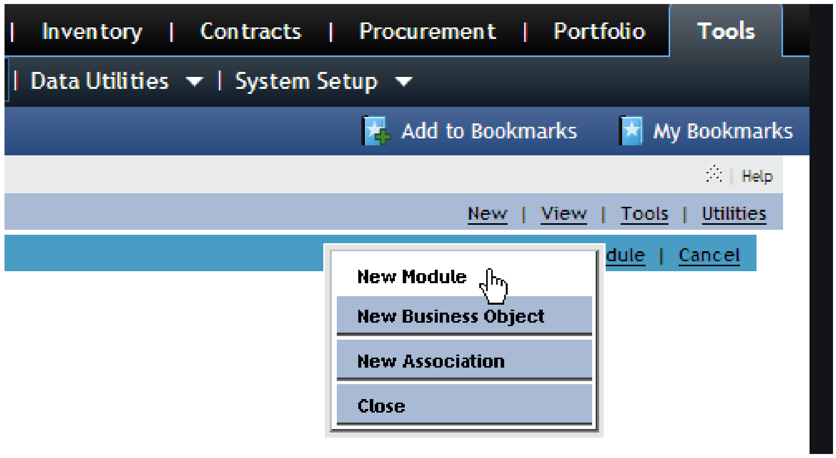
Create the cstCourseManagement module with the following properties.

Table 11. Create module: Properties

Property	Description
Module Name	cstCourseManagement
Hierarchy Module	No

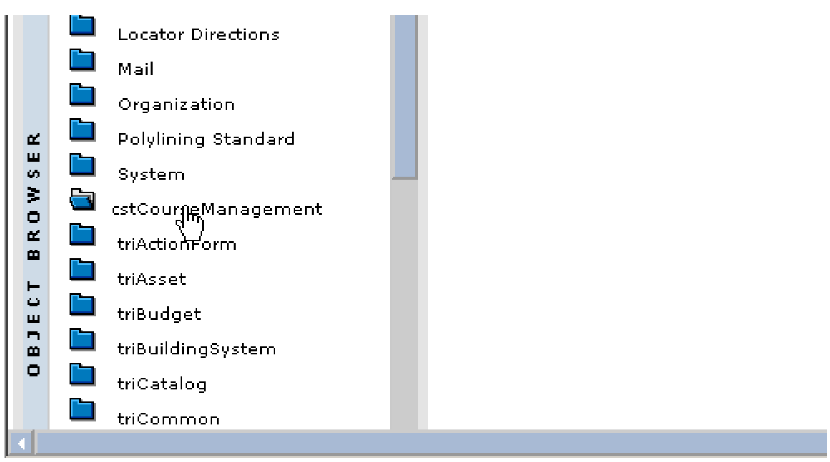
To create the module, perform the following steps:

1. On the **Tools** tab, click **Builder Tools > Data Modeler** to open it.
2. In the upper right of the Data Modeler, click **New** and select **New Module**.



3. When the Create Module window opens, perform the following steps:
   a. In the **Module Name** field, enter **cstCourseManagement**.
   b. Clear the **Hierarchy Module** check box if it is selected.
   c. Click **Save Module**.

4. Review the new module name in the Object Browser window.



Exercise 3. Creating a base business object

Create the cstCourseManagement base business object with the properties that are listed in the following table.

Table 12. Creating a base business object: Properties

Property	Description
BO Name	cstCourseManagement
Display Name	Course Management
BO Type	Stand Alone

Use the **Find** command to add the following fields to the business object.

Table 13. Creating a base BO: Field list

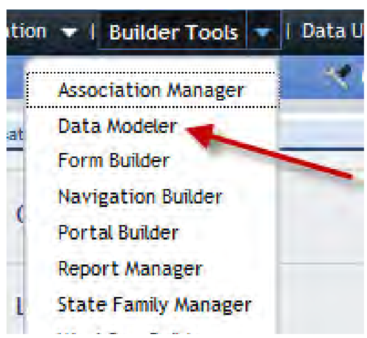
Add or find	Type	Name	Label	Other
Tip: For the following fields, Filter by Type=System Read Only				
Find	Sys RO	triBusinessObjectIdSY	System Business Object ID	
Find	Sys RO	triBusinessObjectLabelSY	Business Object Label	
Find	Sys RO	triBusinessObjectNameSY	Business Object Name	
Find	Sys RO	triCreatedSY	Created Date/Time	
Find	Sys RO	triFormIdSY	System Form ID	
Find	Sys RO	triFormLabelSY	Record Form	
Find	Sys RO	triFormNameSY	Form Name	
Find	Sys RO	triModifiedSY	Modified Date/Time	
Find	Sys RO	triRecordIdSY	System Record ID	
Find	Sys RO	triRecordNameSY	Record Name	
Find	Sys RO	triRecordStateSY	Record State	
Tip: For the following fields, Filter by Type=All				
Find	Classif.	triStatusCL	Status	Do not Auto Populate. Read Only.
Find	Classif.	triPreviousStatusCL	Previous Status	Do not Auto Populate. Read Only.

Table 13. Creating a base BO: Field list (continued)

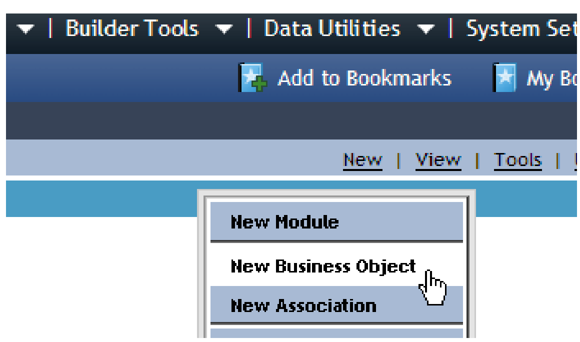
Add or find	Type	Name	Label	Other
Find	Ctrl. No.	triControlNumberCN	Control Number	
Find	Text	triDescriptionTX	Description	Do not Auto Populate.
Find	Text	triNameTX	Name	Set to **NOT** Required. Do not Auto Populate.
Find	Text	triIdTX	ID	Do not Auto Populate.
Find	Text	triUserMessageTX	Attention!	Do not Auto Populate. Read Only.
Find	Text	triUserMessageFlagTX	!	Do not Auto Populate. Read Only.

To create the cstCourseManagement base business object, perform the following steps:

1. On the **Tools** tab, click **Builder Tools > Data Modeler** to open it.

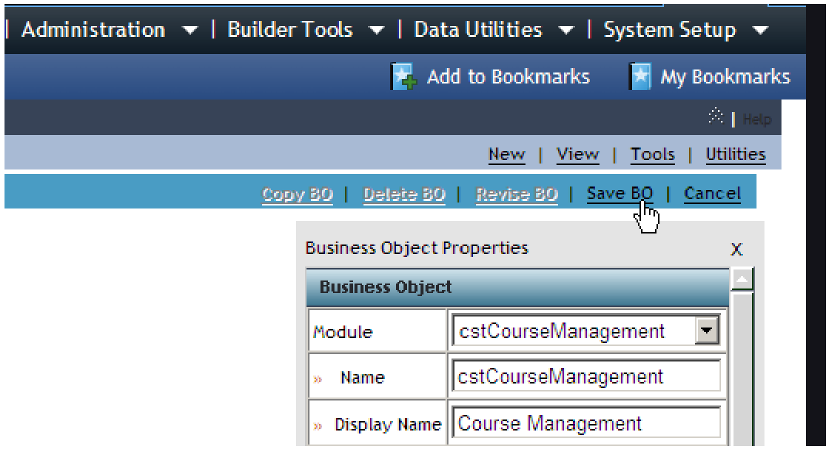


2. In the upper right of the Data Modeler, click **New**, and select **New Business Object**.

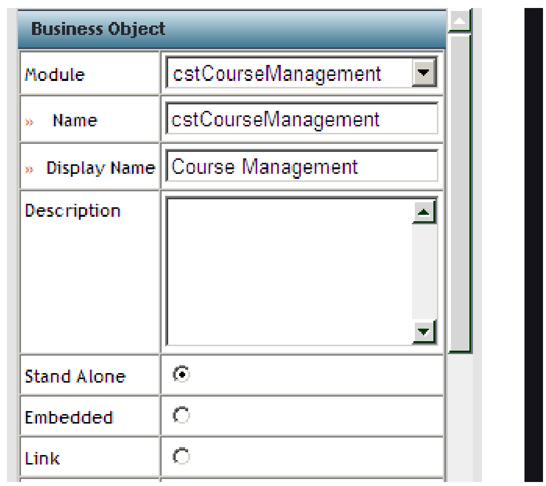


3. When the Business Object Properties window opens, perform the following steps:
   a. From the **Module** list, select **cstCourseManagement.**
   b. In the **Name** field, enter **cstCourseManagement**.

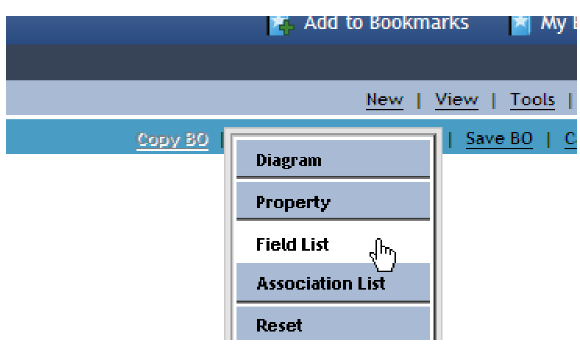
c. In the **Display Name** field, enter **Course Management**.



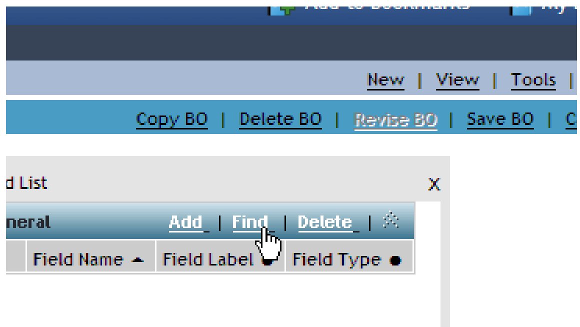
4. Select **Stand Alone**.



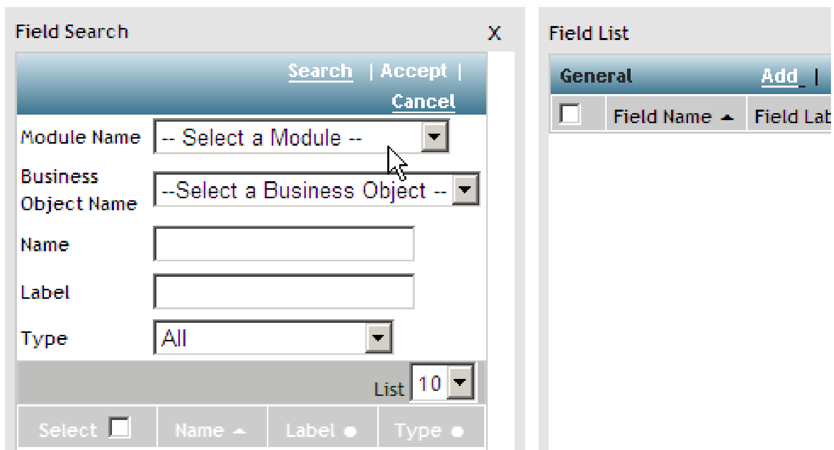
5. Click **Save BO** to save your changes.
6. If necessary, click **View**, and click **Field List** to open the Field List window.



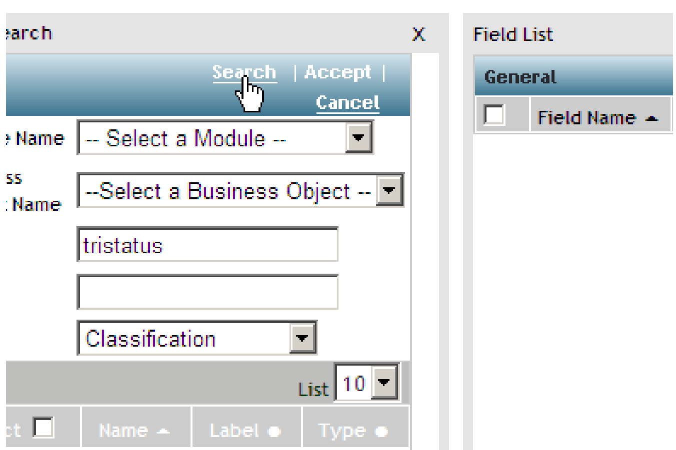
7. In the Field List window, click **Find** to search for fields.



The Field Search window replaces the Business Object Properties window.



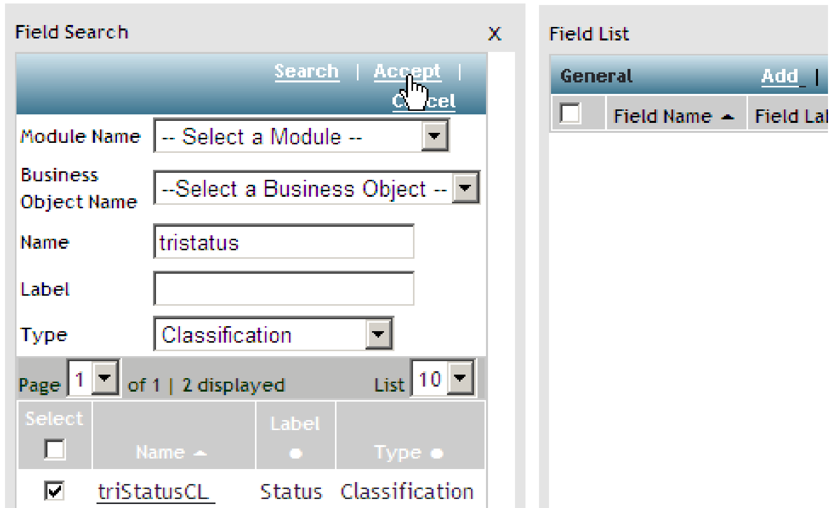
8. For the first search, find the **triStatusCL** field. You can filter by **Module Name**, **Business Object Name**, **Name**, **Label**, **Type**, or a combination. In the **Name** field, enter **triStatus**. Click **Search**.



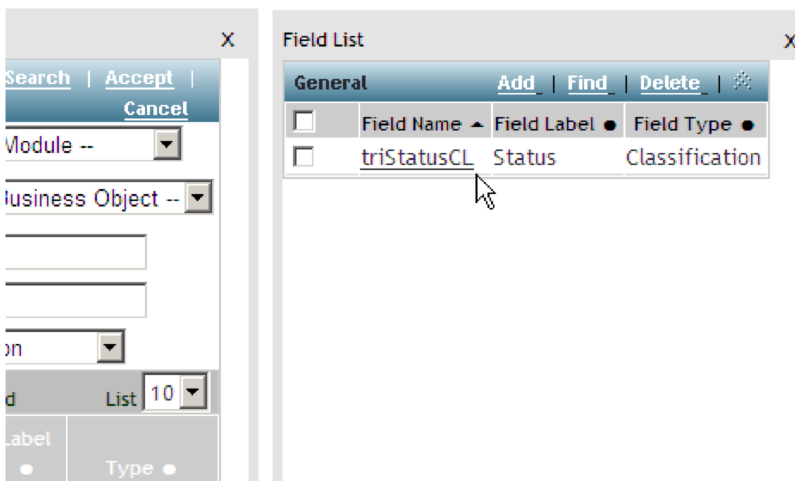
In this example, the search yields two results.

 IBM TRIRIGA 10.3 Application Platform I

9. In the Select column, select the **triStatusCL** check box. Click **Accept**.

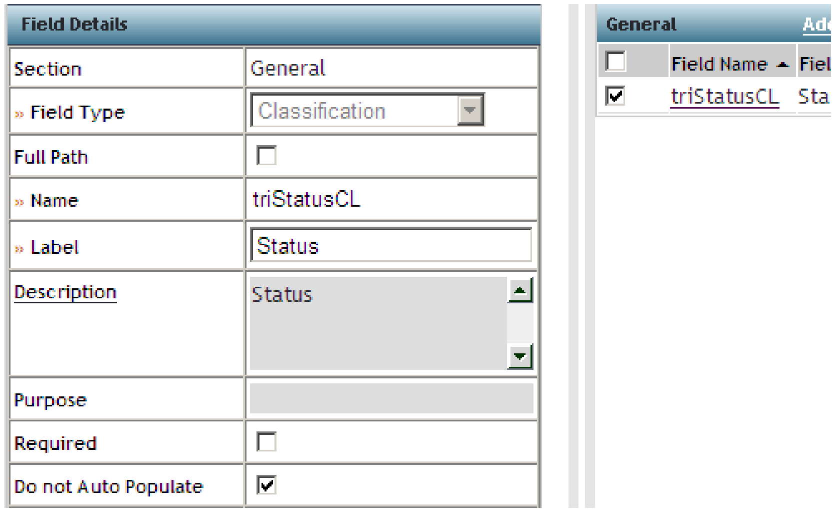


10. When the selected result is displayed in the Field List window, click the **triStatusCL** link to edit the details.

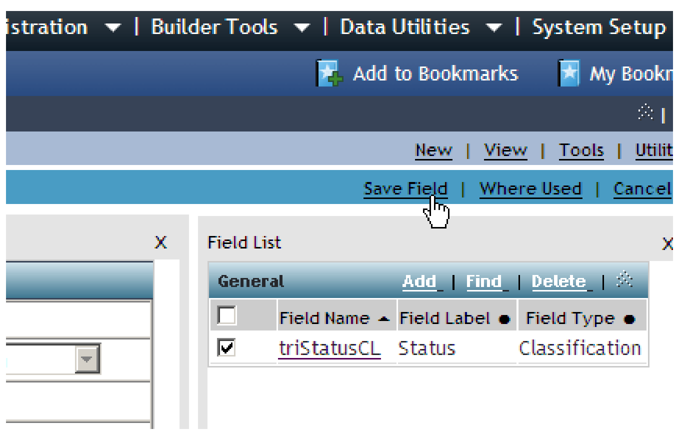


The Field Properties (Field Details) window replaces the Field Search window.

11. Referring to Table 13 , select the **Do not Auto Populate** check box. This action prevents the **Status** field value of the current user from populating the **Status** field of a new Course Management record. Also, select the **Read Only** check box.



12. Click **Save Field** to save your change.



13. Repeat Step 6 - Step 12 to add the remaining fields in Table 13.

Exercise 4. Adding associations

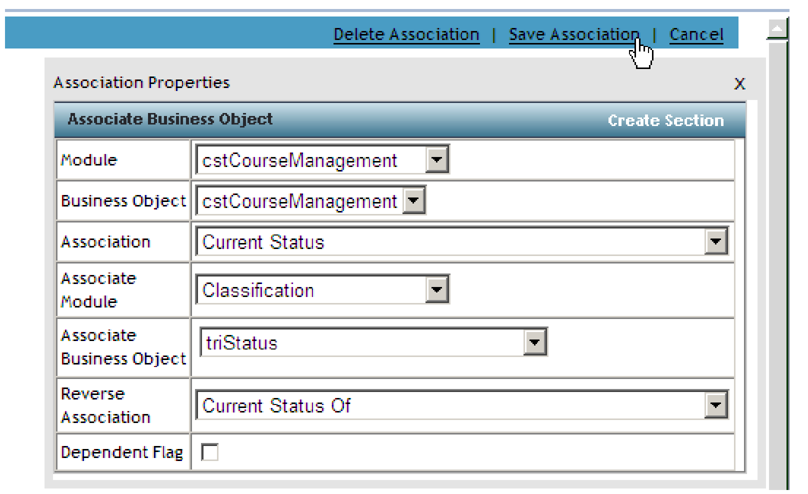
Add associations to the Base business object with the properties that are listed in the following table.

Table 14. Creating associations

Module	Business Object	Association	Associate module	Associate Business Object	Reverse association
cstCourse Management	cstCourse Management	Current Status	Classification	triStatus	Current Status Of
cstCourse Management	cstCourse Management	Previous Status	Classification	triStatus	Previous Status Of

Perform the following steps in the Data Modeler to create the associations:

1. Click **New > Association** to open the Association Properties window.
2. Enter the values from the first line of the table into the Association Properties window. Click the **Save Association** action.

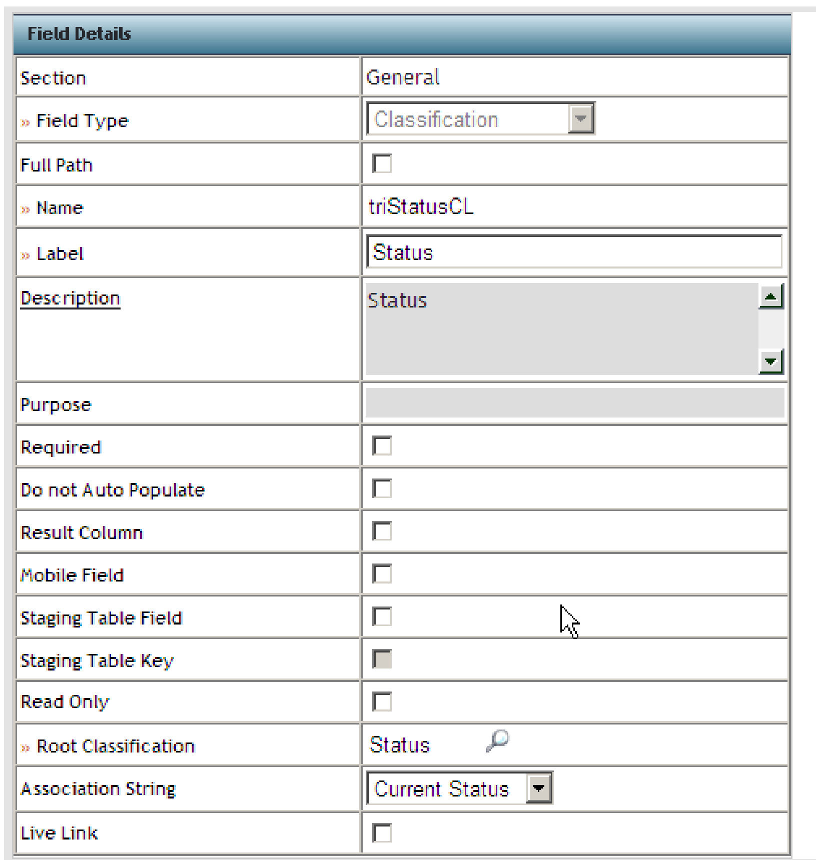


3. Repeat this procedure for the second association.

Exercise 5. Adding association properties to Classification fields

Follow these steps to connect the associations that you created to the Status and Previous Status Classification fields.

1. From the **Field List**, click **triStatusCL**.
2. From the **Association String** list, select **Current Status**, and click **Save Field**.



3. From the **Field List**, click **triPreviousStatusCL**.
4. From the **Association String** list, select **Previous Status**, and click **Save Field**.

Solution 4 State families exercise solutions

You learn about the life cycle of a record and how it is defined in the state family of a business object in this unit.

In the exercises you import a template state family into the base business object and publish the business object. You also create the *course* business object.

Exercise 1. Creating a state transition family for the Base business object

In this exercise, you create a State Transition family for the cstCourseManagement business object by following these steps. Make sure to apply or save your changes as needed.

1. Import the **triDataRevise** template.
2. Relabel the **Final Approval Hidden** action to **Approve.** Make it visible.
3. Relabel the **Return Draft Hidden** action to **Return Draft.** Make it visible.
4. Relabel the **Return Revision Hidden** action to **Return Revision.** Make it visible.
5. Save your changes.
6. Add sub actions to all transitions that change states. These sub actions capture **Status** and **Previous Status** by using the values that are defined in Table 15.

Table 15. Common states and corresponding status values.

State	Status
null	When coming from null, leave it blank. When going to null, Deleted
triDraft	Draft
triReview	Review In Progress Note: All words are capitalized, including *In*.
triActive	Active

Table 15. Common states and corresponding status values.

State	Status
triRevision	Revision In Progress Note: All words are capitalized, including *In*.
triRetired	Retired
triUploadError	Upload Error

When completed, the State Transition family is displayed as shown in Figure 4.

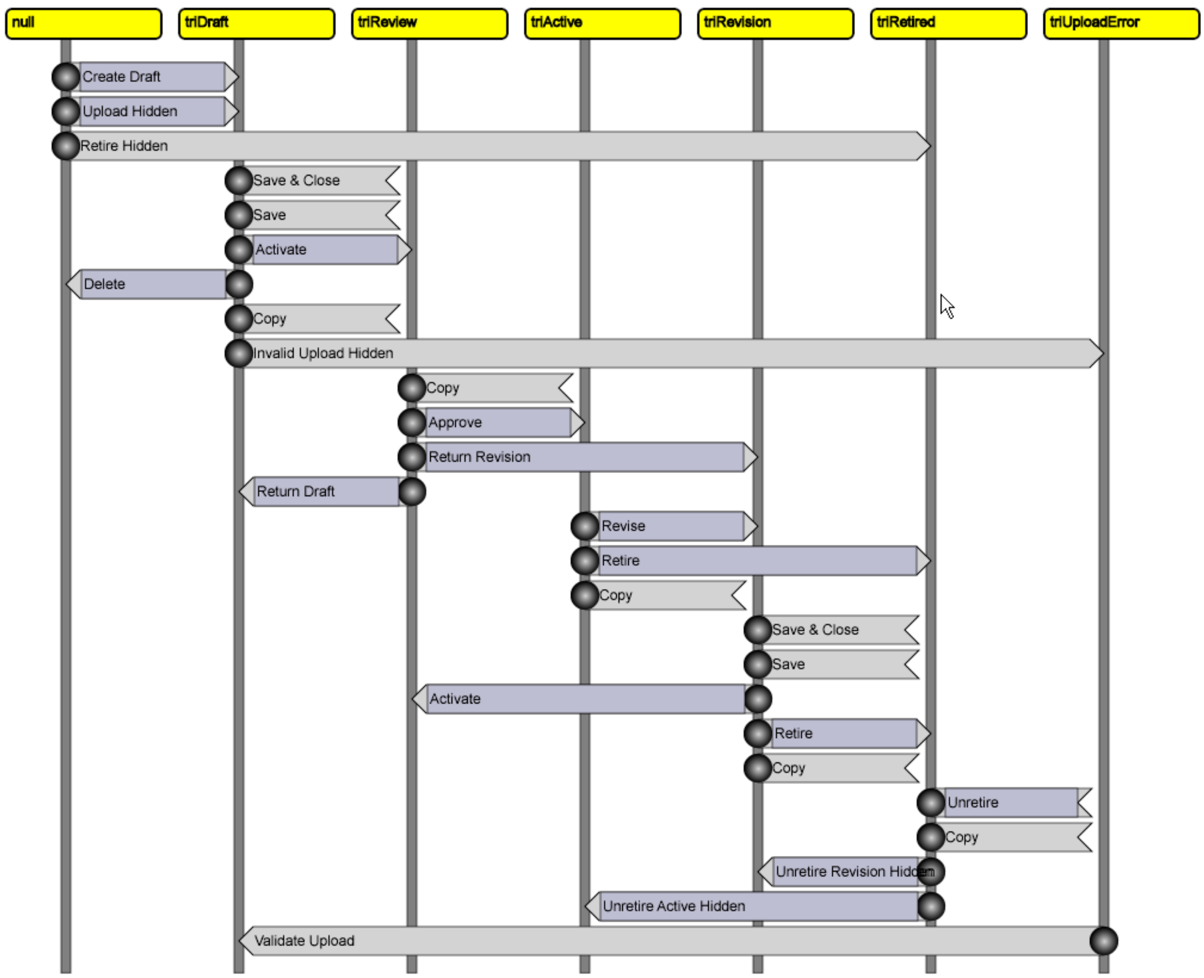
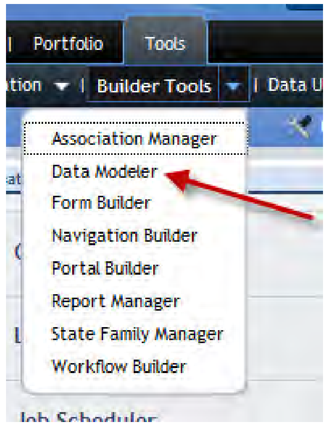


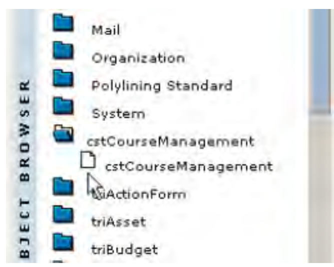
Figure 4. Base business object state transition family

To create a base business object state transition family, perform the following steps:

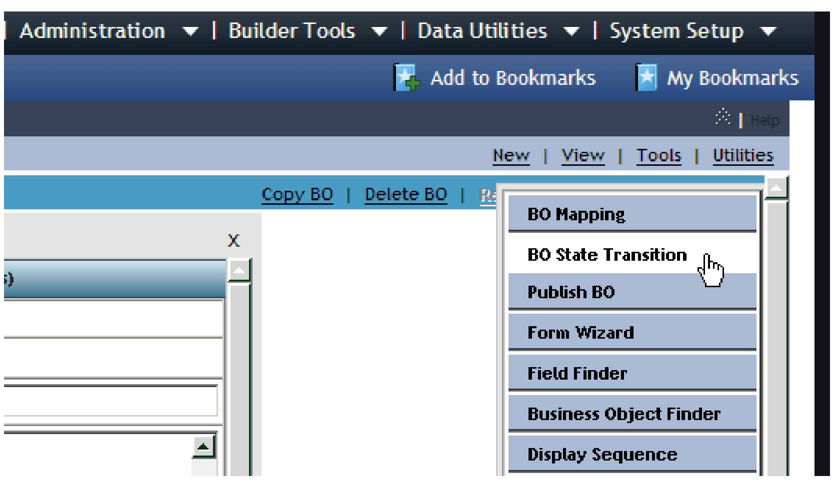
1. On the **Tools** tab, click **Builder Tools > Data Modeler** to open it.



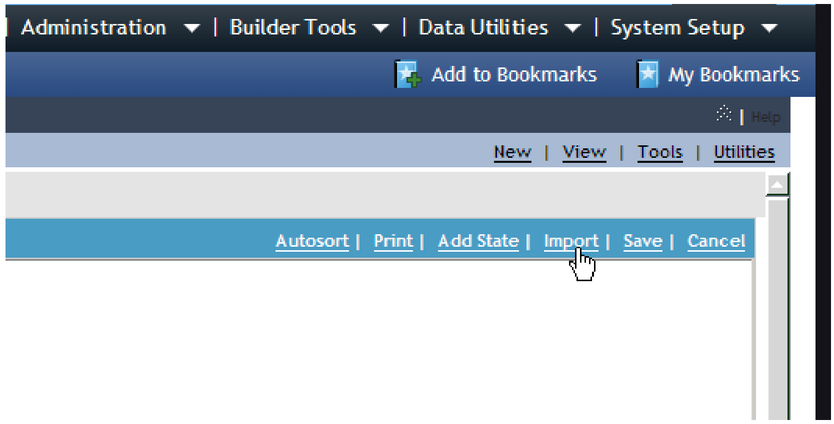
2. Open the Object Browser on the left side, expand the **cstCourseManagement** module, and click the **cstCourseManagement** base business object.



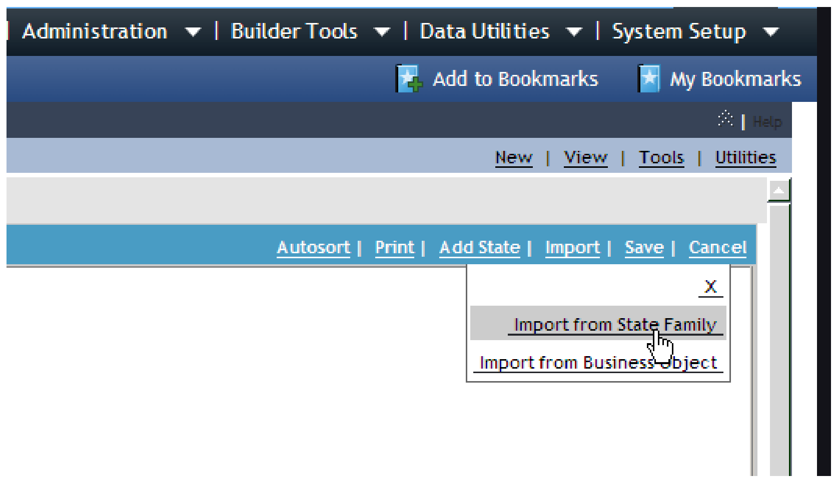
3. Click **Tools**, and click **BO State Transition**.



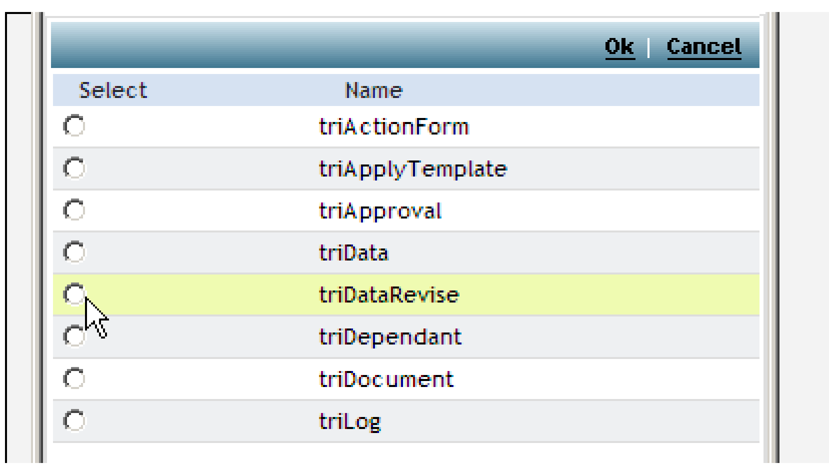
4. In the State Transitions window, click **Import** (on the far right).



5. In the **Import** menu, click **Import from State Family**.

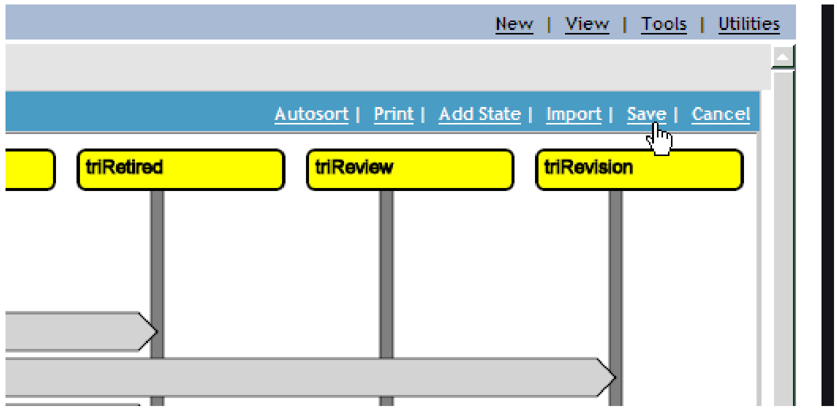


6. In the window, select **triDataRevise**, and click **OK**.

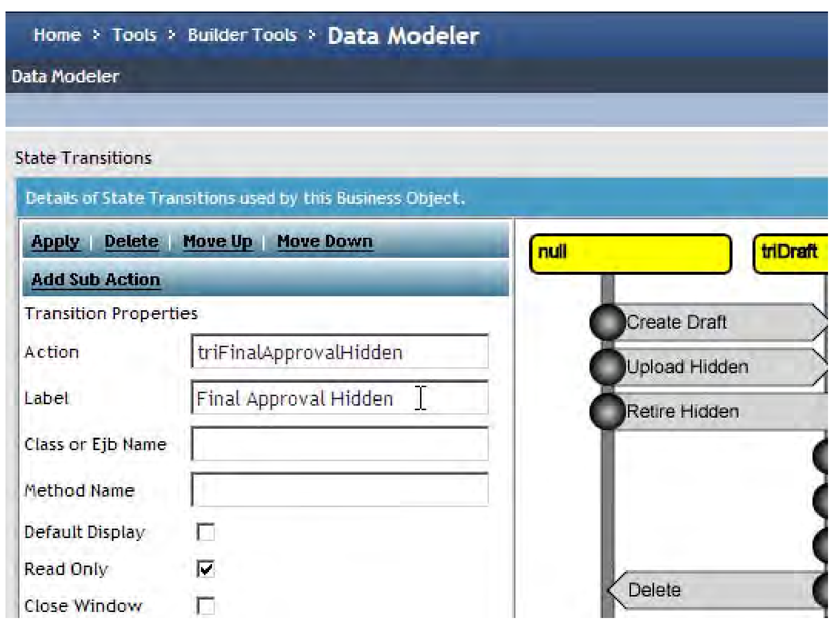


The triDataRevise State Family template opens.

7. If necessary, press and hold the Alt key while clicking and dragging the cursor to move the image in the window.



8. Change the Label (not the Name) of the Final Approval Hidden, Return Draft Hidden, and Return Revision Hidden actions as follows:
   - Relabel the Final Approval Hidden action to Approve, select the **Default Display** check box, and click **Apply** to save your changes.
   - Relabel the Return Draft Hidden action to Return Draft, select the **Default Display** check box, and click **Apply** to save your changes.
   - Relabel the Return Revision Hidden action to Return Revision, select the **Default Display** check box, and click **Apply** to save your changes.



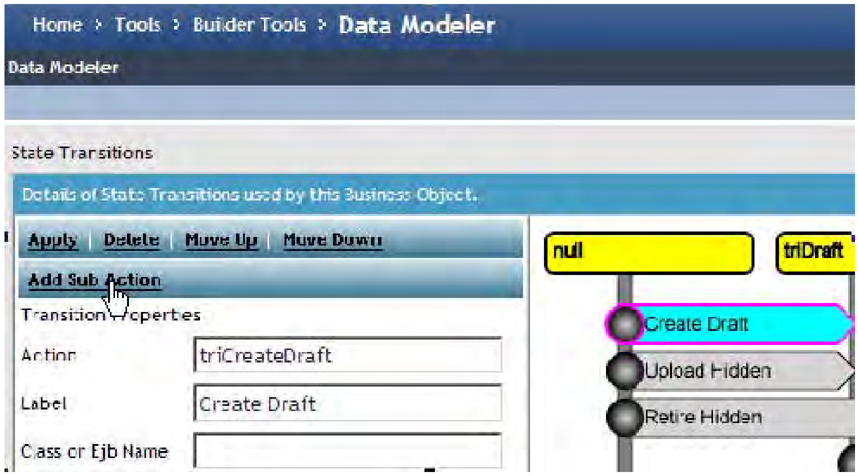
9. Click **Save** on the right to save the state family.

Note: If you do not save before adding sub actions, you lose any unsaved changes.

10. Add sub actions on all transitions that change state, adding State Transition Attributes for Status and Previous Status. The following steps describe how to add a sub action for one transition:

   a. Select the **Create Draft** transition.

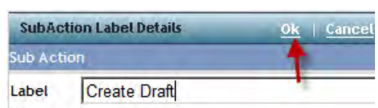
   b. Click **Add Sub Action**.



   c. Set the **Label** for the sub action to **Create Draft**.

Note: By convention, the sub action has the same Label as its transition.

   d. Click **OK**.



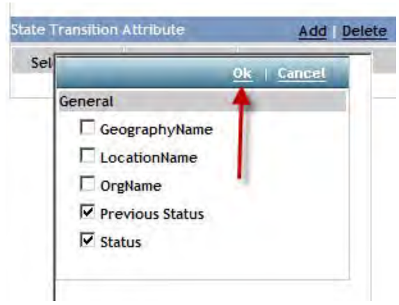
A Sub Action check box on the **Create Draft** transition is displayed. Select it.

   e. Click **Open**.

   f. In the State Transition Attribute section heading, click **Add**.

   g. Select **Previous Status**.

h. Select **Status**.

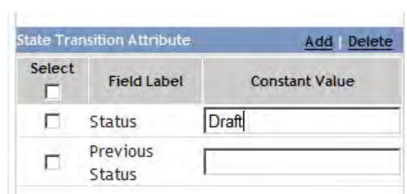


i. Click OK.

Important: Do *not* click **Add** again.

j. Set the value for **Previous Status** based on the **From** state (empty in this case because the **From** state is null).

k. Set the value for **Status** based on the **To** state (Draft, in this case).



l. In the Sub Action Label Details heading, click **OK**.

11. Repeat Step a - Step l for all transitions that leave one state and go to another. Do not perform these steps for any transition that leaves and returns to the same state, such as Copy, Save, and Save and Close.
12. Click **Save** to save your changes.

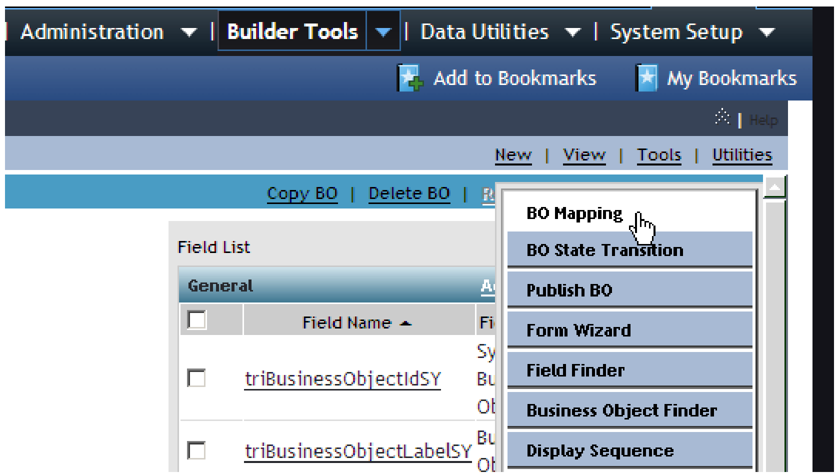
Exercise 2. Publishing the Base business object

In this exercise, you define the business object mapping for the Base business object and publish it. Use the following properties for the business object mapping:

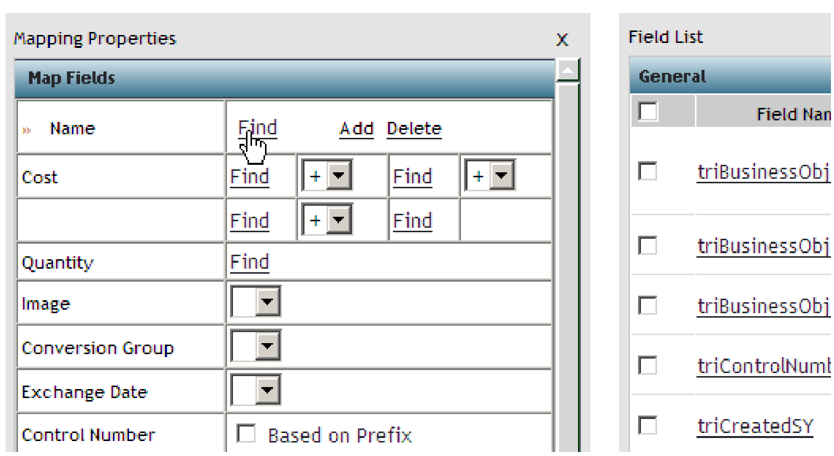
- The Publish Name of the Base business object is Name (triNameTX).
- The Control number has a Start With value of 1000000.

To define the business object mapping, follow these steps:

1. Click **Tools**, and click **BO Mapping**.

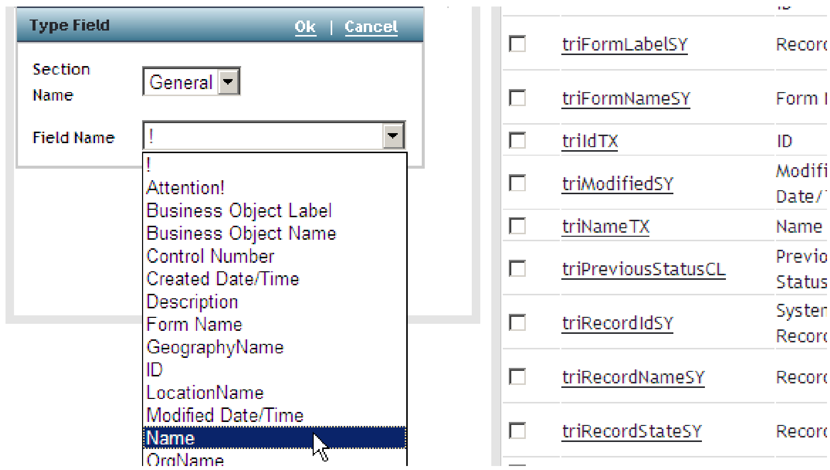


2. In the Mapping Properties window, for the **Name**, click **Find**.

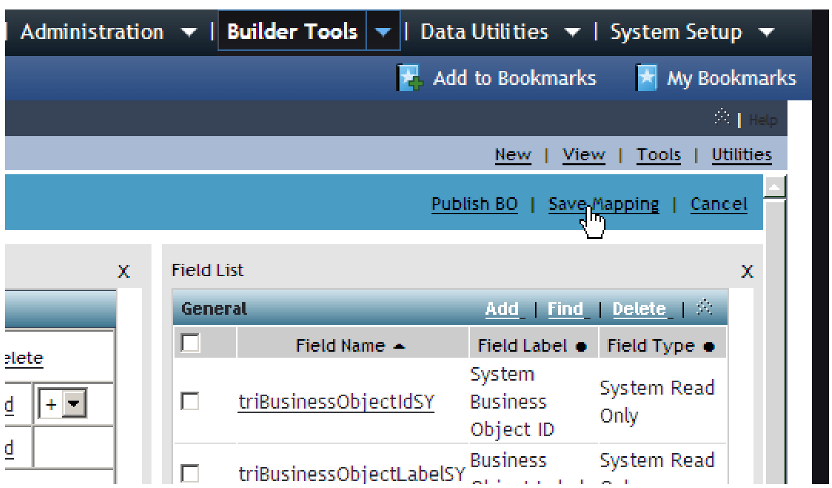


3. In the Type Field section, from the **Field Name** list, select **Name** (triNameTX). This name is the Publish name.

4. Click **OK**.



5. In the **Start With** field, enter 1000000.
6. Click **Save Mapping.**
7. Click **Publish BO**.



Exercise 3. Creating the Course business object

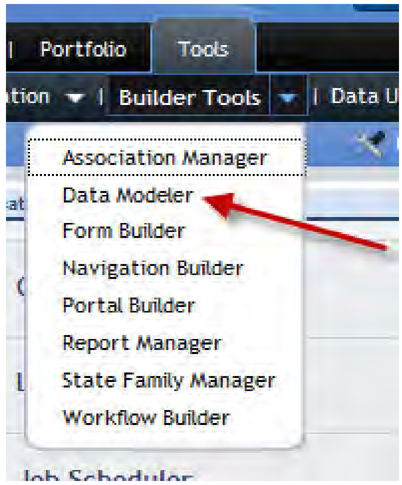
In this exercise, you create the cstCourse business object with the following properties.

Table 16. Creating a course BO: Properties

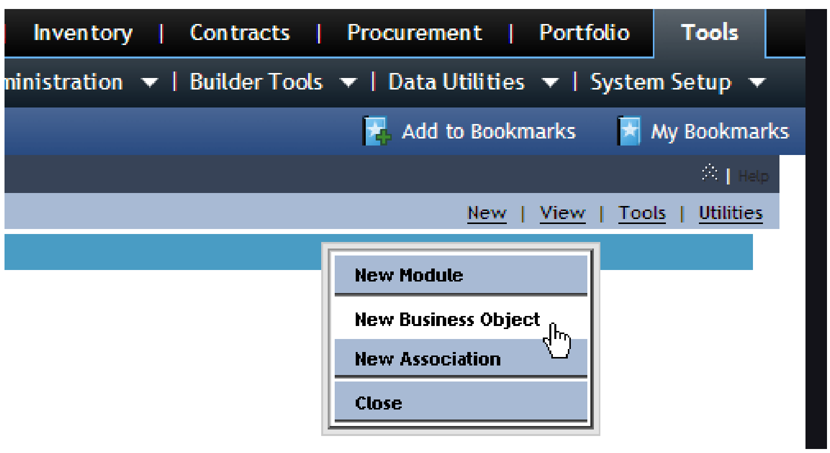
Property	Description
BO Name	cstCourse
Display Name	Course
BO Type	Stand Alone

To create the cstCourse business object, perform the following steps:

1. On the **Tools** tab, click **Builder Tools > Data Modeler** to open it.



2. In the upper-right corner of the Data Modeler, click **New**, and click **New Business Object**.



   The Business Object Properties window opens.

3. Set the following properties:

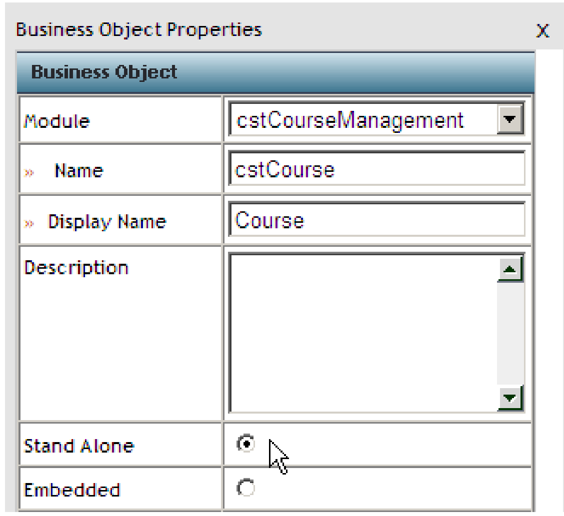
   a. From the **Module** list, select **cstCourseManagement**.

   b. In the **Name** field, enter **cstCourse**.

   c. In the **Display Name** field, enter **Course**.

   d. Click **Stand Alone**.

4. Click **Save BO** to save your changes.



Exercise 4. Adding fields to the Course business object

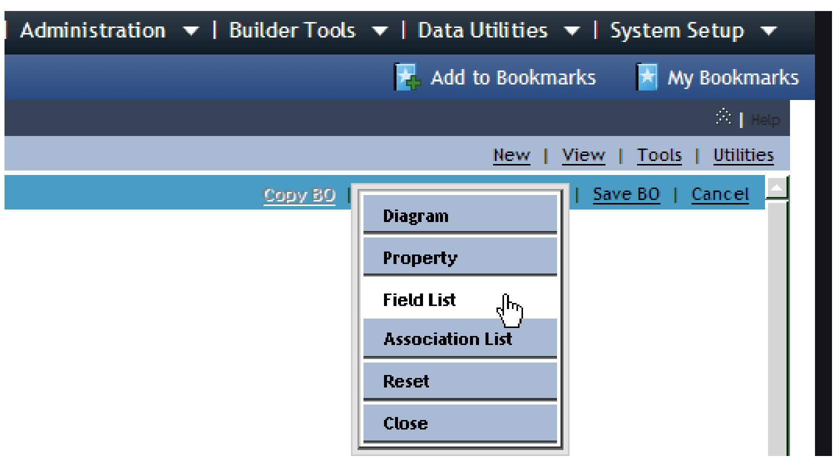
Add the following fields to the Course business object.

Add or find	Type	Name	Label	Other
Add	Text	cstCourseNumberTX	Course Number	**Required**; Do Not Auto Populate; Result Column: Column sequence = 1; Size = 10
Add	Text	cstCourseTitleTX	Course Title	**Required**; Do Not Auto Populate; Result Column: Column sequence = 2

Add or find	Type	Name	Label	Other
Add	Number	cstCreditHoursNU	Credit Hours	Do Not Auto Populate; UOM List = Time; Default UOM = hours; Use Custom UOM Precision and Mask = checked. Display Mask = #.# Storage Precision = 1
Add	Number	cstMaxEnrollmentNU	Max Enrollment	Do Not Auto Populate; Validation = Accept Only Number.
Add	Number	cstFeeNU	Fee	Do Not Auto Populate; UOM List = Currency; Default UOM = US $.

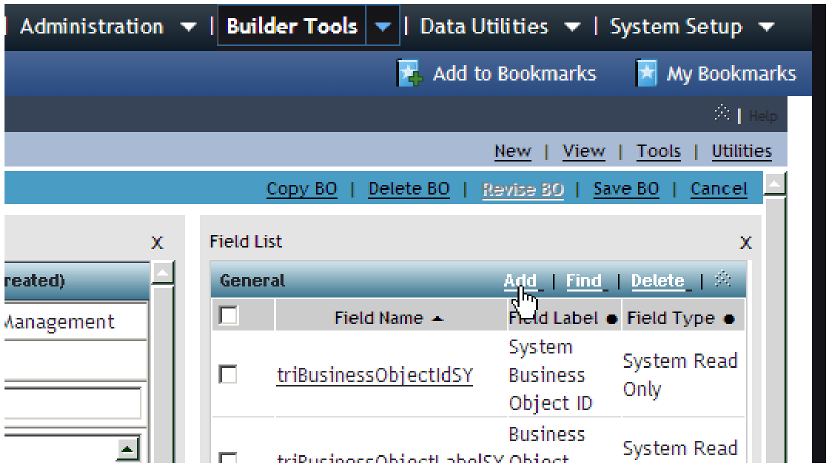
To add the fields, perform the following steps:

1. Click **View**, and click **Field List**.



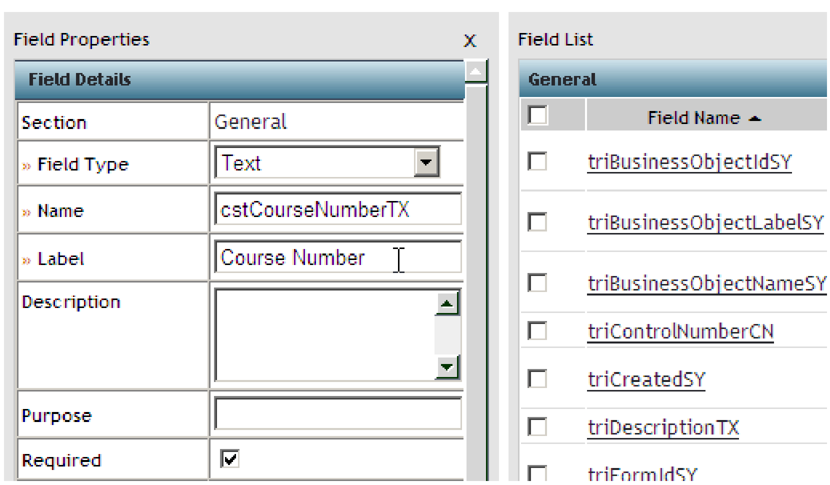
The Field List window opens with the fields established from the base business object.

2. Click **Add** to create a field.

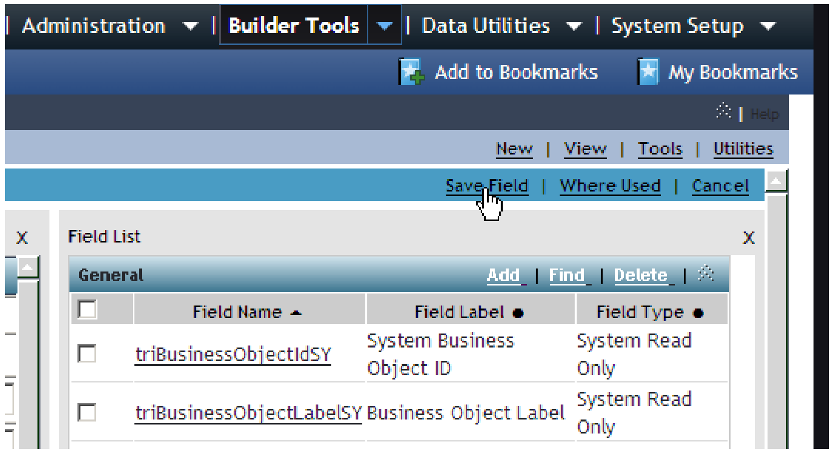


The Field Properties window replaces the Business Object Properties window.

3. In the Field Properties window, perform the following steps:
   a. From the **Field Type** list, select **Text**.
   b. In the **Name** field, enter **cstCourseNumberTX**.
   c. In the **Label** field, enter **Course Number**.
   d. Select the **Required** check box.
   e. Select the **Do Not Auto Populate** check box.
   f. Select the **Result Column** check box.
   g. Enter **1** in the **Column Sequence** field.
   h. Set the **Size** to 10.



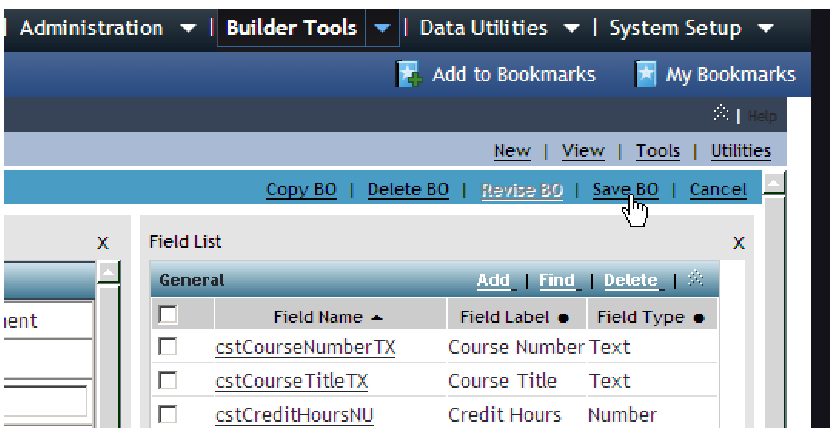
4. Click **Save Field** to save your changes.



5. Click **Add** to create the next field in your table.

6. After you add all the new fields, go to the Object Browser on the left side.

7. Select the **cstCourse** business object.



Exercise 5. Publishing the Course business object

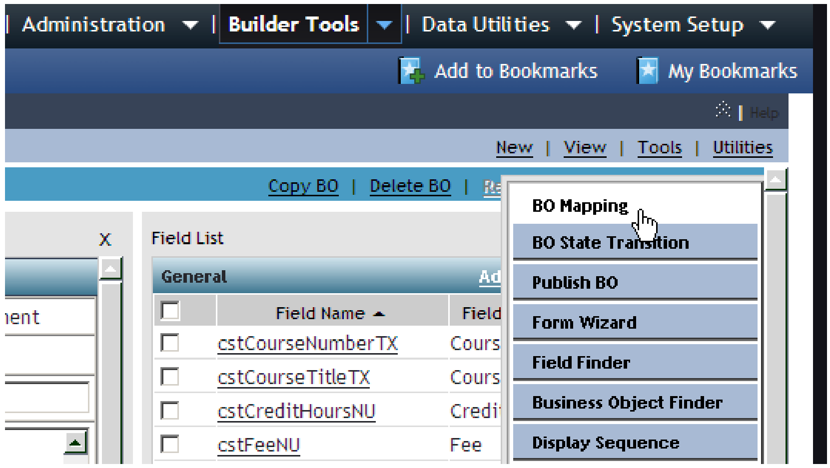
In this exercise, you define the business object mapping for the cstCourse business object and publish it.

Use the following properties for the business object mapping:

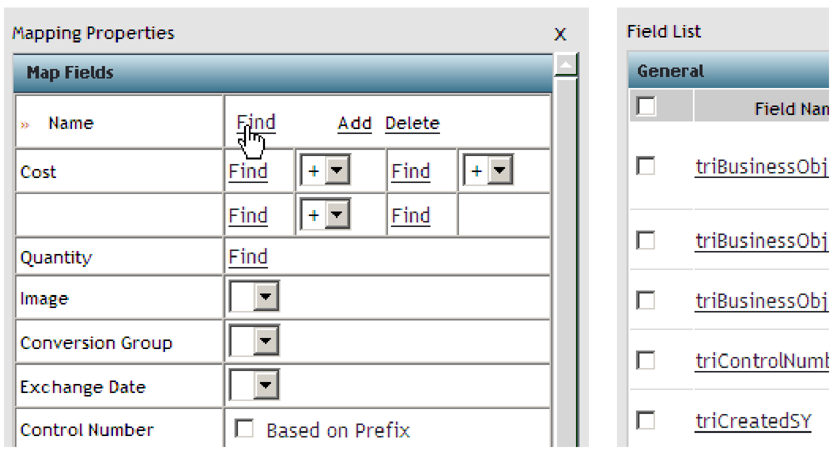
- The Publish Name is **Course Number - Course Title**.
- The Control number has a Start With value of 1000000.

Follow these steps to define the business object mapping and publish the Course business object:

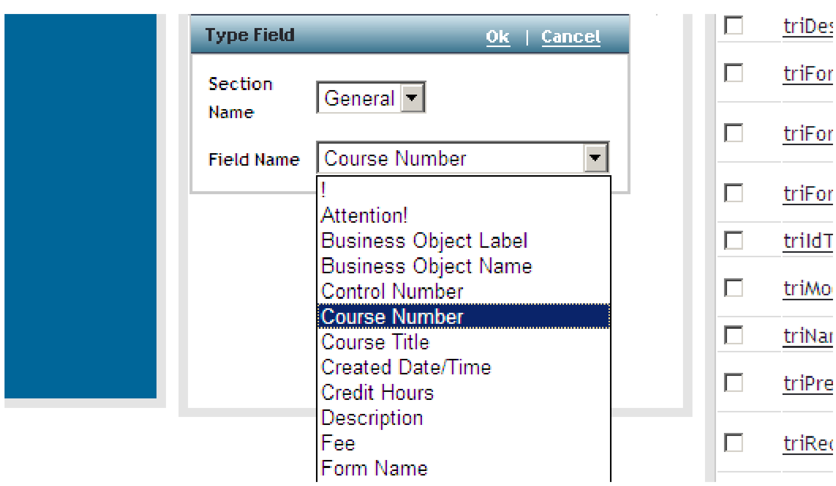
1. Click **Tools**, and click **BO Mapping**.



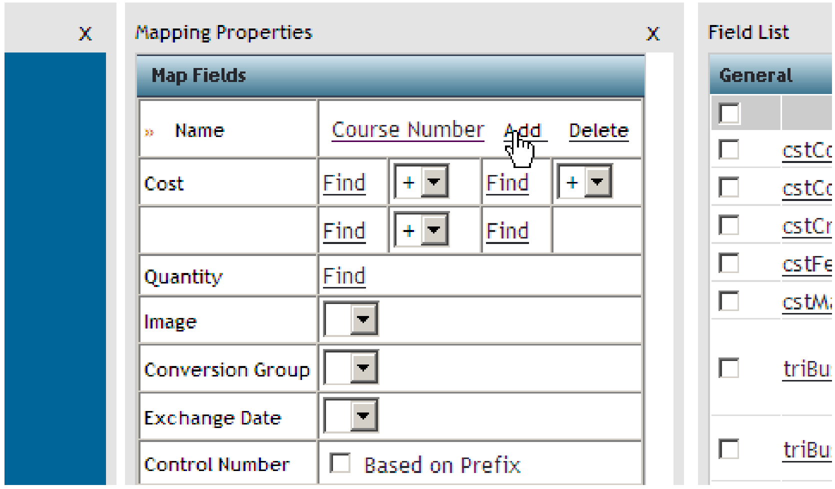
2. In the Mapping Properties window, for the Name, click **Find**.



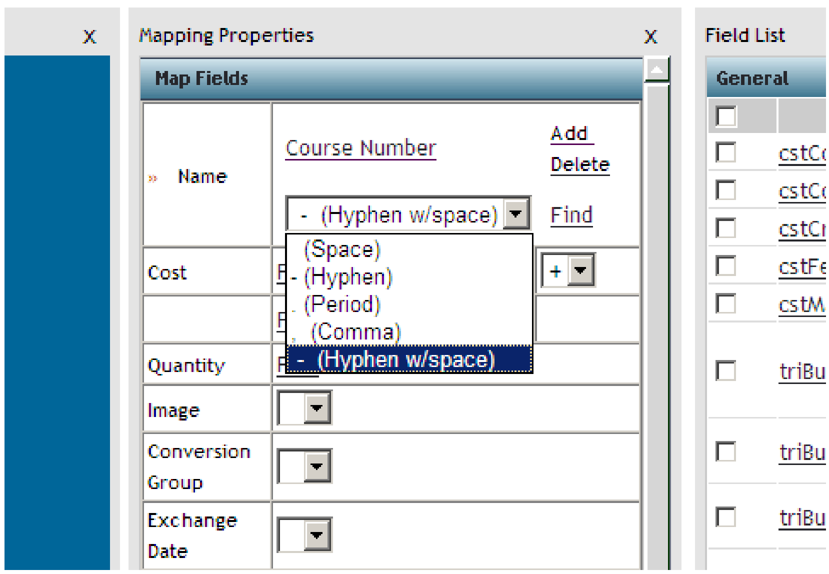
3. In the Type Field section, from the **Field Name** list, select **Course Number**. Click **OK**.



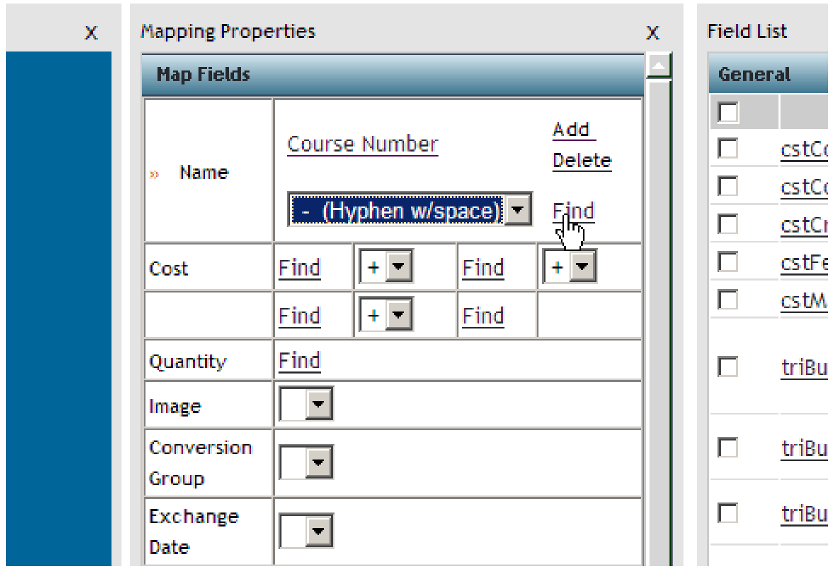
4. Click **Add**.



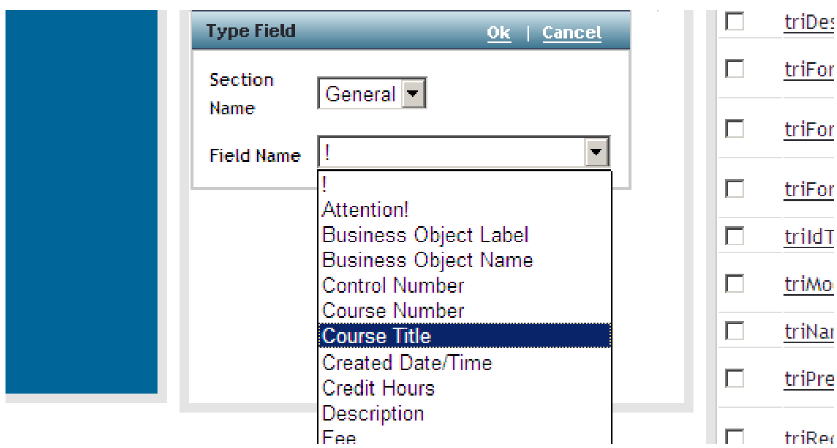
5. From the list, select **– (Hyphen w/space)**.



6. Click **Find**.



7. In the Type Field section, from the **Field Name** list, select **Course Title**.
8. Click **OK**.



9. In the **Start With** field, enter **1000000**.
10. Click **Save Mapping.**
11. Click **Publish BO**.

SOLUTION 5 Forms and the Form Builder exercise solutions

You learn about the presentation of data in this unit.

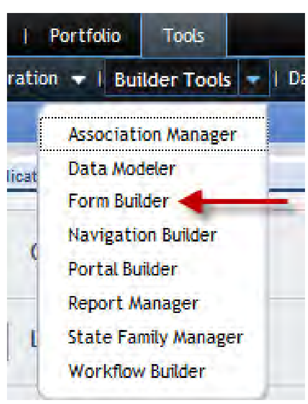
In the exercises you create a form for the base business object, and copy it to create the form for the *course* business object.

Exercise 1. Creating a base business object form

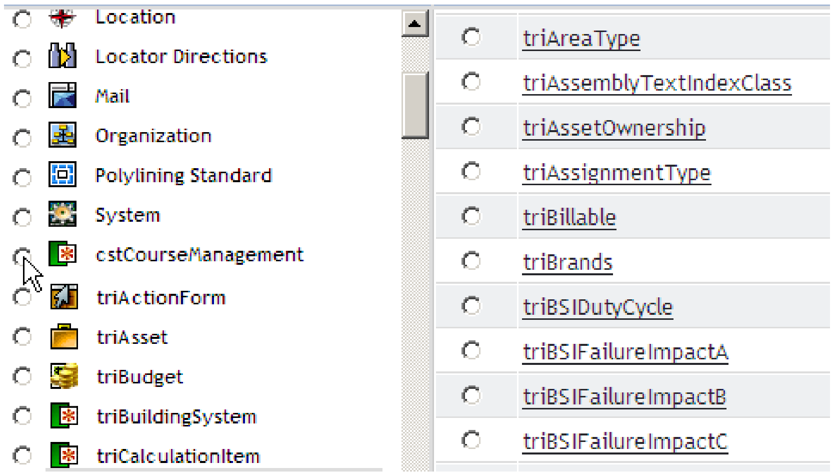
In this exercise, you create a form to display the base business object (cstCourseManagement). This form serves as a template for the other forms in the cstCourseManagement module. It has common elements that are used by all forms in the module.

To create the course management form, perform the following steps.

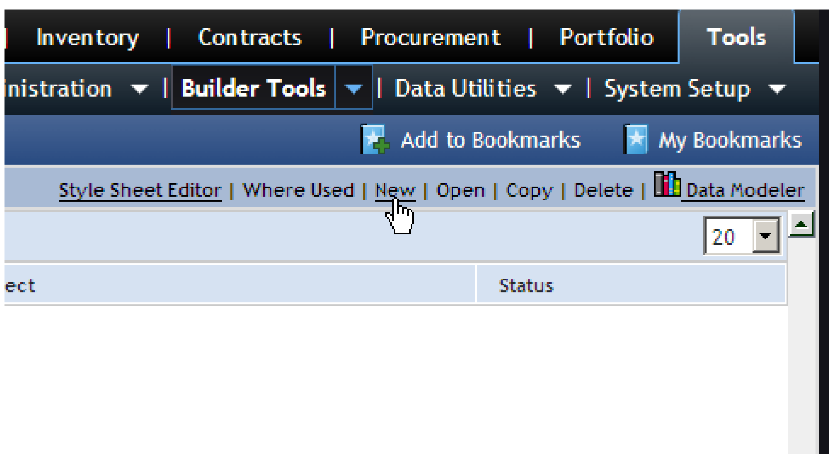
1. On the **Tools** tab, click **Builder Tools > Form Builder** to open it.



2. In the left-side module pane, select **cstCourseManagement** to view the list of current course management forms.



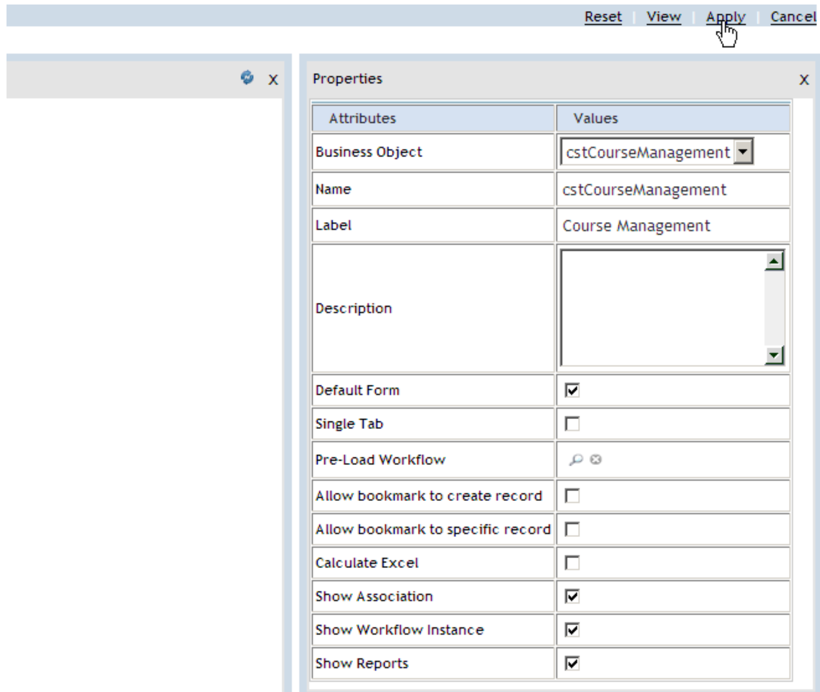
3. To build a new form for this module, click **New**.



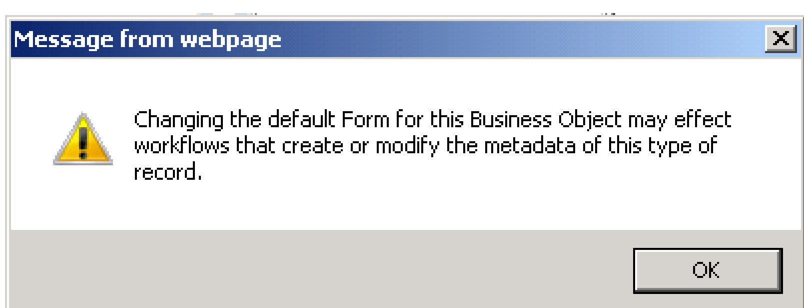
The Form Wizard window opens.

4. In the Properties window, perform the following steps:
   a. Select the Business Object, **cstCourseManagement**.
   b. Change the Label to **Course Management**.
   c. Select the following properties:
      - **Default Form**
      - **Allow bookmark to create record**
      - **Allow bookmark to specific record**
      - **Show Association**
      - **Show Workflow Instance**

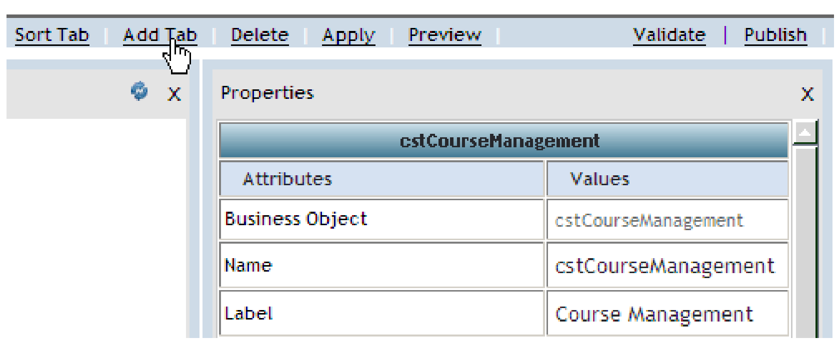
d. Click **Apply**.



5. A message about the default form setting is displayed. Click OK.



6. Click **Add Tab**.

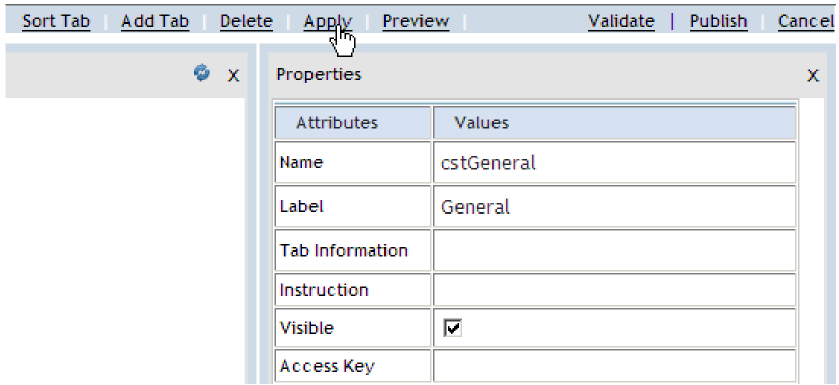


7. In the Properties window, perform the following steps:

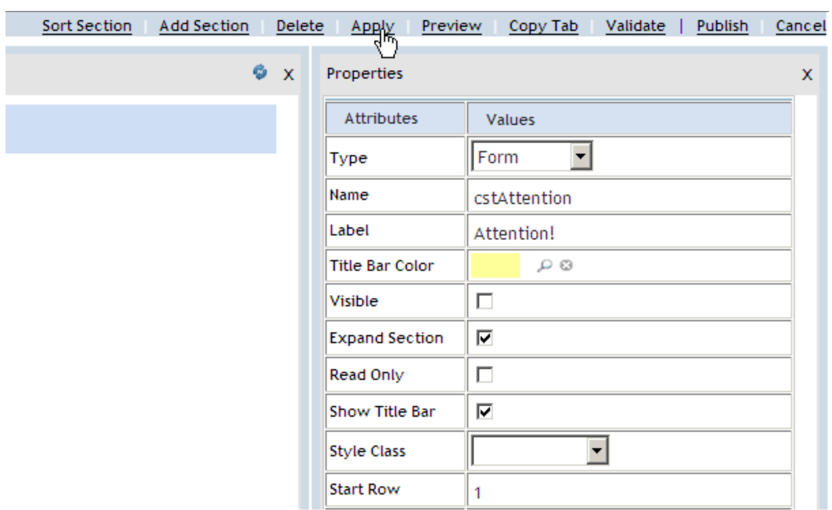
   a. Enter **cstGeneral** as the Name.

   b. Enter **General** as the Label.

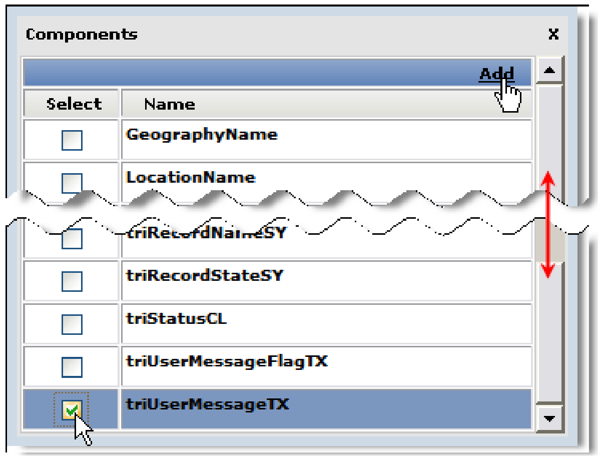
c. Click **Apply**.



8. Create the Attention section in the General tab by performing the following steps:
   a. Click **Add Section**.
   b. In the **Name** field, enter **cstAttention**.
   c. Change the **Label** field value to **Attention!**.
   d. Set the **Title Bar Color** to yellow (#FFFF33).
   e. Clear the **Visible** check box.
   f. Click **Apply**.



9. In the Components panel, click the **triUserMessageTX** field, scroll back to the top of the panel, and click **Add**.

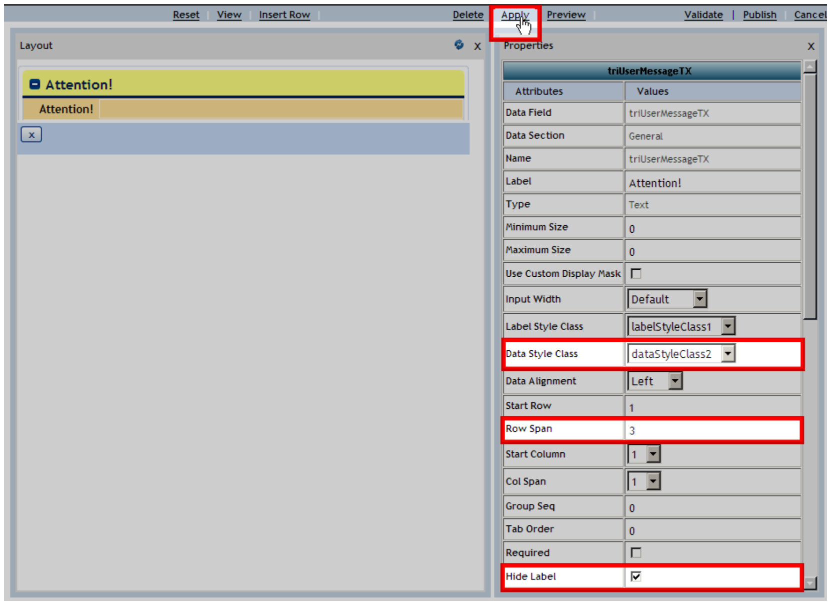


Note: If the Components panel is not viewable, click it from the **View** menu at the top of the window.

10. Set the triUserMessageTX properties by performing the following steps:
    a. Select the **Attention** field by either clicking its name in the Navigation panel, or by clicking the field in the Layout panel.
    b. From the **Data Style Class** list, select **dataStyleClass2**.

       Selecting the **dataStyleClass2** property makes the message text red and bold.
    c. In the **Row Span** field, enter **3**.
    d. Select the **Hide Label** check box.

e. Click **Apply**.

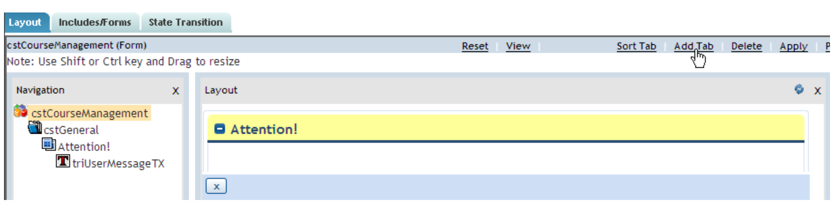


Note: Every form in this module has a different layout for the **General** tab.

11. To add the **System** tab, perform the following steps:

   a. Return to the form level by clicking **cstCourseManagement** in the Navigation panel.

   b. Click **Add Tab**.



12. Set the following properties:

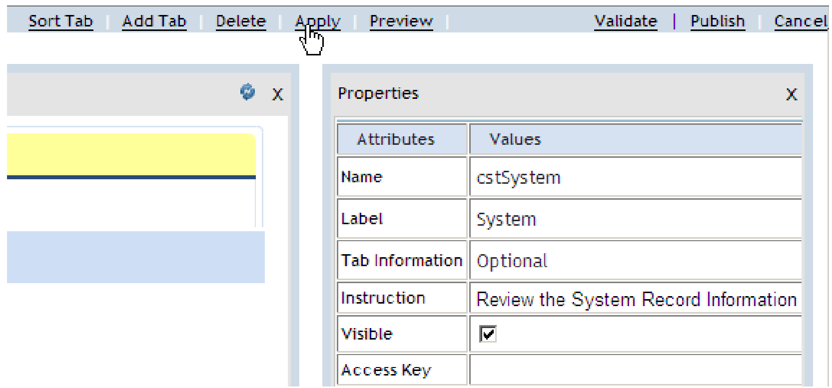
   a. In the **Name** field, enter **cstSystem**.

   b. Change the **Label** field value to **System**.

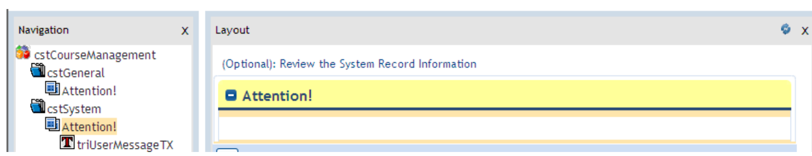
   c. In the **Tab Information** field, enter **Optional**.

   d. In the **Instruction** field, enter **Review the System Record Information**.

e. Click **Apply**.



13. Use the **Copy Section** feature to add an **Attention** section to the **System** tab:



a. Select the **cstAttention** section on the **cstGeneral** tab.

b. Click **Copy** in the upper right of the screen.

c. Click the **cstSystem** tab.

d. Click **Apply**.

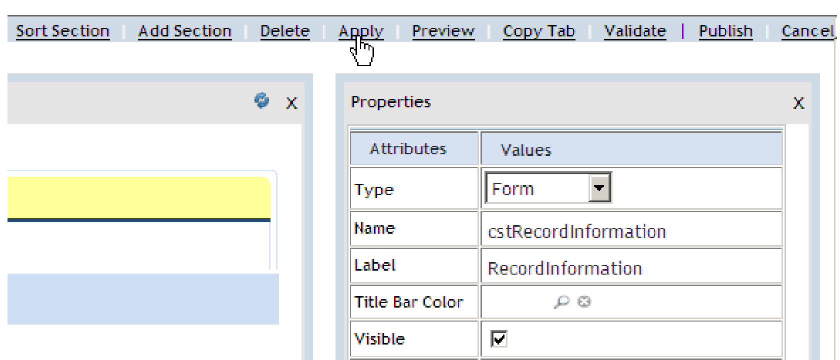
14. Set the following properties:

a. Click the **cstSystem** tab in the Navigation panel, and click **Add Section**.

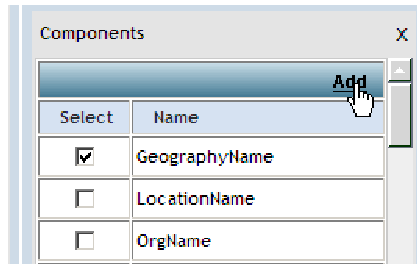
b. In the **Name** field, enter **cstRecordInformation**.

c. Change the label to **Record Information**.

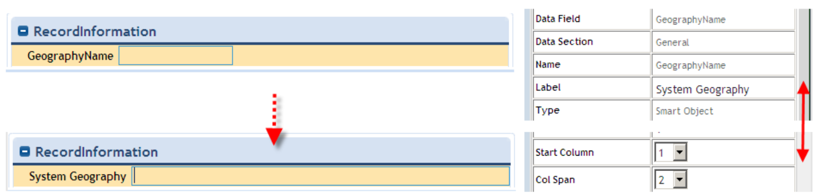
d. Click **Apply**.



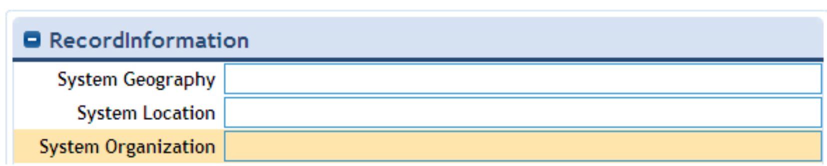
15. In the Components panel, select the **GeographyName** check box, and click **Add**.



16. Click the **GeographyName** field and change the label to **System Geography**. Change the Column Span property to **2**, and click **Apply**.



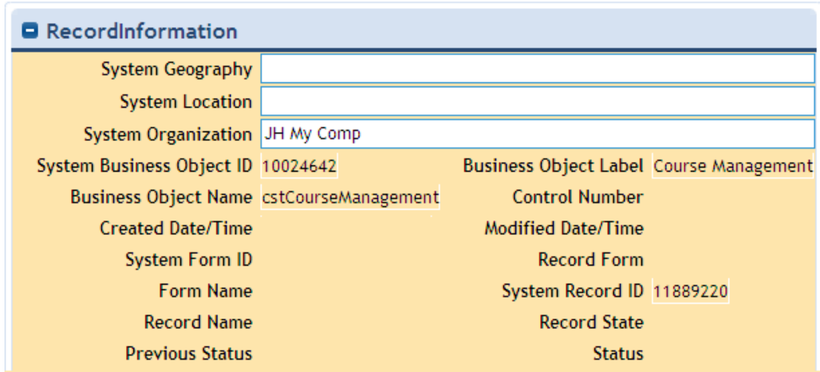
17. Repeat Step 15 and Step 16 for the **LocationName** and **OrgName** fields.



18. In the Components panel, select the following fields in the following order:

- **triBusinessObjectIdSY**
- **triBusinessObjectLabelSY**
- **triBusinessObjectNameSY**
- **triControlNumberCN**
- **triCreatedSY**
- **triModifiedSY**
- **triFormIdSY**
- **triFormLabelSY**
- **triFormNameSY**
- **triRecordIdSY**
- **triRecordNameSY**
- **triRecordStateSY**
- **triPreviousStatusCL**
- **triStatusCL**

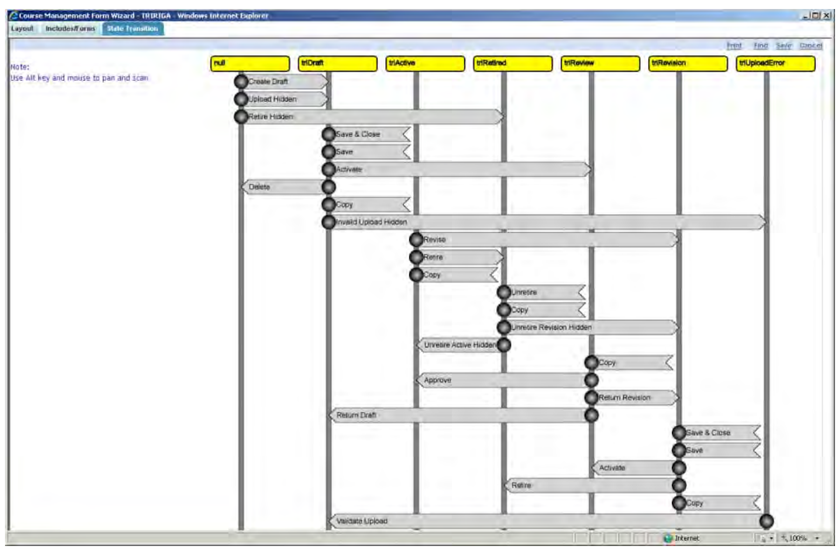
19. Click the **Add** action to add the fields to the form.



20. Click the **State Transition** tab to view the State Family. Notice that the sub actions are not visible here. You can see them only in the Data Modeler.

21. Return to the **Layout** tab, and click **Publish**.

22. Close the form.



Exercise 2. Creating the Course form

In this exercise, you create a form to display Course records (from the cstCourse business object). When you finish creating this form, it resembles the image in Figure 5.

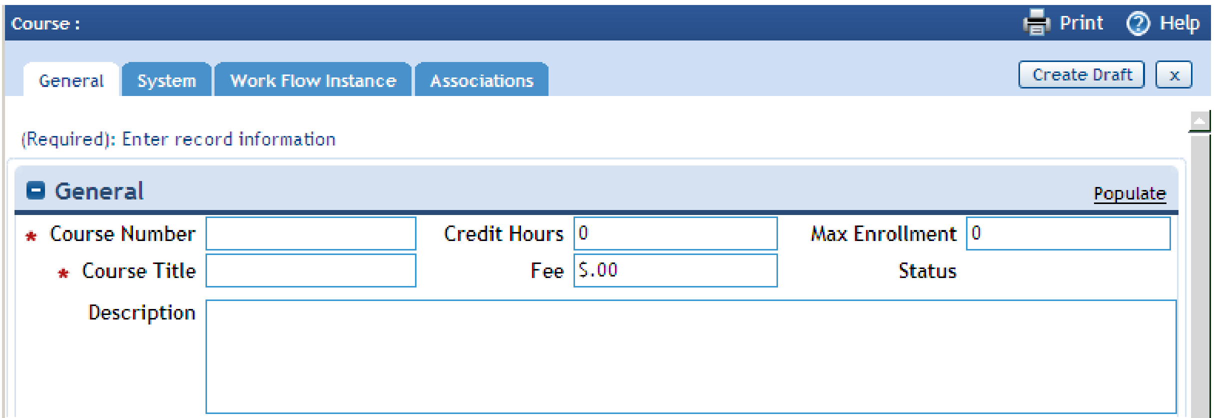
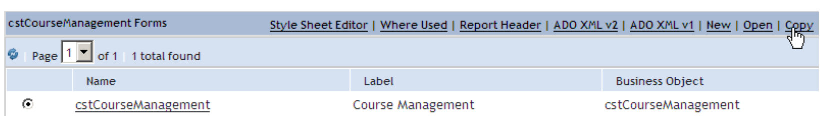


Figure 5. Creating a course form

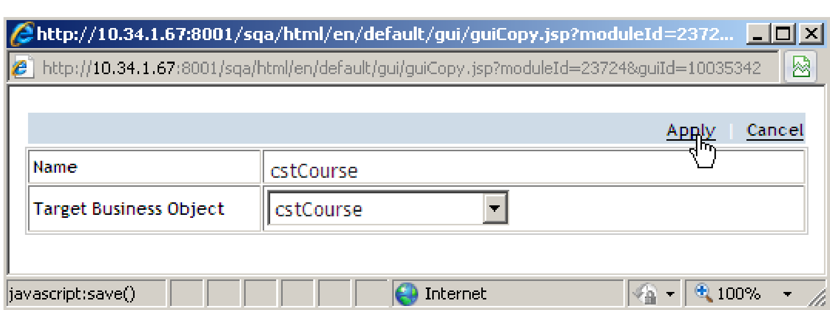
Copy the base business object form and use it as a pattern. To create the course form, perform the following steps:

1. If Form Builder is not already open, open it from **Tools > Builder Tools**.
2. Select the **cstCourseManagement** form, and click **Copy**.

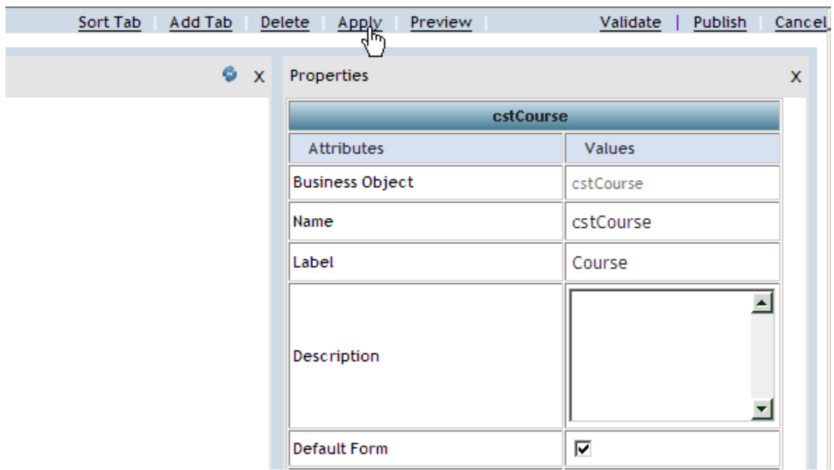


   The window opens for selecting the business object for the form.

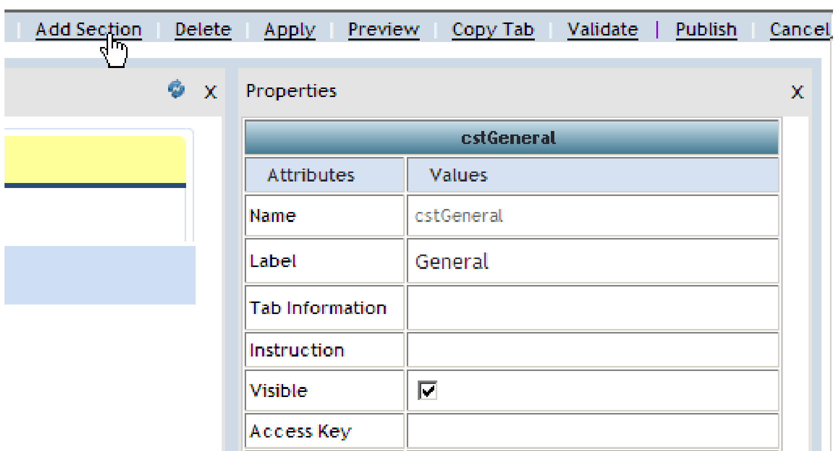
3. Perform the following steps in the window:
   a. Change the Target Business Object to **cstCourse**.
   b. Change the Name to **cstCourse**.
   c. Click **Apply**.



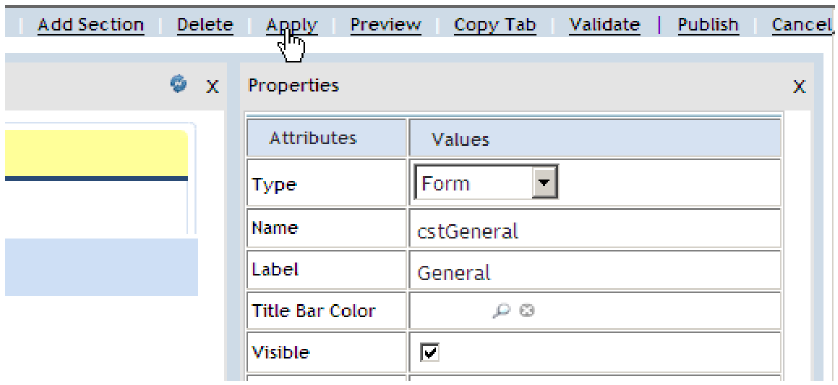
4. Click the name of the **cstCourse** form to open it.
5. Click the name of the form in the Navigation panel to open **Form Properties**.
6. In the Form Properties window, perform the following steps:
   a. Change the Label to **Course**.
   b. Select **Default Form** check box.
   c. Click **Apply**.



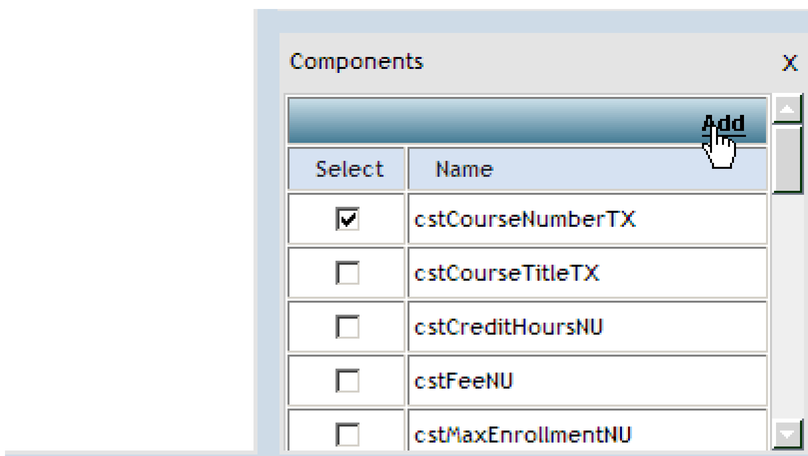
7. Click the **cstGeneral** tab entry in the Navigation panel, and click **Add Section**.



8. In the Properties window, perform the following steps:
   a. In the **Name** field, enter **cstGeneral**.
   b. In the **Label** field, enter **General**.
   c. Click **Apply**.



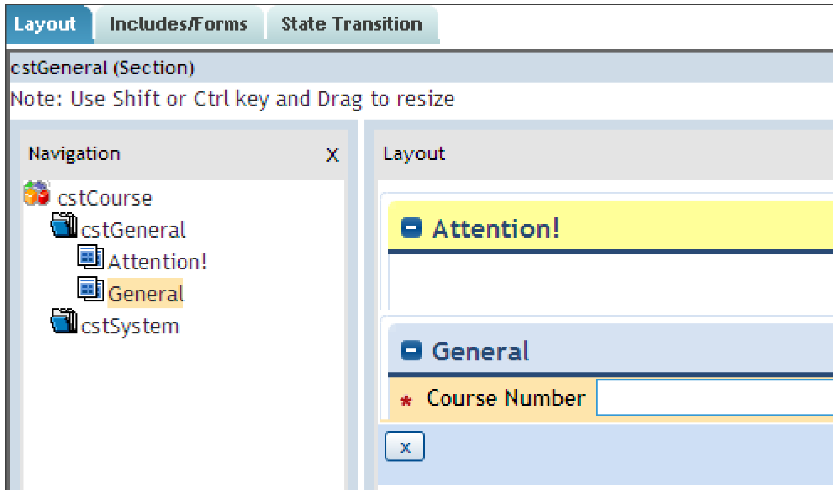
9. Select the **cstCourseNumberTX** check box, and click **Add** to add the field.



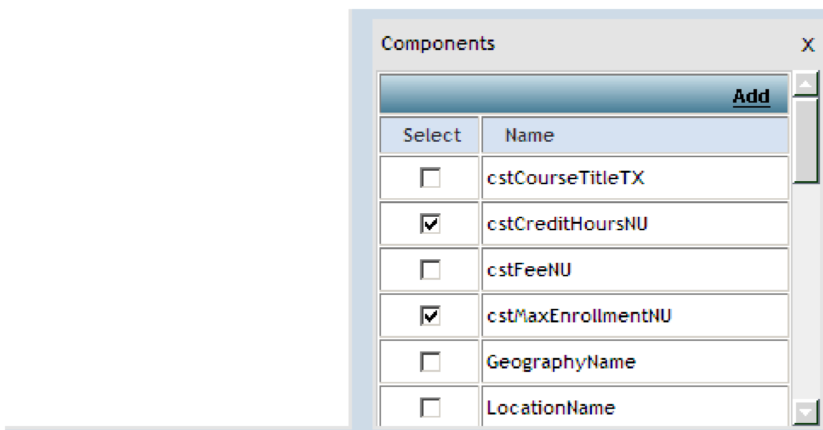
   In the Layout window, the **Course Number** field is beneath the General section.

10. Click **Apply** to save.

At any time, you can preview the layout of the form by clicking **Preview**.

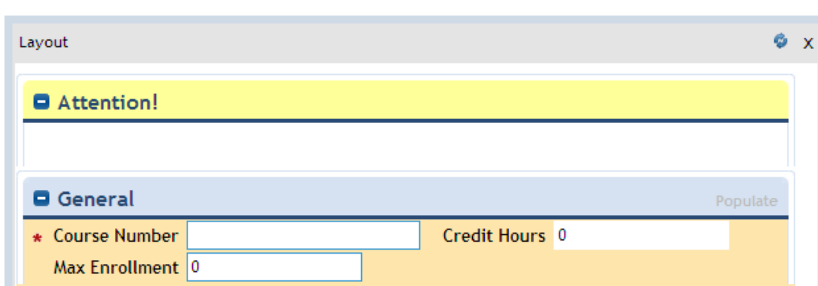


11. In the Components panel, perform the following steps:
    a. Select the **cstCreditHoursNU** and **cstMaxEnrollmentNU** check boxes.
    b. Click **Add** to add the fields.



In the Layout window, the fields are within the General section.

Note: Not all the fields are in their correct rows or columns.

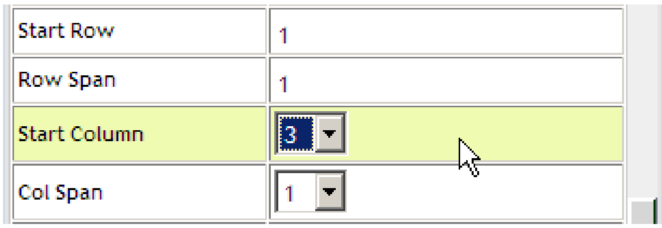


12. In the Layout window, select the **Max Enrollment** field so that it is highlighted orange.

13. In the Properties window, change the Start Row Property from **2** to **1**.

14. Change the **Start Column** from **1** to **3**.

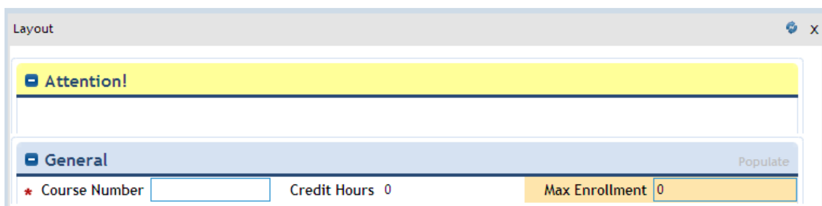
15. Click **Apply**.



The **Max Enrollment** field now exists on the same row as Course Number and Credit Hours.

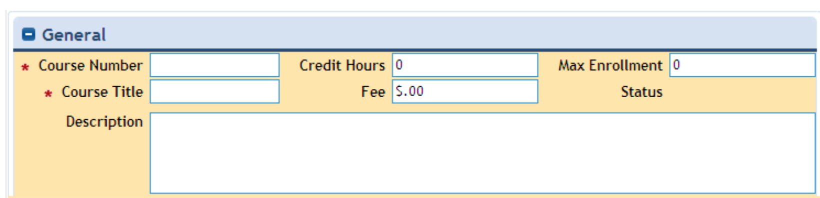
16. Add the remaining fields and reposition them by using the **Start Row**, **Row Span**, **Start Column**, and **Col Span** values.

17. Click **Apply** to save each change.

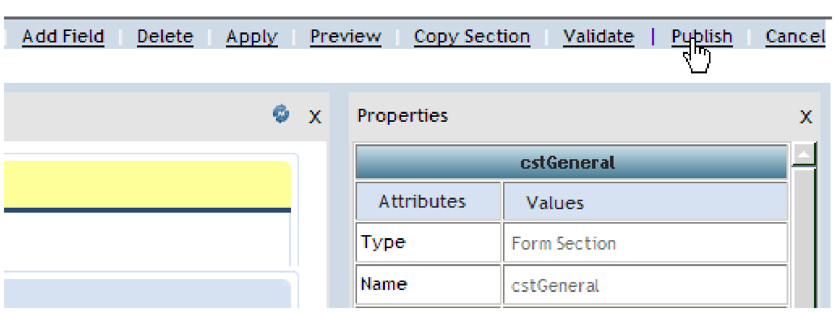


18. Review your layout.

    Your layout resembles the following image.



19. Click **Publish**.



SOLUTION 6 Navigation exercise solutions

In this unit you learn how to create menu items and move around the platform. This is only part of the information required to put items into the platform navigation.

There are no student exercises for this unit.

SOLUTION 7 Portals exercise solutions

In this unit you learn how to create menu items and move around the platform. This is only part of the information required to put items into the platform navigation.

No exercises are provided for this unit.

The exercises have you create the navigation elements required to access the *course* form and create records. You then validate that the status and previous status values are being captured correctly.

Exercise 1. Creating navigation components to the Course form

In this exercise, you create the navigation components that are necessary to use the Course form to create records. Use the following steps to create these components:

1. Open the Navigation Builder tool.
2. Create a navigation collection with the following properties:
   - Name: **cstCourseManagement - Quick Links - Course Management**
   - Label: **Course Management.**
   - Type: **Quick Links**
3. Open the Navigation Items library.
4. Create a navigation item with the following properties:
   - Name: **cst Master / Detail Courses**
   - Label: **Courses**
   - Target Type: **Master/Detail Default Query**
   - Module: **cstCourseManagement**
   - Form: **cstCourse**
   - In the Default Query Columns section, select all fields except the Image field

- Add actions for System Add, named Add, and System Delete, named Delete

5. Add the navigation item to the navigation collection.
6. Save and close the navigation collection.
7. Open the Portal Builder tool.
8. Select the Portfolio - Portfolio Landing Page portal, and click the **Edit** action.
9. Open the Portal Sections Library.
10. Create a portal section with the following properties:
    - Name: **cst Quick Links - cstCourseManagement - Course Management**
    - Label: **Course Management**
    - Type: **Quick Links**
    - Quick Links collection: **cstCourseManagement - Quick Links - Course Management**
11. Save the portal section. Use the filters to search the Portal Sections Library for the portal section.
12. Select the portal section and click the **Add to Portal** button.
13. Save and close the portal. Click the Portfolio tab.

When you finish creating these components, the portal section as seen on the portal resembles Figure 6.

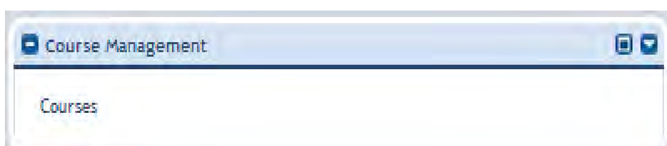


Figure 6. Completed Course Management section

Creating the Navigation Collection

Create a navigation collection in the Navigation Builder by performing the following steps:

1. On the **Tools** tab, click **Builder Tools > Navigation Builder** to open it.

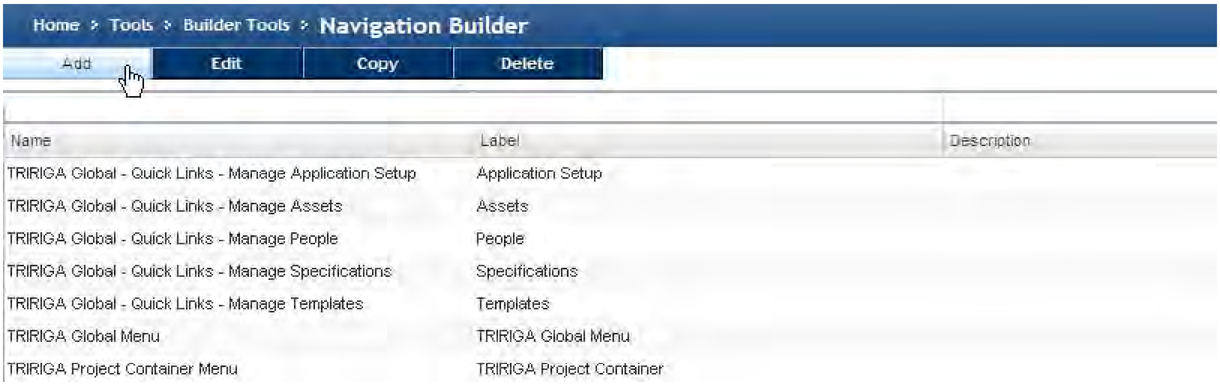


Figure 7. Navigation Builder

2. Click **Add**.

   The New Navigation Collection page opens.

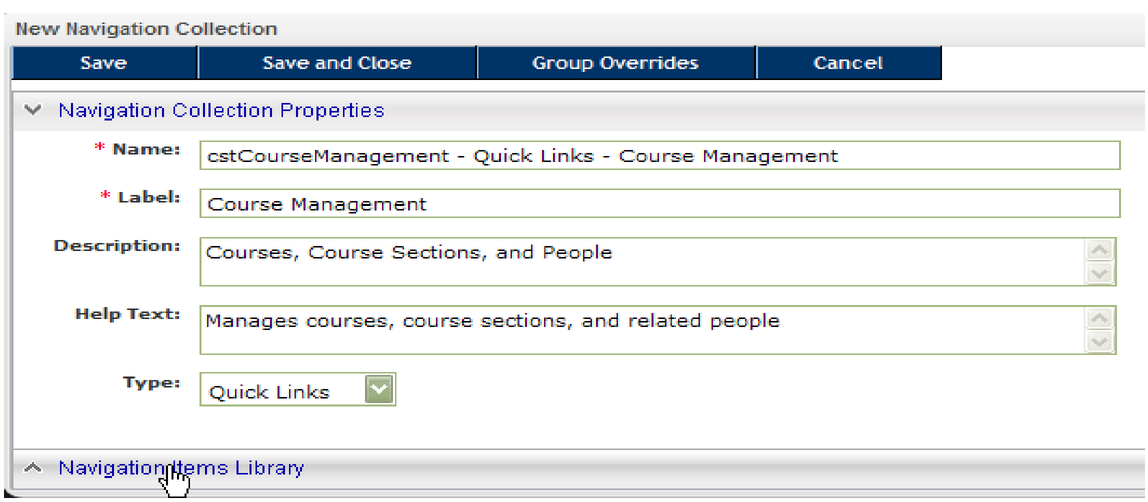
3. Use the following properties:

   a. In the **Name** field, enter **cstCourseManagement – Quick Links – Course Management**.

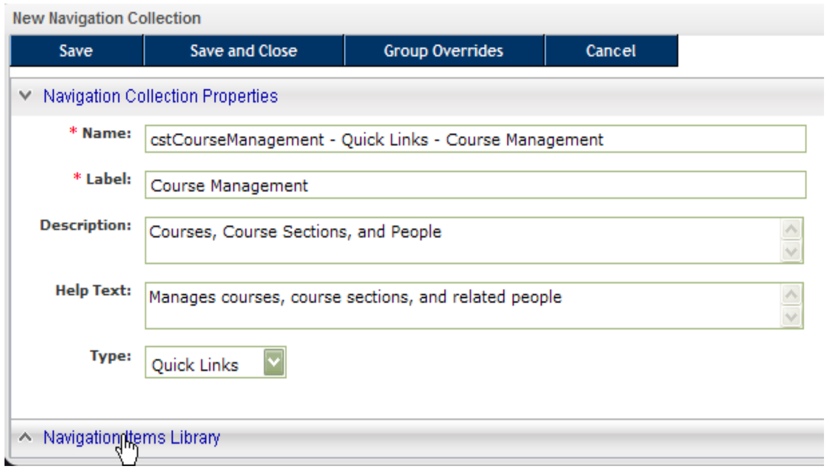
   b. In the **Label** field, enter **Course Management**.

   c. From the **Type** list, select **Quick Links**.

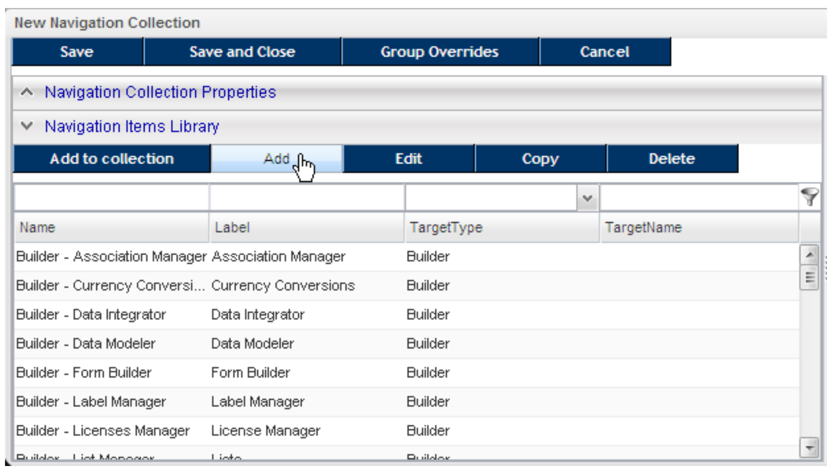
   d. When you finish, click **Save**.



4. Click **Navigation Items Library** at the lower left of the page.



5. Click **Add** to create a navigation item.

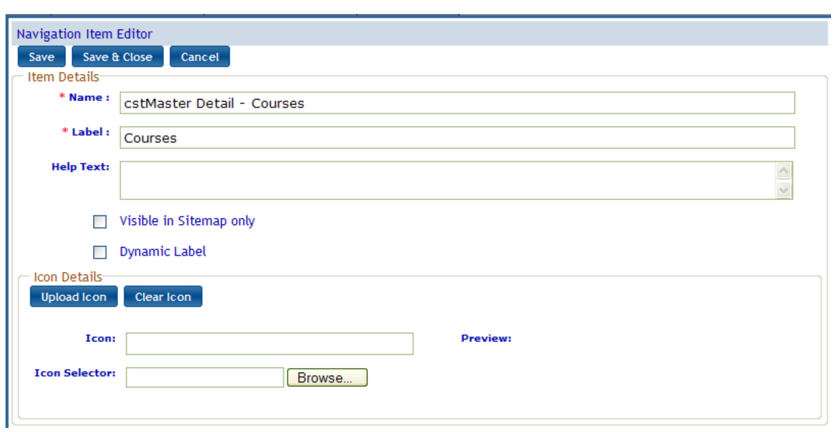


The Navigation Item Editor window opens.

6. Use the following properties:

   a. In the **Name** field, enter **cstMaster / Detail - Courses**.

   b. In the **Label** field, enter **Courses**.



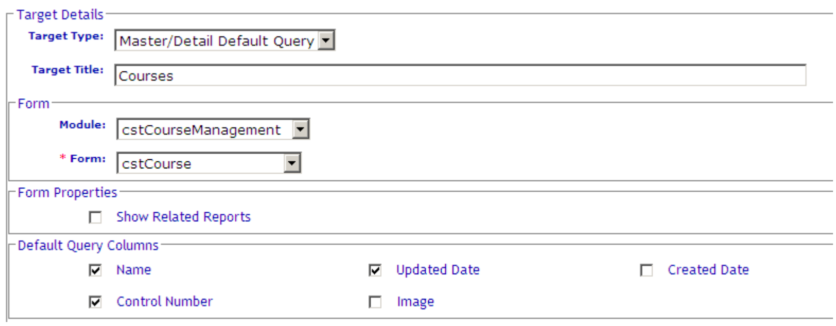
   c. From the **Target Type** list, select **Master/Detail Default Query**.

d. In the **Target Title** field, enter **Courses**.

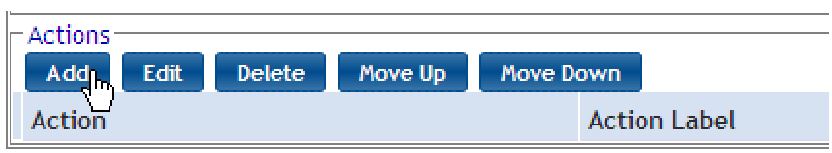
e. From the **Module** list, select **cstCourseManagement**.

f. From the **Form** list, select **cstCourse**.

g. Under **Default Query Columns**, select the **Name**, **Control Number** and **Updated Date** check boxes.

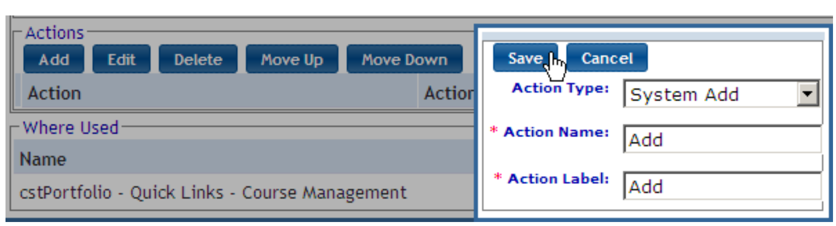


h. Under **Actions**, click **Add**.



i. In the window, perform the following steps:

- From the **Action Type** list, select **System Add**.
- In the **Action Name** field, enter **Add**.
- In the **Action Label** field, enter **Add**.
- Click **Save** to add the action to the **Navigation Item**.
- Repeat these steps for **System Delete** by using **Delete** for the **Name** and **Label**.



j. At the lower part of the Navigation Item Editor window, click **Save & Close.**

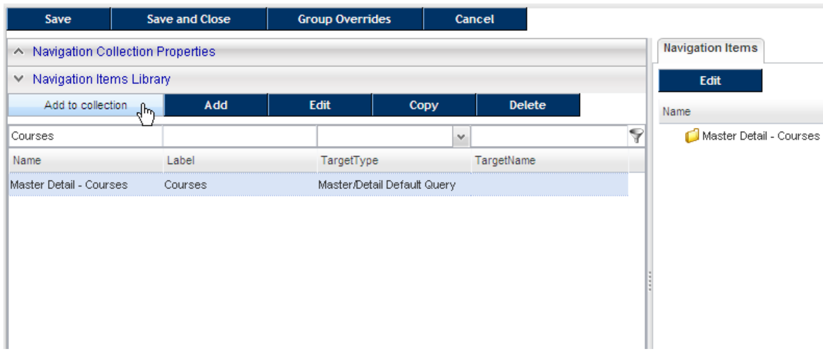
7. In the Navigation Items Library, perform the following steps:

a. Filter the Library by Name: **Courses**.

b. Select the item that you created by clicking it.

c. Click **Add to Collection**.

d. Click **Save and Close** that is above Navigation Collection Properties.

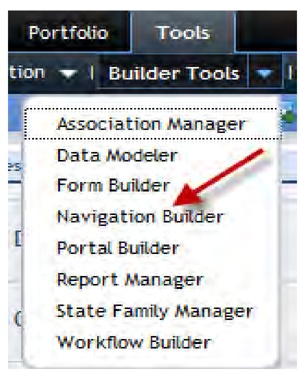


The Course Management Navigation Collection is displayed in the **Navigation Builder** list.

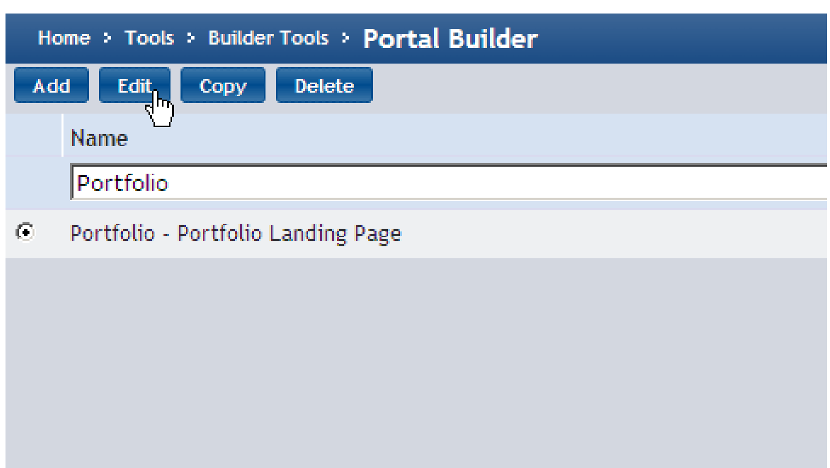
Creating the portal section

To create the portal section, perform the following steps:

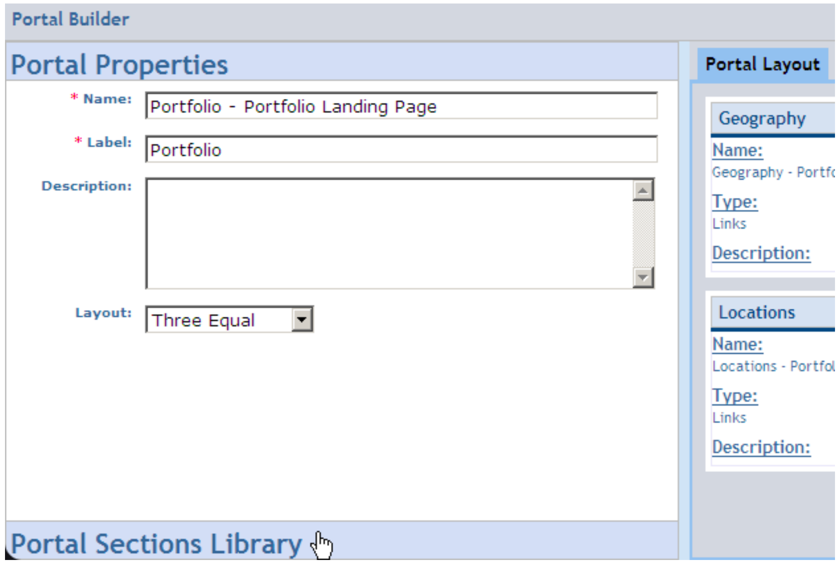
1. On the **Tools** tab, click **Builder Tools > Portal Builder** to open it.



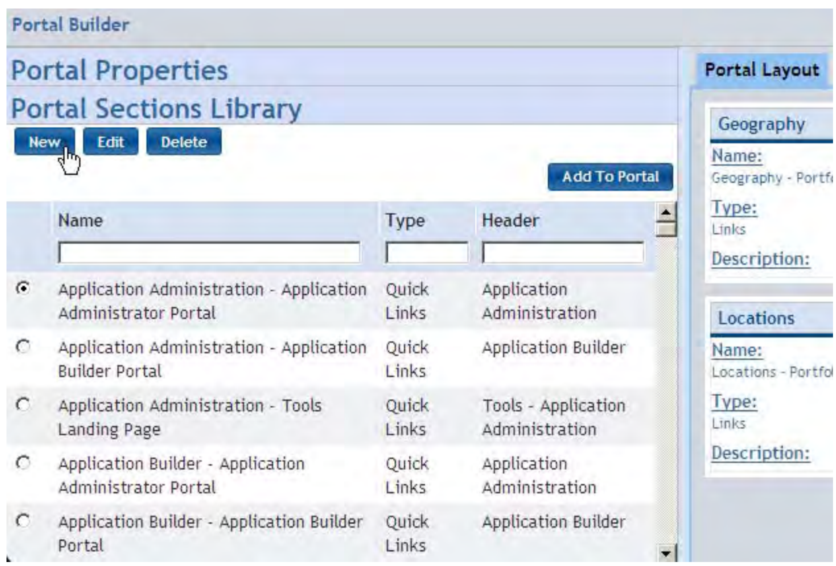
2. Click **Portfolio - Portfolio Landing Page**, and click **Edit**.



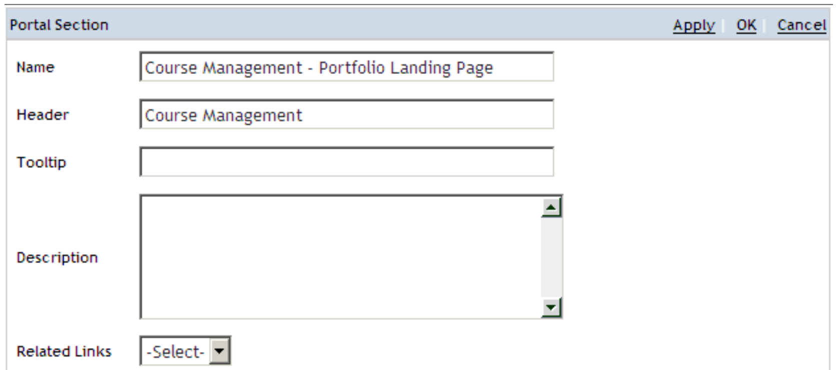
3. In the lower-left corner of the Portal Builder, click **Portal Sections Library**.



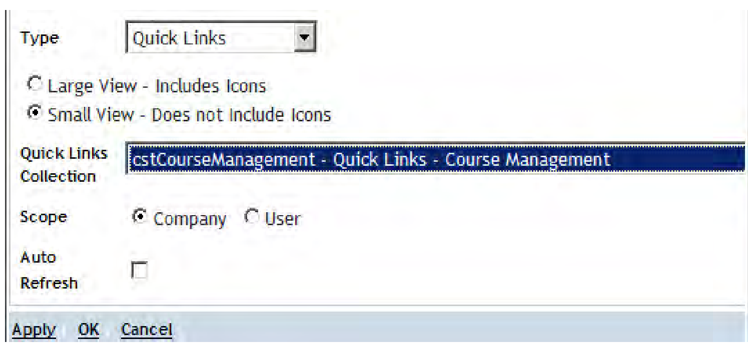
4. Click **New** to create a portal section.



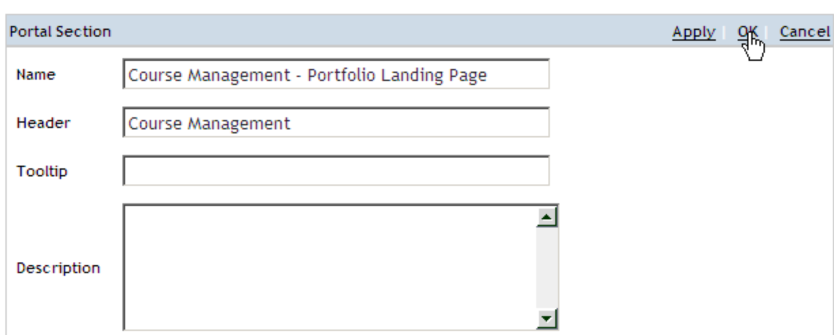
5. In the Portal Section window, perform the following steps:
   a. In the **Name** field, enter **cst Quick Links - cstCourseManagement – Course Management**.
   b. In the **Header** field, enter **Course Management**.



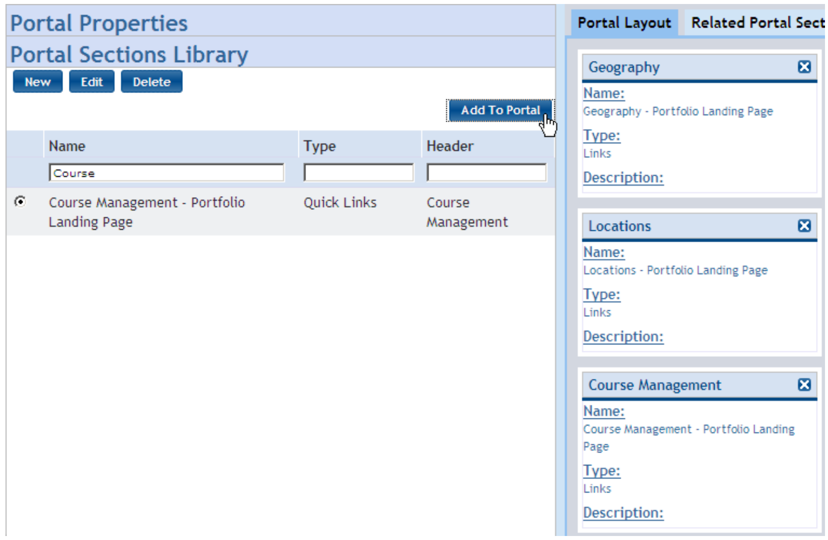
   c. From the **Type** list, select **Quick Links**.
   d. From the **Quick Links Collection** list, select **cstCourseManagement – Quick Links – Course Management**.



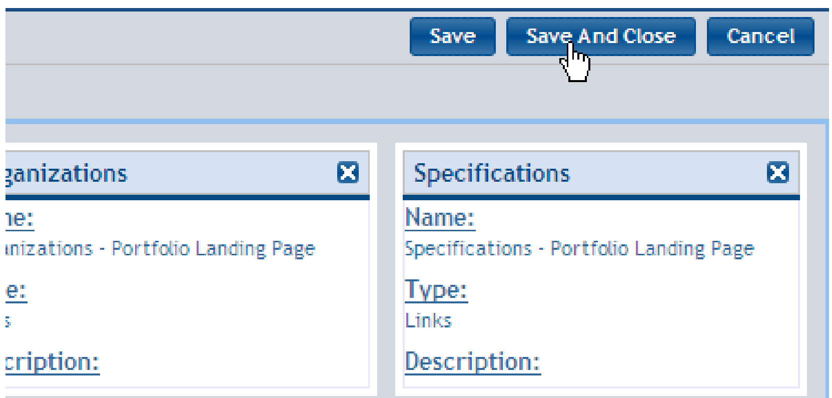
6. Click **OK** to save and close the Portal Section window.



7. Select the newly created **Portal Section** and click **Add To Portal** to add it to the Portfolio Landing Page.



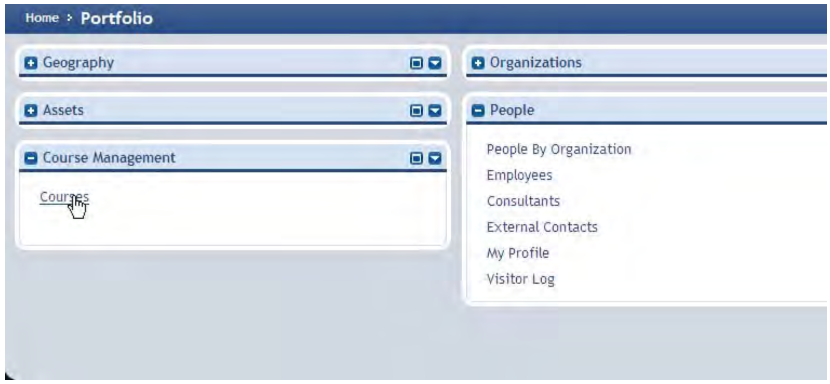
8. Click **Save And Close** to apply all of your changes.



Note: You might have to log out and log back in for the changes to take effect.

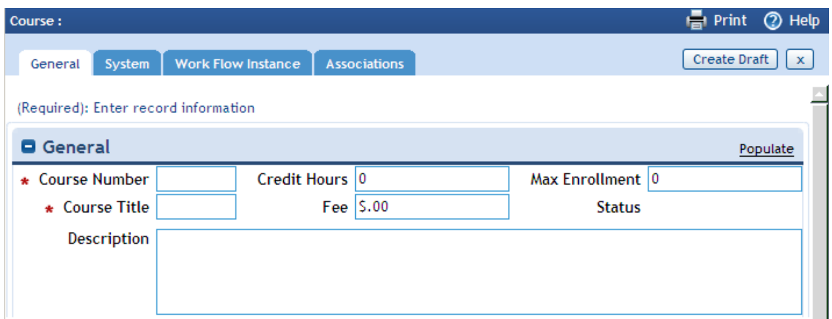
9. Click the **Portfolio** tab to go the portfolio landing page.

10. Click **Courses** to open a results window.



11. Click **Add** to create a Course record.

12. Enter the details of the record, and click **Create Draft** to save the new record.



Exercise 2. Validate status and previous status

This exercise is to verify that the status and previous status are captured correctly.

1. Create a Course record.
2. Type values in fields and click **Create Draft**.
3. Click the **System** tab.
4. Verify that the **Status** value is **Draft** and that **Previous Status** is blank.
5. Click **Activate**.
6. Verify that the Status is **Review In Progress** and that Previous Status is **Draft**.
7. Click an action button to move the record to another state. Verify that the status and previous status values are captured correctly, as specified in the table provided in Chapter 4 Exercise 1, "Creating a state transition family for the Base business object".
8. Continue to move the record from state to state and verify that status and previous status are captured correctly.

Note: After a record is in Retired status, it cannot be unretired without a workflow (which is outside the scope of this class). If you retire a record, you must create another one to continue testing.

9. Correct any errors that you find in both the cstCourse business object state family and in the cstCourseManagement state family.

Solution 8 Basic reporting exercise solutions

This unit teaches you how to create basic reports using the Report Manager.

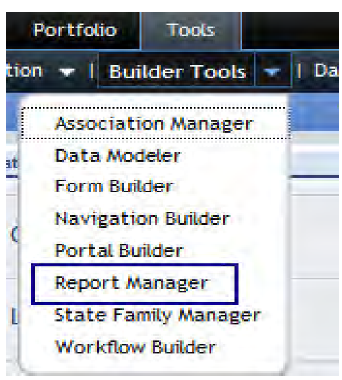
In the exercises you create a custom query to view *course* records and change the navigation item to put the custom query in place of the default *course* query.

Exercise 1. Creating a course manager query

In this exercise, you create a custom query to display courses and replace the default query in the Navigation Item with the custom query.

To create a course manager query, perform the following steps:

1. On the **Tools** tab, select **Builder Tools > Report Manager**.



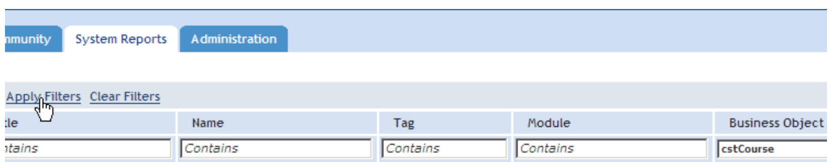
   The Report Manager window opens.

2. Click the **System Reports** tab.

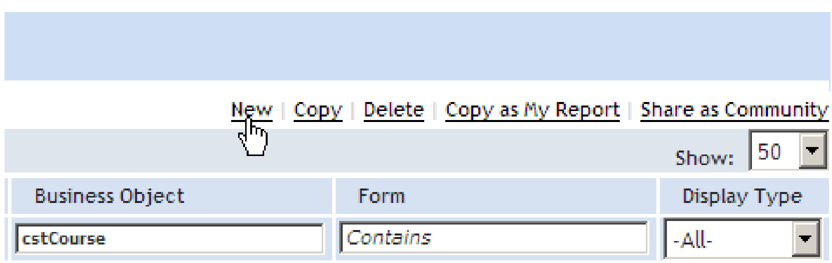
The page lists all system reports.

3. Display only the reports if the business object name contains **cstCourse** by performing the following steps:
   a. In the **Business Object** column field, enter **cstCourse**.
   b. Click **Apply Filters**.

      The page lists no report templates.



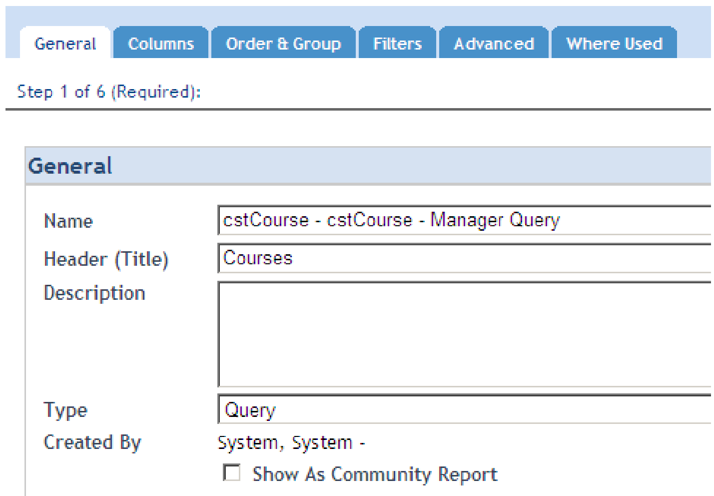
4. Click **New** to create a report.



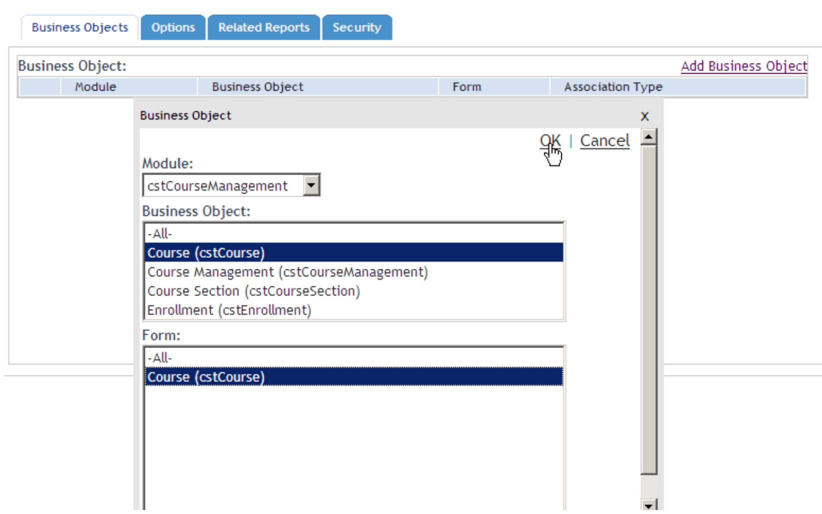
   The Report window opens.

5. Set the **General** properties as follows:
   - Name: **cstCourse – cstCourse – Manager Query**
   - Header **(Title)**: **Courses**

- ID: **CUSTOM**
- Description: **Course manager query**
- Scope: **All Projects**
- Type: **Query**



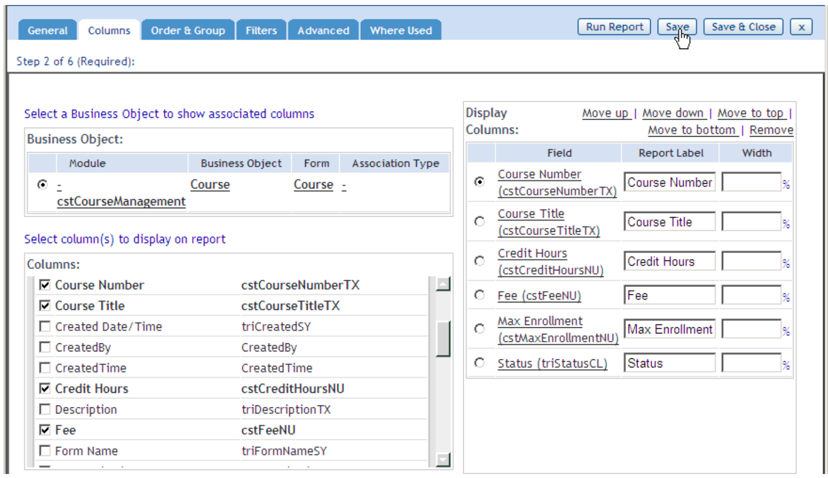
6. In the **Business Objects** subtab, click **Add Business Object**, and set the following properties:
   a. From the **Module** list, select cstCourseManagement.
   b. From the **Business Object** list, select **cstCourse**.
   c. From the **Form** list, select **cstCourse**.
   d. Click **OK**.



7. ...Click the **Columns** tab, and set the following properties:
   a. In the Columns section, select the following six check boxes:
      - **Course Number**
      - **Course Title**

- **Credit Hours**
- **Fee**
- **Max Enrollment**
- **Status**

b. In the upper-right corner, click **Save**.

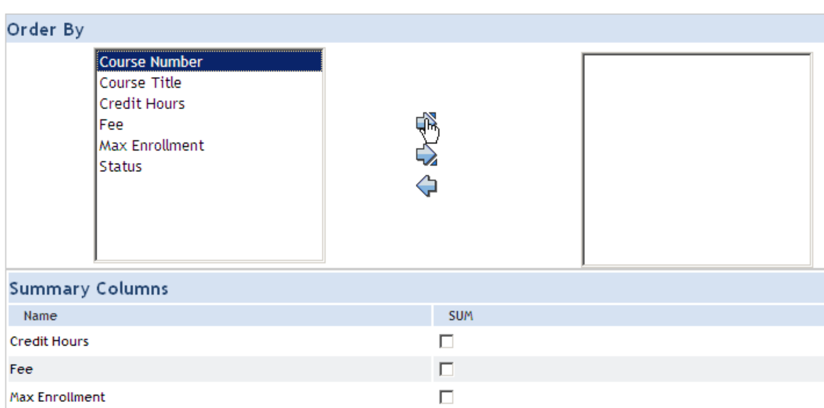


8. Click the **Order & Group** tab, and sort as follows:

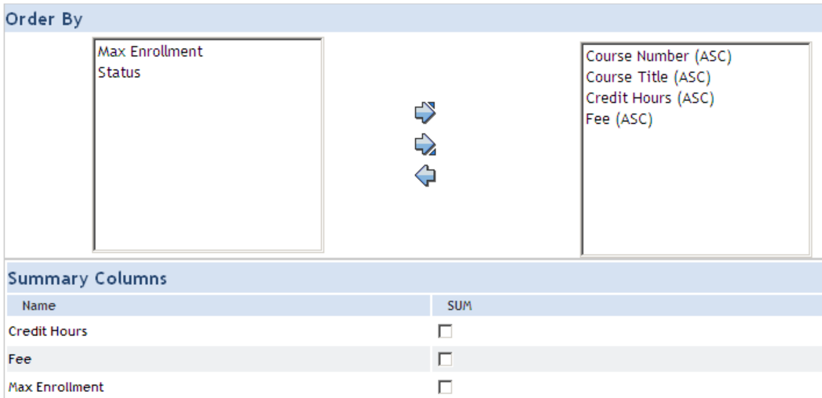
a. In the Order By section, select the following four items, one at a time:

- **Course Number**
- **Course Title**
- **Credit Hours**
- **Fee**

b. Click the ascending (top-most) arrow icon to move them to the right-side list.



c. In the upper-right corner, click **Save**.



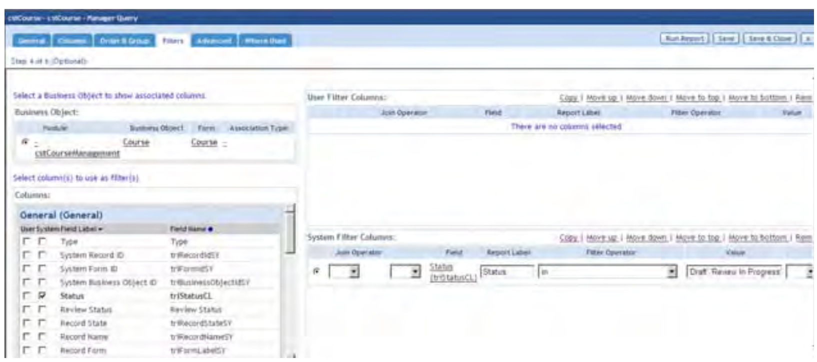
9. Click the **Filters** tab.

   a. In the Columns section, in the **Status** line, select the **System** check box.

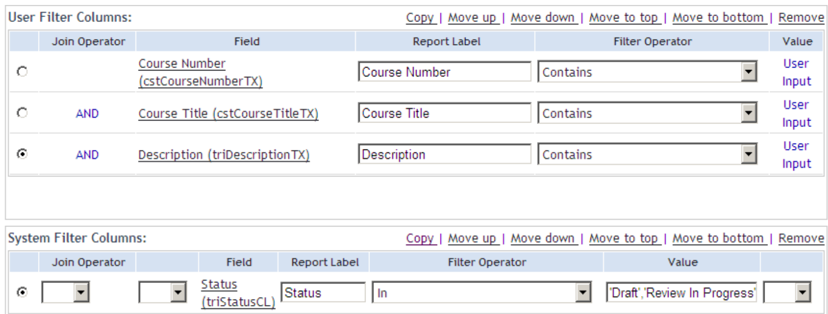
      The new filter is displayed in the System Filter Columns section.

   b. Select **Operator** of **In**.

   c. Enter the following in the **Value** field: '**Draft'**, **'Review In Progress'**, '**Active'**, '**Revision In Progress'**. Ensure that you spell the values exactly, and include the single quotation marks as shown.



10. Repeat this process in the Columns section, but this time click the **User** check boxes to add three more filters:
    - **cstCourseNumberTX (Contains)**
    - **cstCourseTitleTX (Contains)**
    - **triDescriptionTX (Contains)**

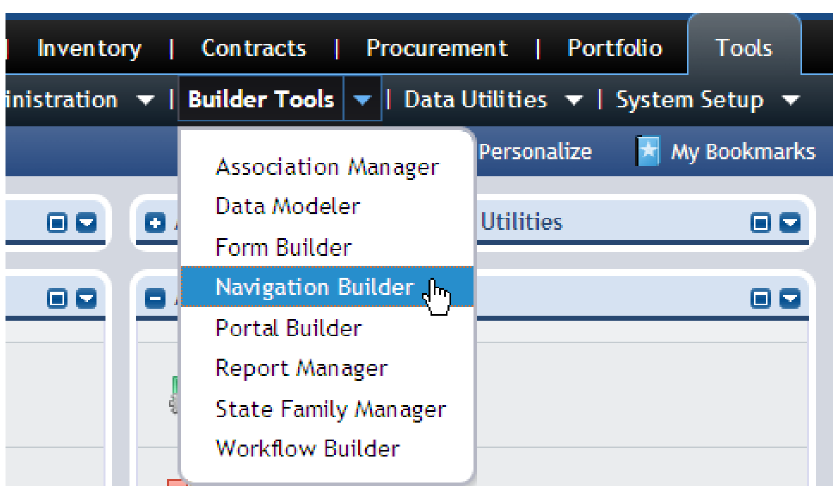


11. In the upper-right corner, click **Save & Close**.
12. Close the Report Builder window.

Exercise 2. Replacing the default Course query in navigation

Follow these steps to replace the default Course query with the custom query:

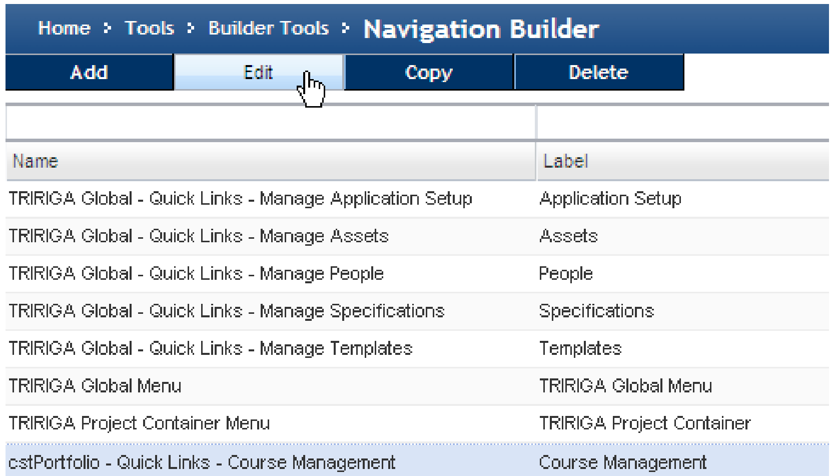
1. On the **Tools** tab, click **Builder Tools > Navigation Builder**.



The Navigation Builder window opens.

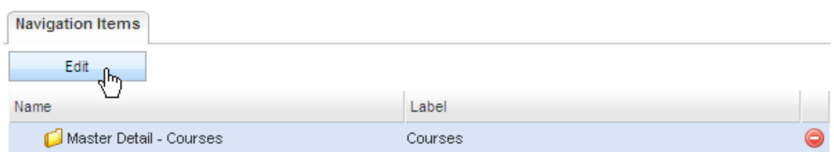
2. Select **cstPortfolio – Quick Links – Course Management**.

3. Click **Edit**.

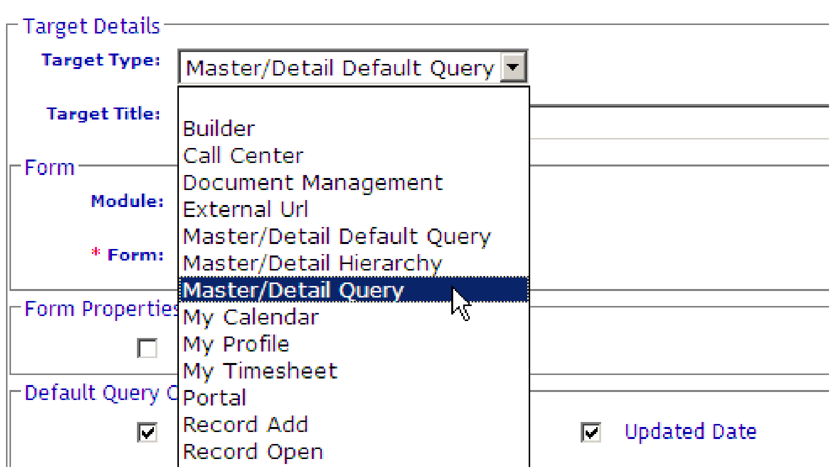


The Navigation Collection page opens.

4. From the **Navigation Items** tab, select **Master Detail – Courses**.
5. Click **Edit**.



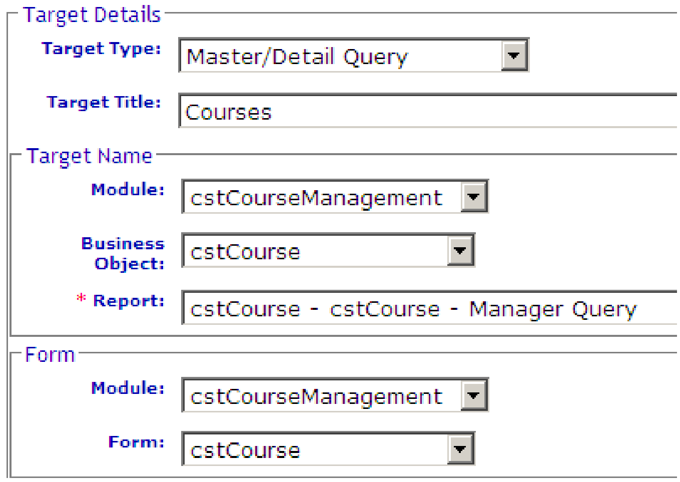
6. From the **Target Type** list, select **Master/Detail Query**.



7. Change the following settings:
   a. In the **Target Title** list, change the text to **Courses**.
   b. From the **Module** list, select **cstCourseManagement**.
   c. From the **Business Object** list, select **cstCourse**.
   d. From the **Report** list, select **cstCourse – cstCourse – Manager Query**.

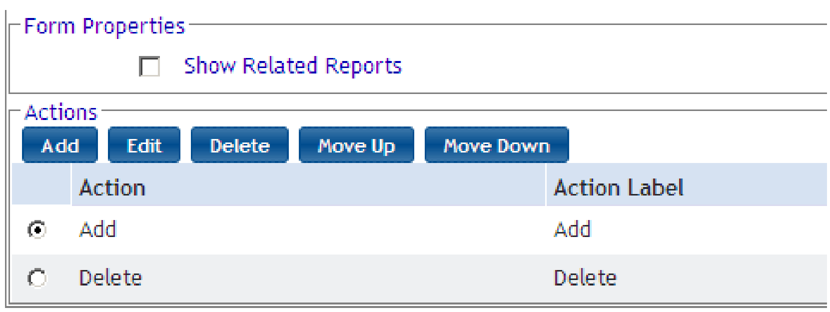
e. From the **Modules** list, select **cstCourseManagement**.

f. From the **Forms** list, select **cstCourse**.

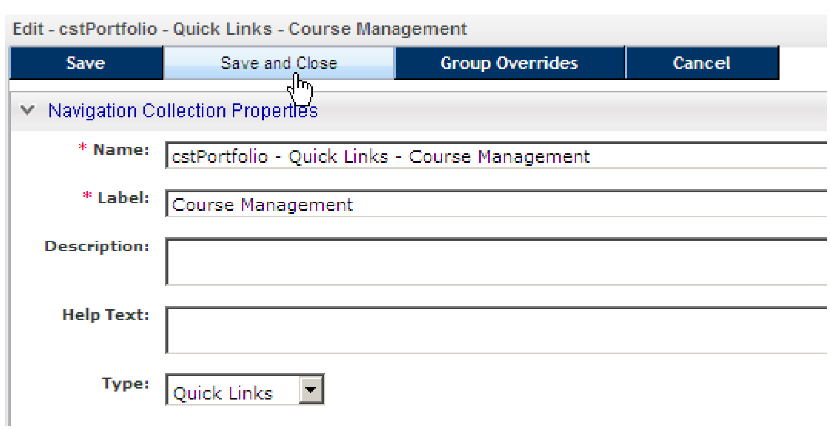


8. Add actions as previously.

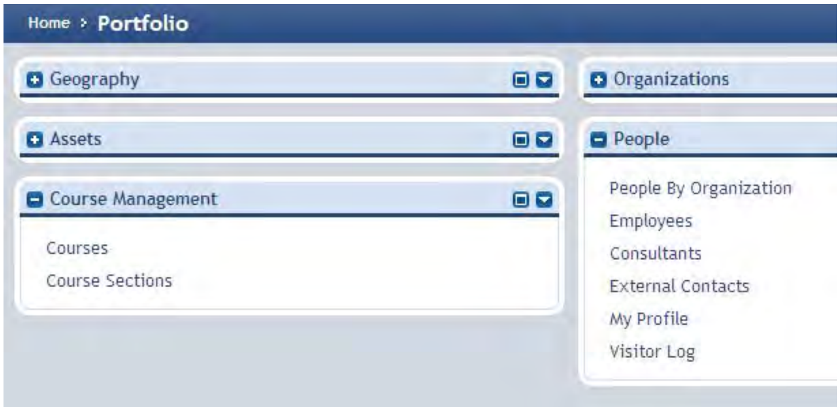
9. In the Navigation Items editor, click **Save & Close**.



10. In the Navigation Collection page, click **Save and Close**.

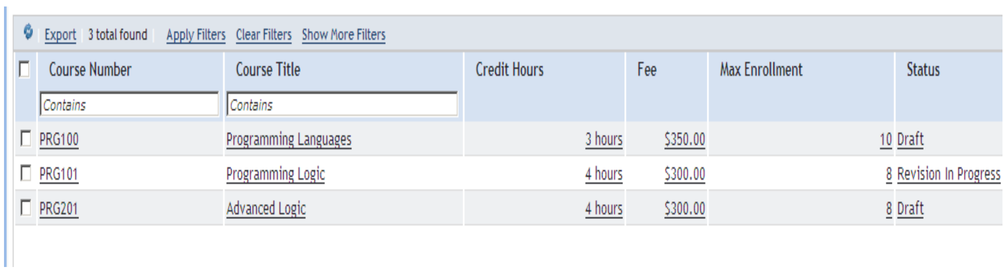


11. Click the **Portfolio** tab to open the page.



12. Click the **Courses** link.

13. In the Data Browser List window, review the six columns that you selected for your query.



SOLUTION 9 Lists and classifications exercise solutions

The unit describes lists and classifications and how they are used in the platform.

The exercises have you create a new list, and add values to another list. You then begin creation of a new business object for *course sections*.

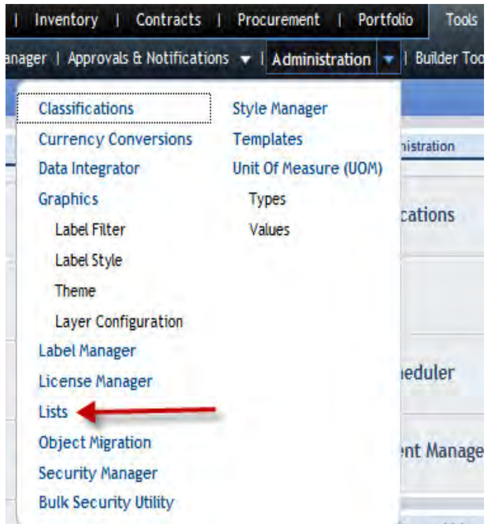
Exercise 1. Creating a schedule list

In this exercise you create the cstSchedule list with the following items:

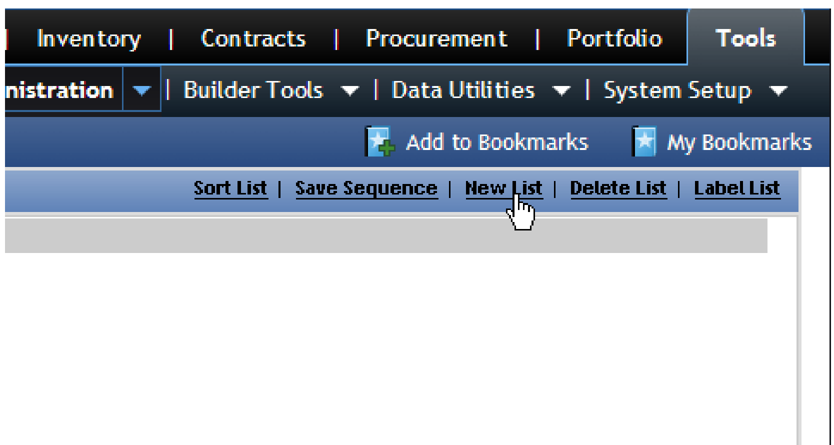
- Properties
  - Name: **cstSchedule**
  - Label: **Schedule**
  - Module: **cstCourseManagement**
  - Source Type: **Manual**
- Values
  - M, W, F
  - M, W
  - W, F
  - Tu, Th

To create the Schedule list, perform the following steps:

1. On the **Tools** tab, click **Administration > Lists** to open the List Manager.



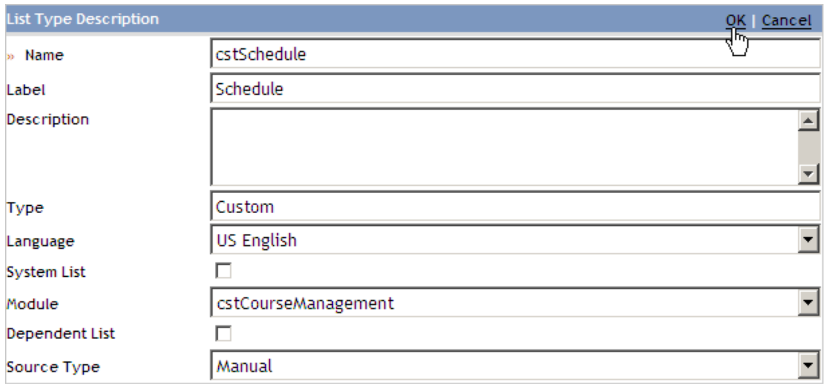
2. In the upper right of the List Manager, click **New List** to create a list.



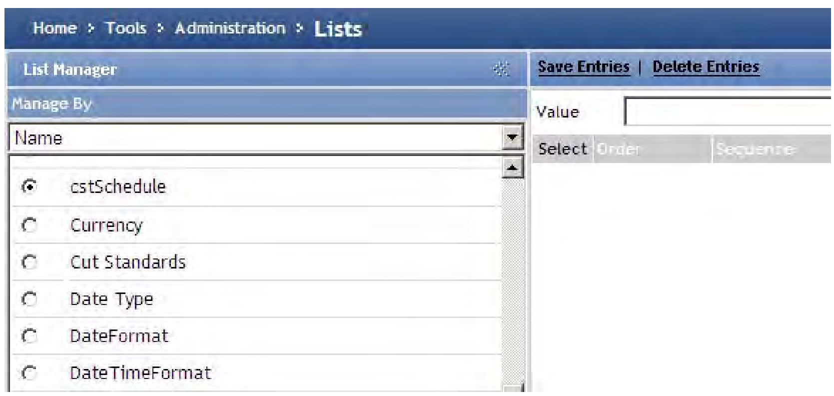
3. Set the following properties and click **OK**:
   a. In the **Name** field, enter **cstSchedule**.
   b. In the **Label** field, enter **Schedule**.
   c. In the **Type** field, enter **Custom**.
   d. From the **Language** list, select **US English**.

e. From the **Module** list, select **cstCourseManagement**.

f. From the **Source Type** list, select **Manual**.

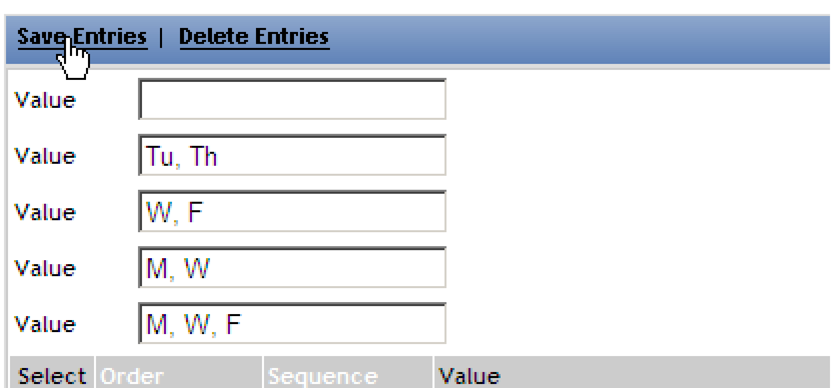


4. Find the **cstSchedule** list in the Manage By panel.



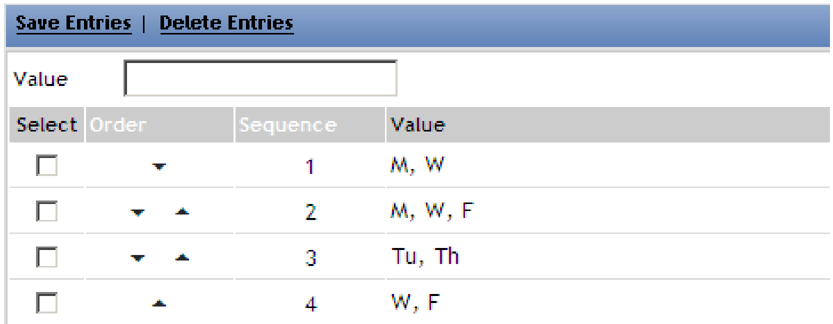
5. Enter the following entries in the **Value** fields:

- **M, W, F**
- **M, W**
- **W, F**
- **Tu, Th**



6. Click **Save Entries**.

7. Review the list.



The list is now ready for use.

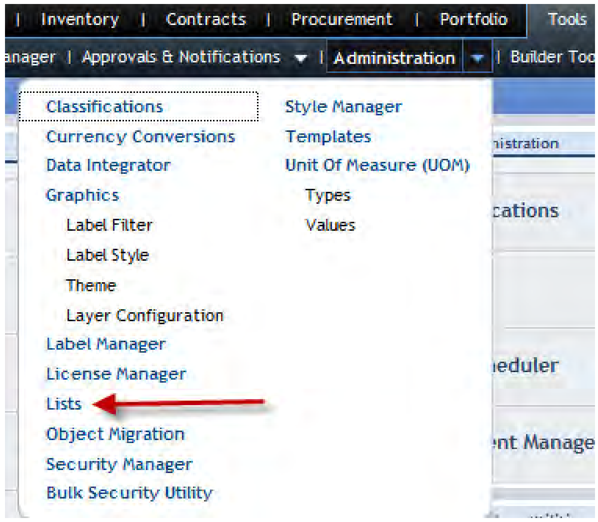
Exercise 2. Adding association strings

In this exercise, you add the following association strings to the **Association Types** list in the List Manager. All associations that are created in the platform use this list for their association strings.

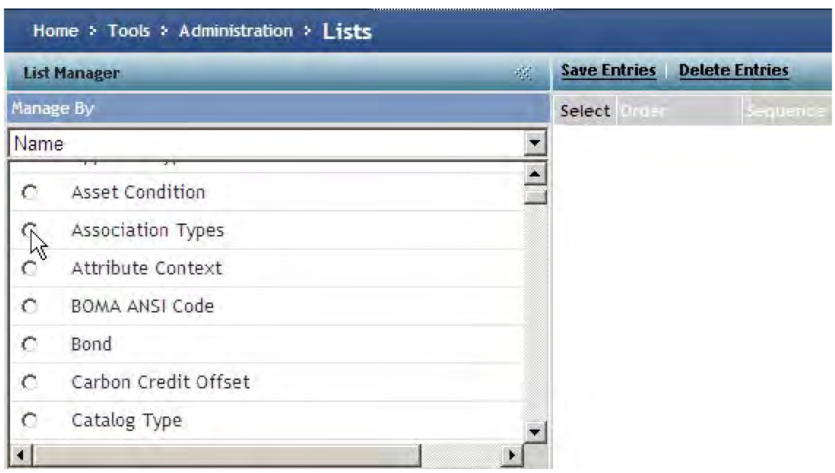
Association string
Has Teacher
Teaches
Enrollment For
Has Grade
Grade For
Has Student
Is Enrolled In

To add association strings to the Association Types list, perform the following steps:

1. On the **Tools** tab, click **Administration > Lists** to open the List Manager.



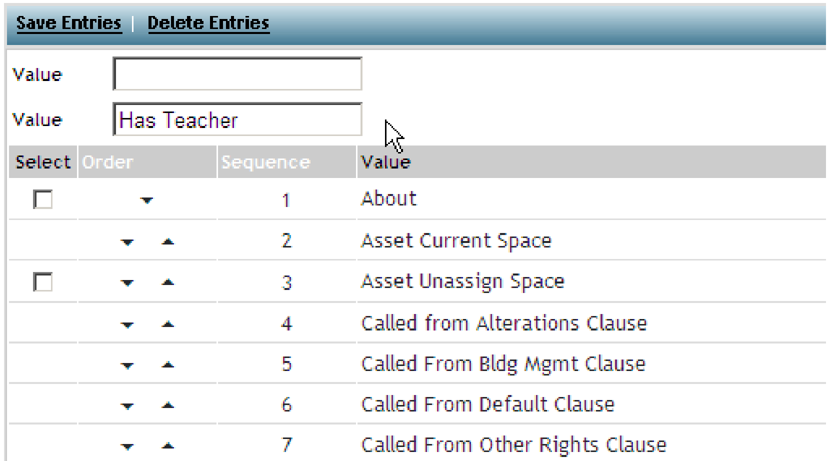
2. In the List Manager window, click **Association Types**.



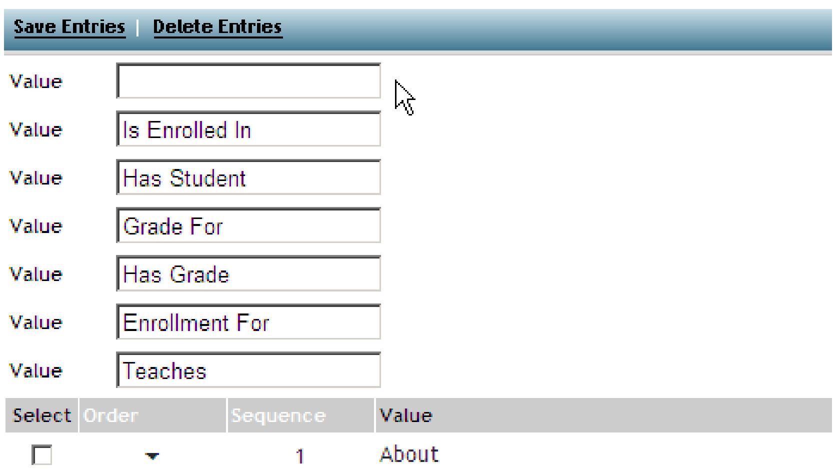
Note: Wait a few minutes for the window to load.

3. In the **Value** field, enter **Has Teacher**.

When you click outside that field box, or press Enter, a new empty **Value** field box opens above the other input area.

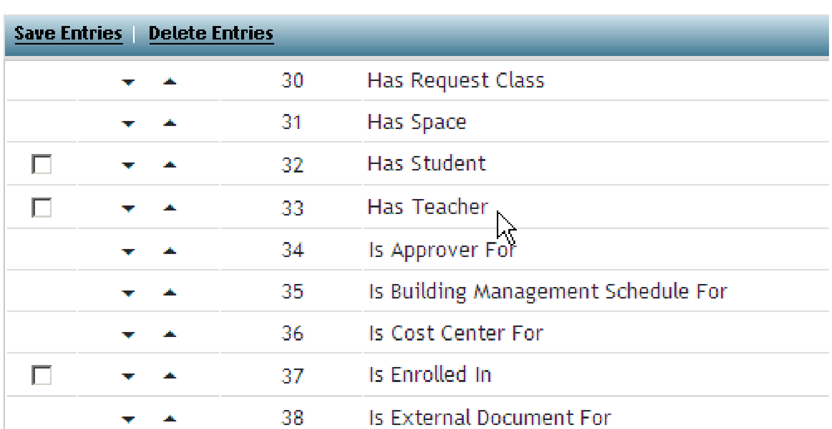


4. Enter the remaining values as shown in the following image.



After you enter the seven values from the string list, click **Save Entries**. Wait a few minutes for the window to load.

5. Review the list. **Has Teacher** and the other strings are now in the list.



Exercise 3. Creating a course section business object

In this exercise, you create a Course Section business object. It brings together the various other components that you develop in class. Create the cstCourseSection business object with the information shown in Table 17 and Table 18 .

Table 17. Creating a course section business object: Properties

Property	Description
BO Name	cstCourseSection
Display Name	Course Section
BO Type	Stand Alone

Table 18. Creating a course section business object: Field list

Add or Find	Type	Name	Label	Other
Add	Number	cstCurrentEnrollmentNU	Current Enrollment	Read Only. Do not Auto Populate; Validation: Accept Only Number.
Add	Text	cstInstructorTX	Instructor	Do not Auto Populate
Add	List	cstScheduleLI	Schedule	Choose the List named cstSchedule from the cstCourseManagement Module. Do not Auto Populate.
Add	Text	cstSectionNumberTX	Section #	**Required**; Size: 15 characters. Do not Auto Populate.
Find	Number	cstMaxEnrollmentNU	Max Enrollment	Validation: Accept Only Number. Do not Auto Populate.
Find	Text	triEmailTX	Email	Do not Auto Populate.
Find	Date	triEndDA	End Date	Do not Auto Populate.
Find	Date	triStartDA	Start Date	Do not Auto Populate.

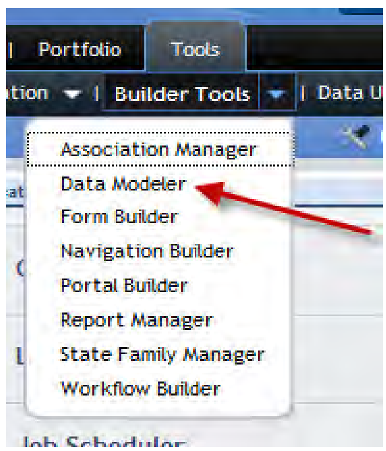
Table 18. Creating a course section business object: Field list (continued)

Add or Find	Type	Name	Label	Other
Find	Time	triEndTimeTI	End Time	Do not Auto Populate. Set to NOT Required.
Find	Time	triStartTimeTI	Start Time	Do not Auto Populate. Set to NOT Required.

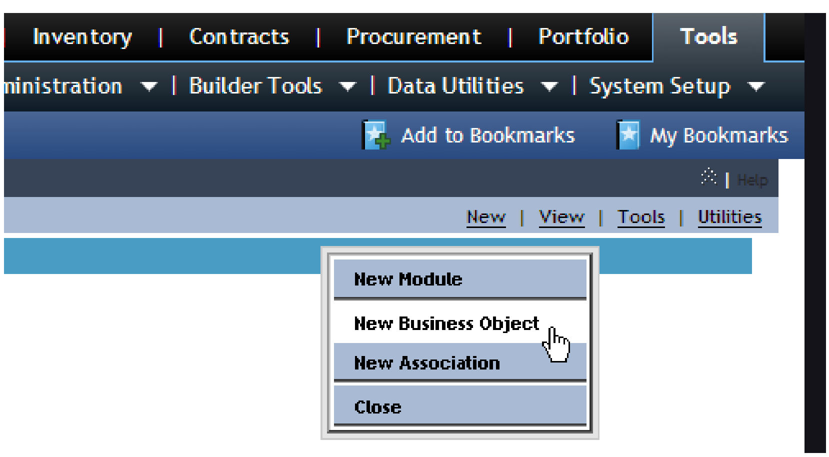
Creating the business object

To create the Course Section business object, perform the following steps:

1. On the **Tools** tab, click **Builder Tools > Data Modeler** to open it.



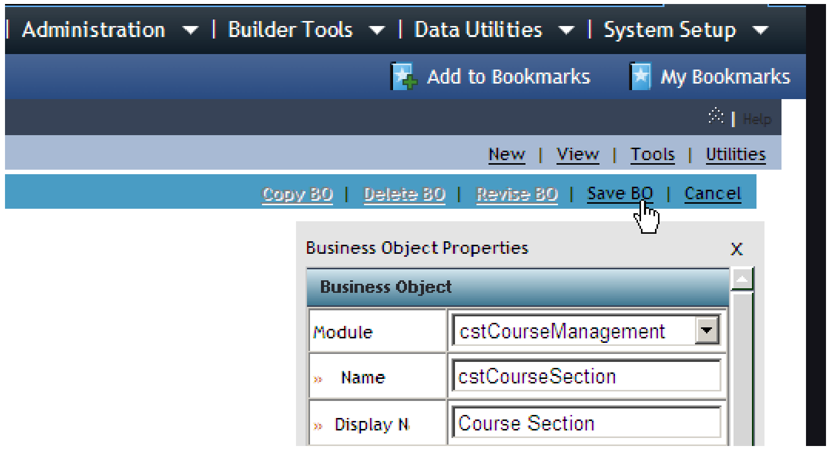
2. In the upper-right corner of the Data Modeler, click **New**, and click **New Business Object**.



3. When the Business Object Properties window opens, perform the following steps:
   a. From the **Module** list, select **cstCourseManagement**.
   b. From the **Name** field, enter **cstCourseSection**.
   c. In the **Display Name** field, enter **Course Section**.

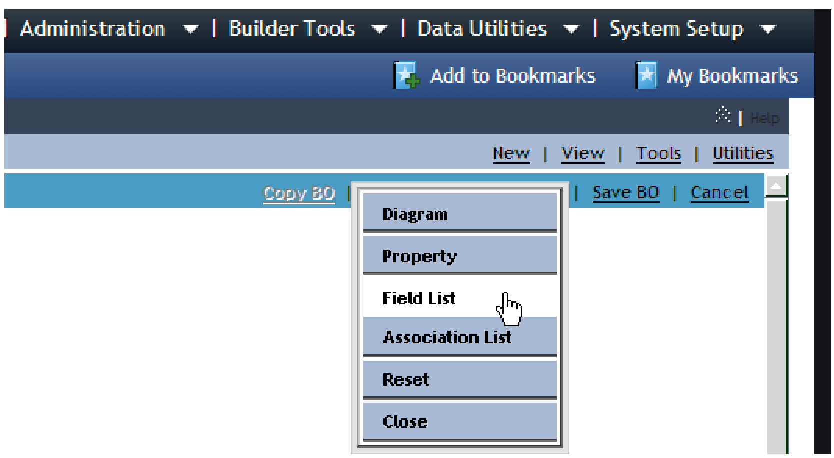
d. Click **Stand Alone**.

e. Click **Save BO** to save your changes.

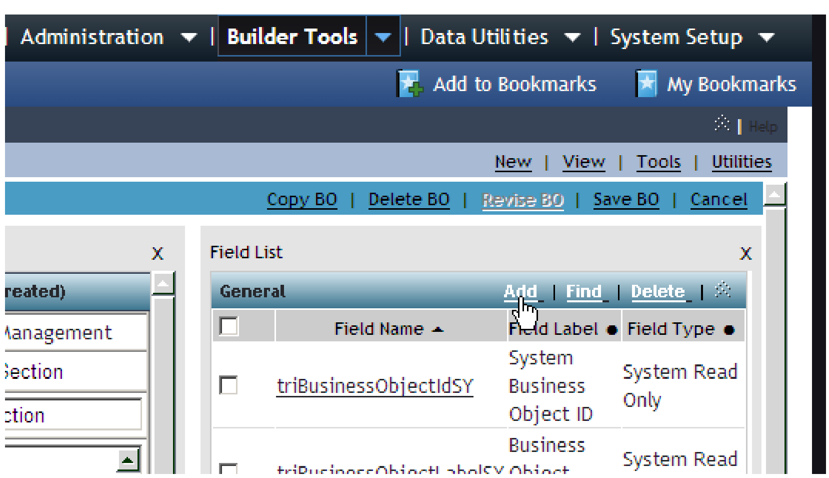


Adding fields to the business object

1. Click **View**, and click **Field List** if the Field List window does not open automatically.

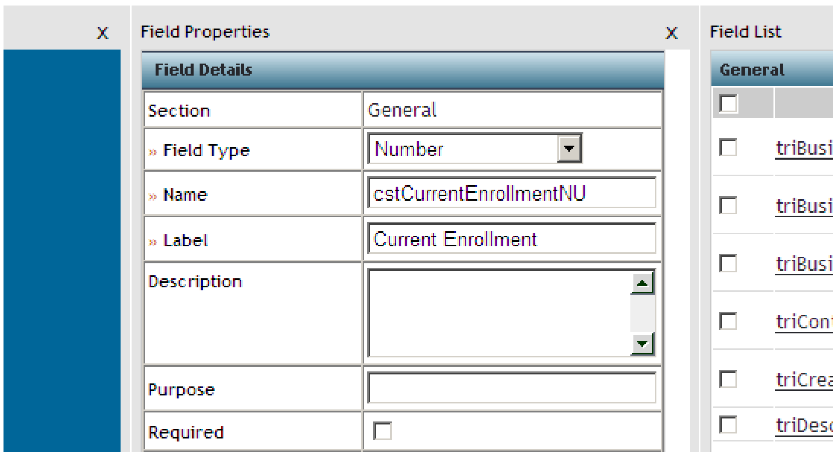


2. When the Field List window opens with the fields from the Base business object, click **Add** to create new fields.

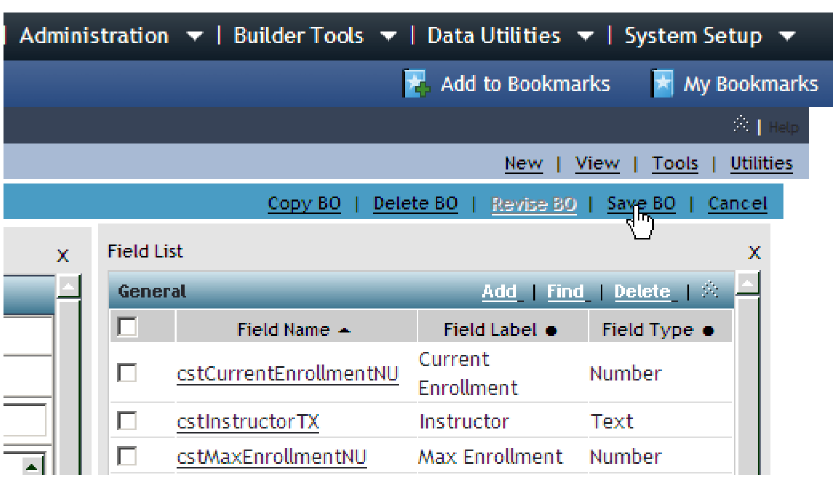


The Field Properties window replaces the Business Object Properties window.

3. In the Field Properties window, perform the following steps:
   a. From the **Field Type** list, select **Number**.
   b. In the **Name** field, enter **cstCurrentEnrollmentNU**.
   c. In the **Label** field, enter **Current Enrollment**.
   d. Select the **Read Only** check box.



   e. To remove the units of measure (UOM), clear the option for UOM list.
   f. From the **Validation** list, select **Accept Only Number**.
   g. Click **Save Field** to save your changes.
4. Click **Add** to create the next field in your table.
5. After you add all of the new fields, open the Object Browser.
   a. Select the **cstCourseSection** business object.
   b. Return to the upper right and click **Save BO**.



You define the unique publish name in Chapter 2 Publishing the Course Section business object.

Note: You cannot implement **Publish BO** until the Publish name is defined. Also, the course number is a field that is added to the cstCourse Smart section. The Publish name of the Course section cannot be defined until the Smart section is defined. In the example, the **Course Number** field is not added to the General Section Field List. The field becomes available after the Smart section is added.

SOLUTION 10 Data Integrator exercise solutions

Data Integrator is a tool used to load data that is contained in text files into the platform.

This exercise has you load location and person data.

Exercise 1. Loading data by using Data Integrator

This exercise loads predefined text files by using the Data Integrator.

Use these settings for all files:

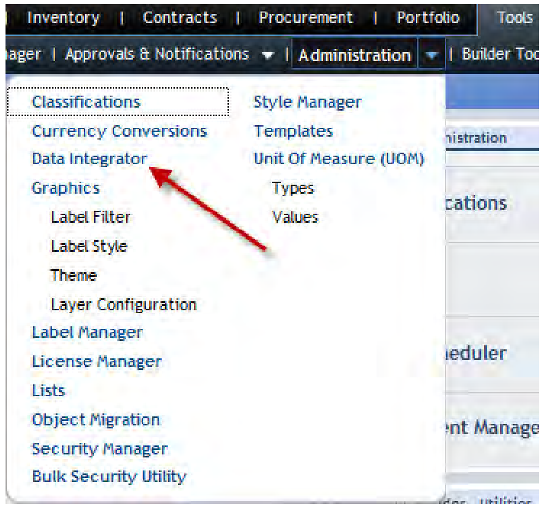
- Import Type: **Add**
- Action: **triUploadHidden**
- File Type: **Tab Delimited (*.txt)**
- File Char Set: **UTF-8**

Use these settings for the specified files.

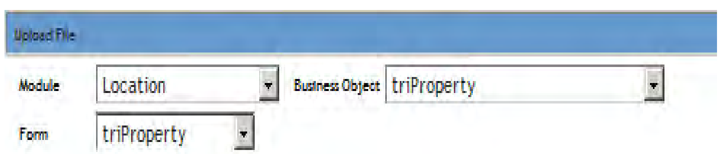
Type of data	Module	BO	Form	File name	Number of lines
Properties	Location	triProperty	triProperty	Properties.txt	1
Buildings	Location	triBuilding	triBuilding	Buildings.txt	3
Floors	Location	triFloor	triFloor	Floors.txt	6
Spaces	Location	triSpace	triSpace	Spaces.txt	30
Instructors	triPeople	triPeople	triEmployee	Instructors.txt	5
Students	triPeople	triPeople	triExternalContact	Students.txt	12

Use the following steps to load the text files by using the Data Integrator:

1. On the **Tools** tab, click **Administration > Data Integrator** to open the Data Integrator utility.

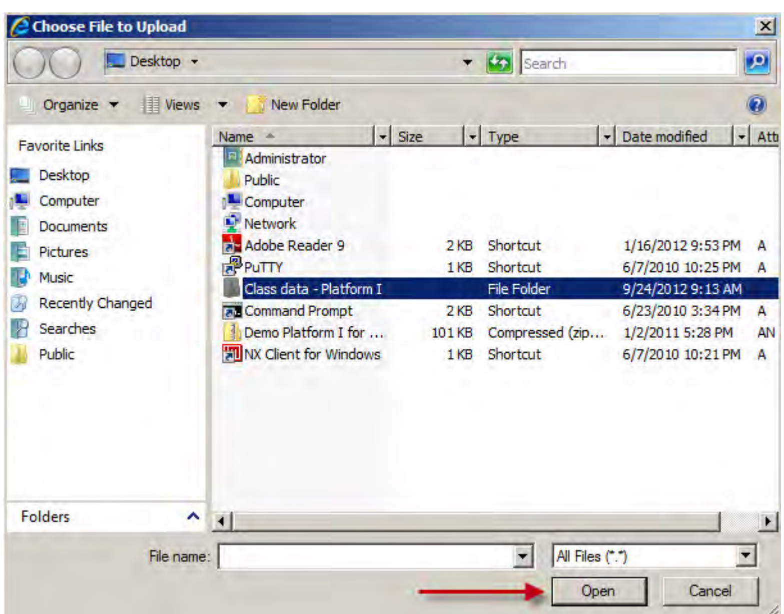


2. In the Upload File section, use the settings for the **Properties** data file to complete the **Module**, **Business Object**, and **Form** fields as shown in the following image.

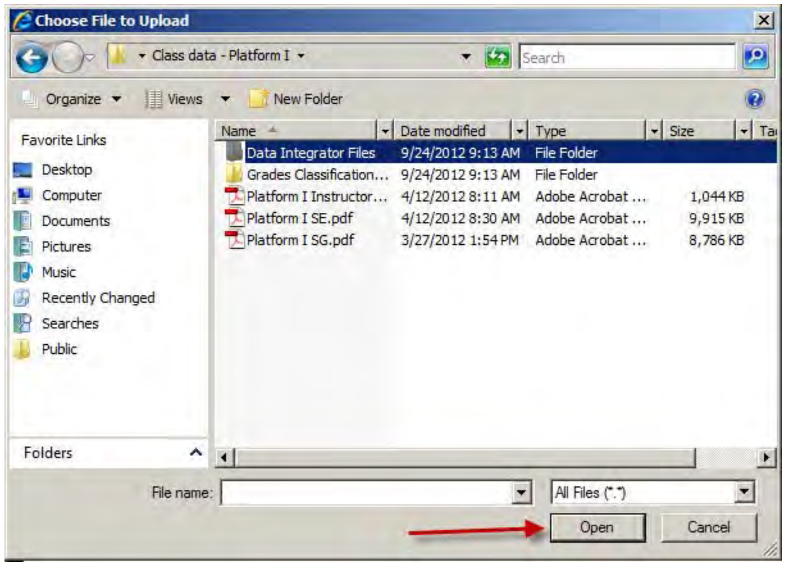


3. In the Action field, select **triUploadHidden**.

4. Click the **Browse** button. In the list, you see an entry for **Class data - Platform I**. Select it and click **Open**.

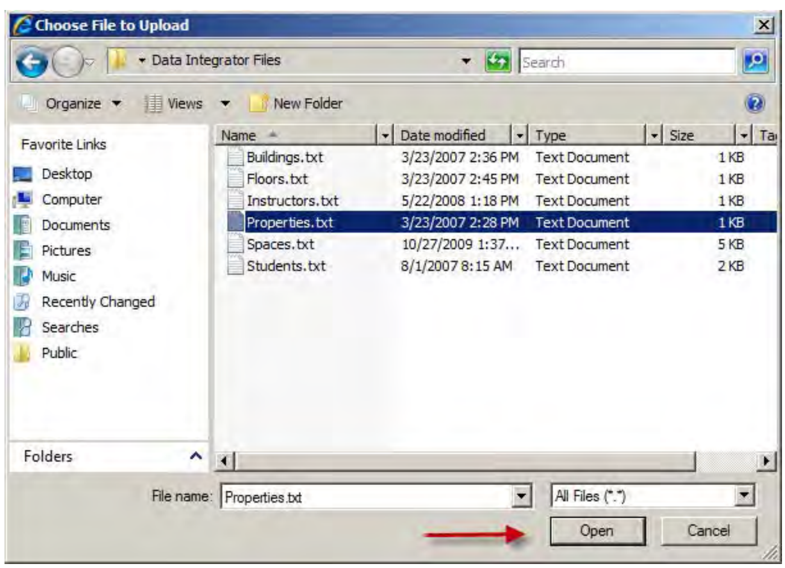


5. Within the Class Data - Platform I folder is another folder that is called **Data Integrator Files**. Select this folder and click **Open**.



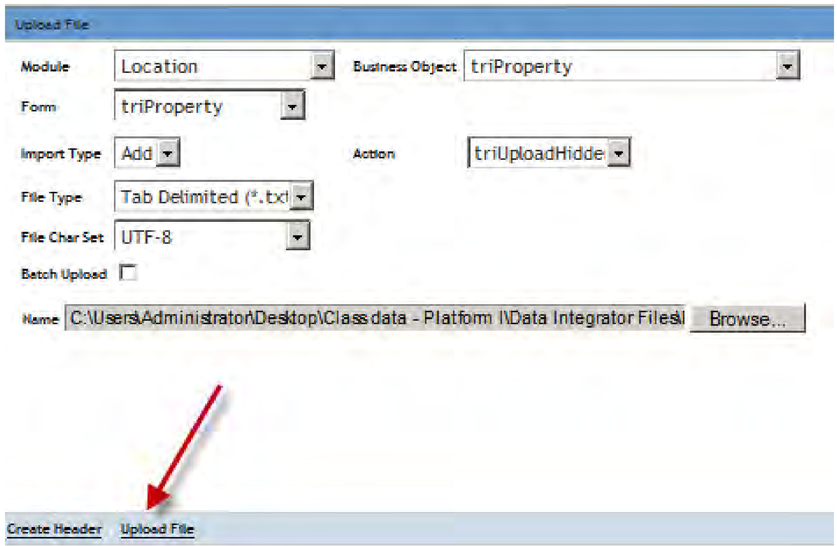
You now see a list of text files.

6. Select the one named **Properties.txt** and click **Open**.



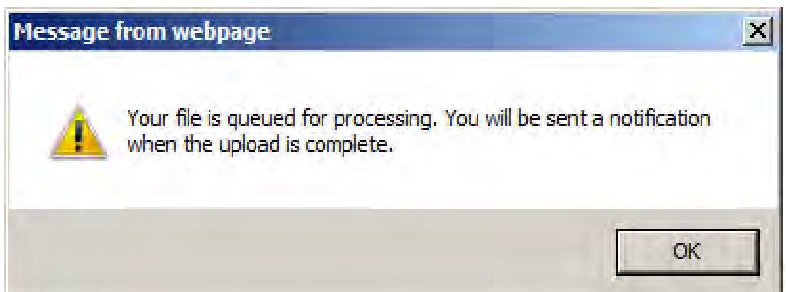
Note: The platform has the file location and returns to this same place for later files.

7. At the bottom of the Upload File section is the **Upload File** link. Click it.



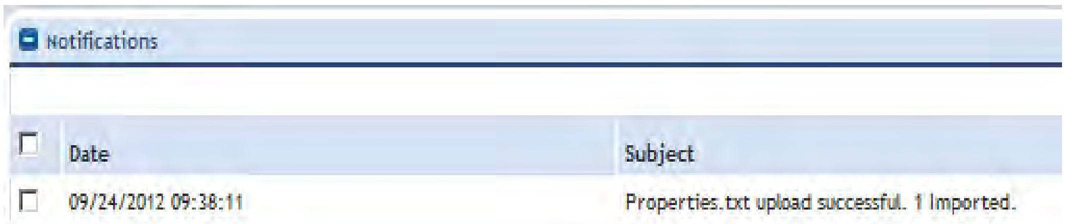
A message window opens, notifying you that your file is queued for processing.

8. Click **OK**.



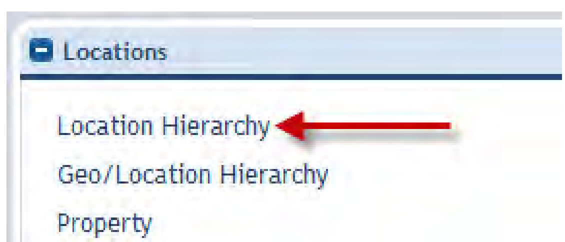
9. Click the **Home** tab and expand the Reminders - Application Builder portal section. Click **Notifications**.

10. Press F5 to refresh the Notifications list until you see the notification, as shown in the following image.



Note: The Properties, Building, Floors, and Spaces data that is being loaded is Location data, which is hierarchical. Each file must be imported before the next one can begin, for them to be structured correctly.

11. Repeat Step 2 - Step 10 for the remaining files in the table, in the order that the files are listed. Remember to wait for each of the Location files to finish loading before you begin loading the next one.
12. After the loading of all of the Location files is completed, go to the **Portfolio** tab and open the **Location Hierarchy**.



13. Expand each level of the hierarchy and verify that the properties, buildings, floors, and spaces are all loaded correctly.

Solution 11 Object migration: Import exercise solutions

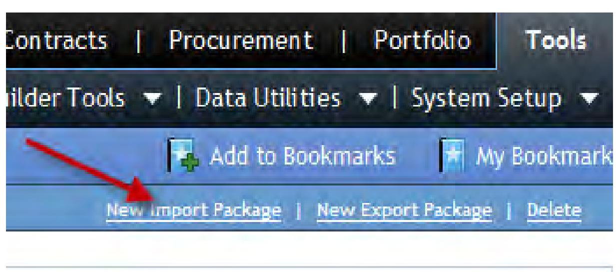
Object migration is the process of transferring business objects from one IBM TRIRIGA environment to another.

In this exercise you import the objects for the Grades package into your platform environment.

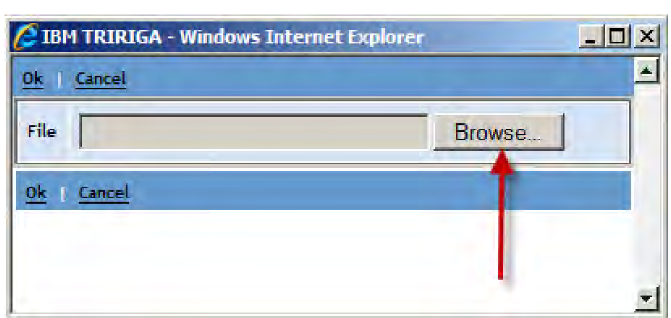
Exercise 1. Importing cstGrades

In this exercise, you import the Grades Object Migration package by following these steps:

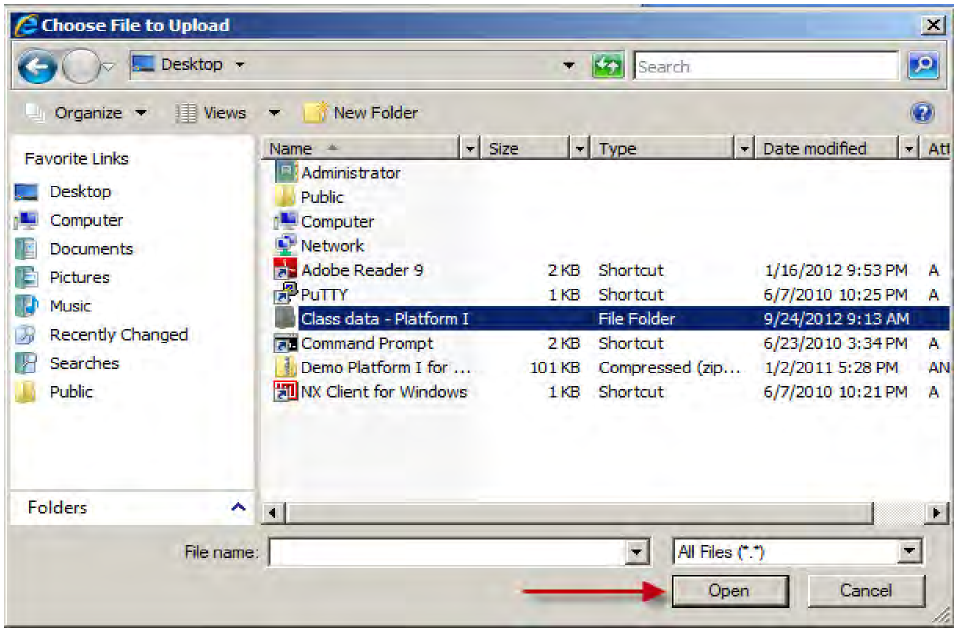
1. On the **Tools** tab, click **Administration** and select **Object Migration** to open the Object Migration tool.
2. Click the **New Import Package** link in the upper right of the window.



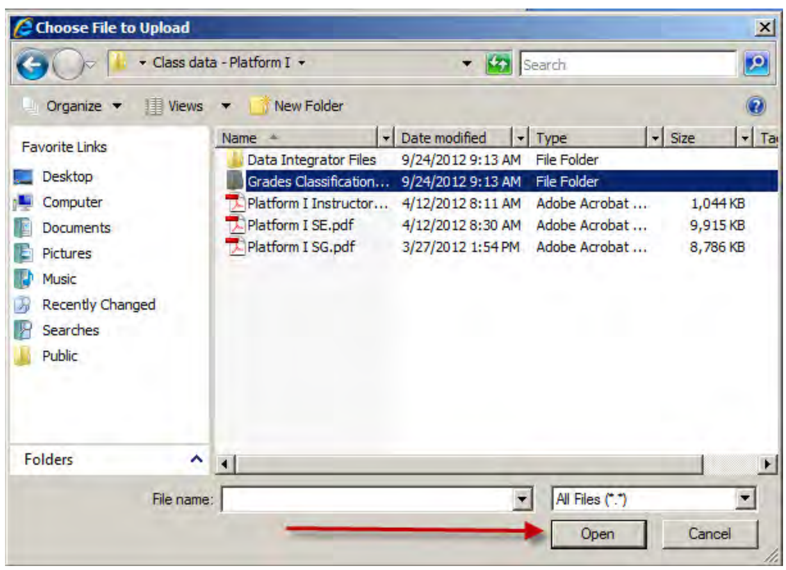
3. Click **Browse** to select the package to be imported.



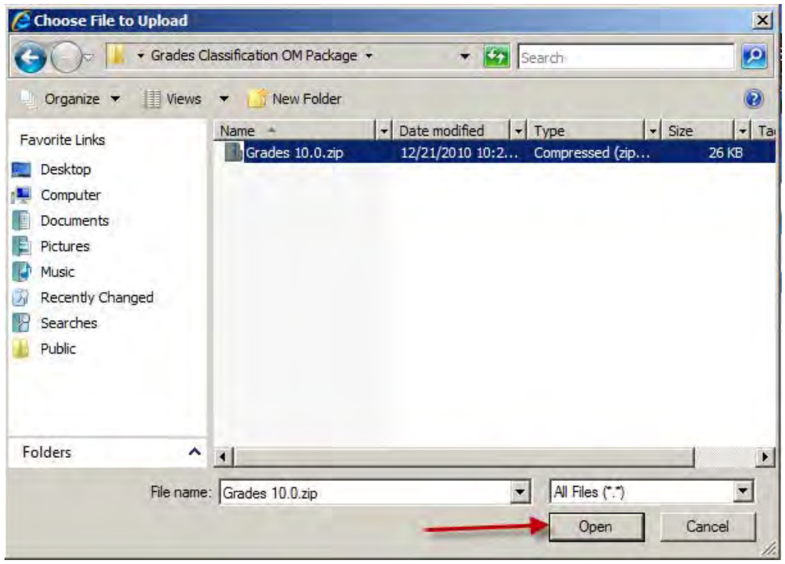
4. Select the **Class data - Platform I** folder and click **Open**.



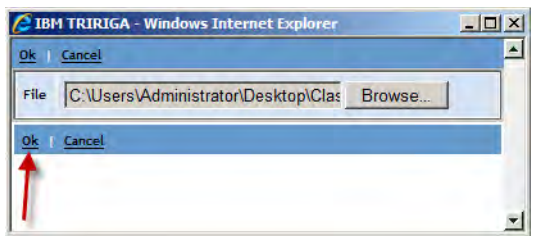
5. Select the **Grades Classification** object migration package and click **Open**.



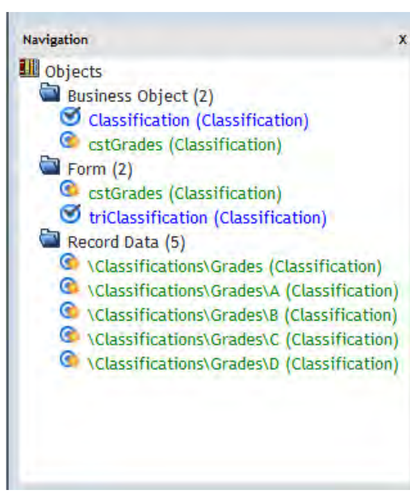
6. Select the **Grades** package.



7. Click **OK** to open the package.

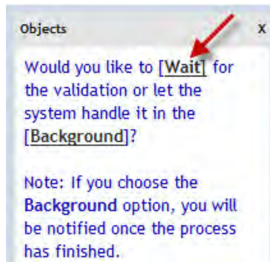


8. Click each of the folders in the Navigation window to see the contents of the package. Notice the color of each item.

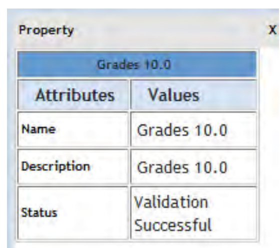


9. Click the **Validate** link.

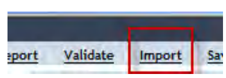
10. Click **Wait**, when prompted.



You see the results of the validation in the Property window.

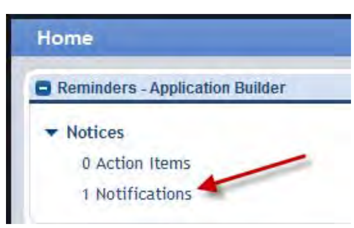


11. If the validation is successful, click the **Import** link.



You receive a notification when the import is complete.

12. Go to the home page and click **Notifications** to see the import.



Solution 12 Associations exercise solutions

Associations are the connections between records. They typically must be defined at the business object level before they can be created at the record level.

This exercise has you define associations at the business object level,

Exercise 1. Creating associations

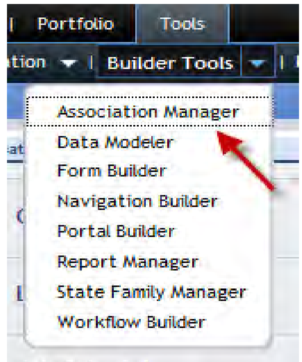
Create associations with the information shown in the following table.

Table 19. Creating associations

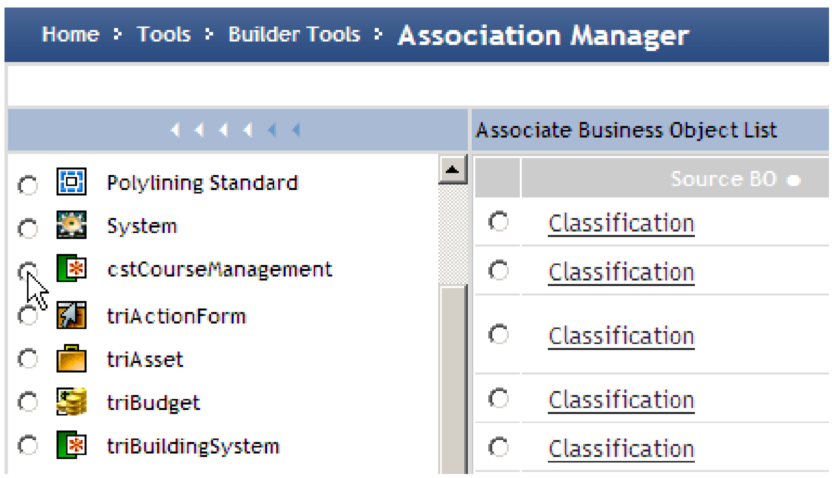
Module	Business Object	Association	Associate module	Associate business object	Reverse association
cstCourse Management	cstCourseSection	Has Location	Location	triSpace	Is Location For
cstCourse Management	cstCourseSection	Has	cstCourse Management	cstCourse	Assigned To
cstCourse Management	cstCourseSection	Has Teacher	triPeople	triPeople	Teaches
Location	triSpace	Is Location For	cstCourse Management	cstCourseSection	Has Location
cstCourse Management	cstCourse	Assigned To	cstCourse Management	cstCourseSection	Has
triPeople	triPeople	Teaches	cstCourse Management	cstCourseSection	Has Teacher

To create the associations, perform the following steps:

1. On the **Tools** tab, click **Builder Tools > Association Manager** to open it.

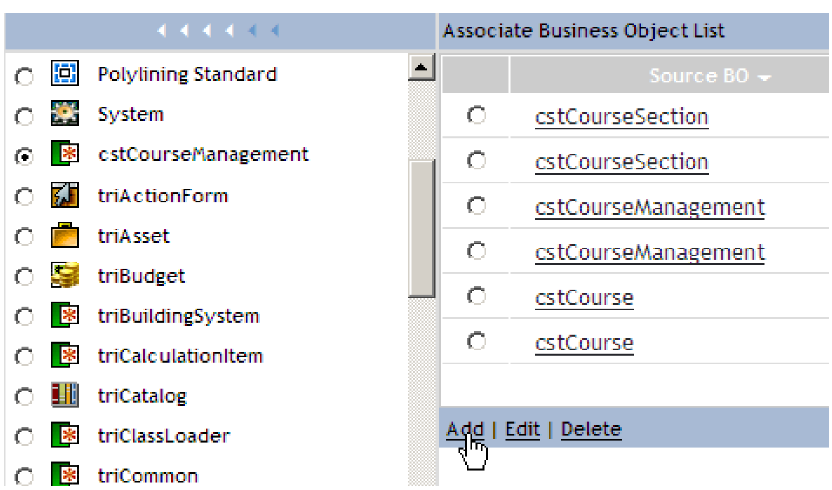


2. In the Association Manager, click the **cstCourseManagement** module.



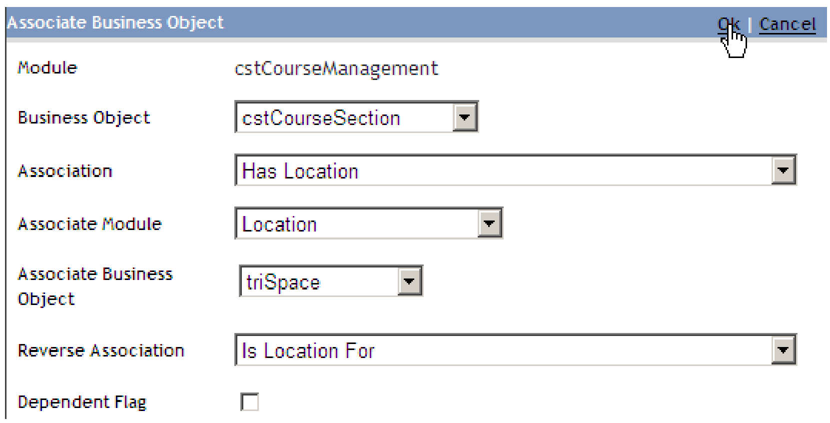
The cstCourseManagement Associate Business Object List panel is empty.

3. Click **Add** to add an association.



The Associate Business Object window opens.

4. For the first association in the table, perform the following steps:
    a. From the **Business Object** list, select **cstCourseSection**.
    b. From the **Association** list, select **Has Location**.
    c. From the **Associate Module**, select **Location**.
    d. From the **Associate Business Object**, select **triSpace**.
    e. From the **Reverse Association** list, select **Is Location For**.
    f. Click **OK**.

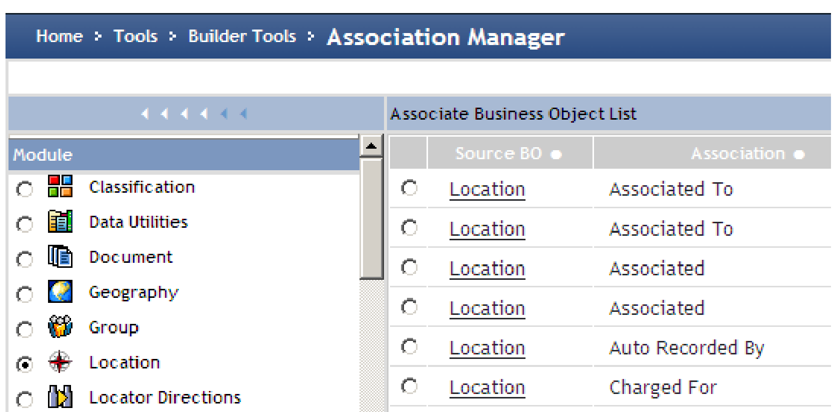


The new association is in the list.

5. Enter the remaining associations.

    To create the *reverse* associations, navigate to each of the *associated* modules and business objects corresponding to the associations created in Step 4.

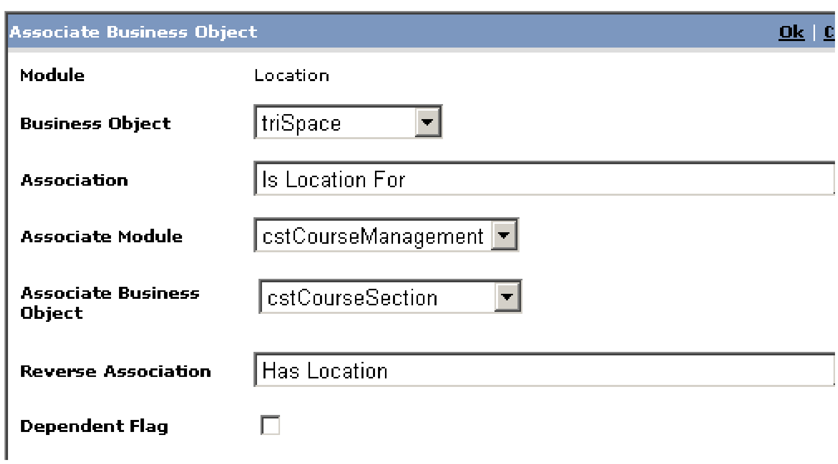
6. For the first reverse association, in the **Module** list, click **Location**.



7. In the Location Associate Business Object List panel, click **Add** to add a new, reverse association.

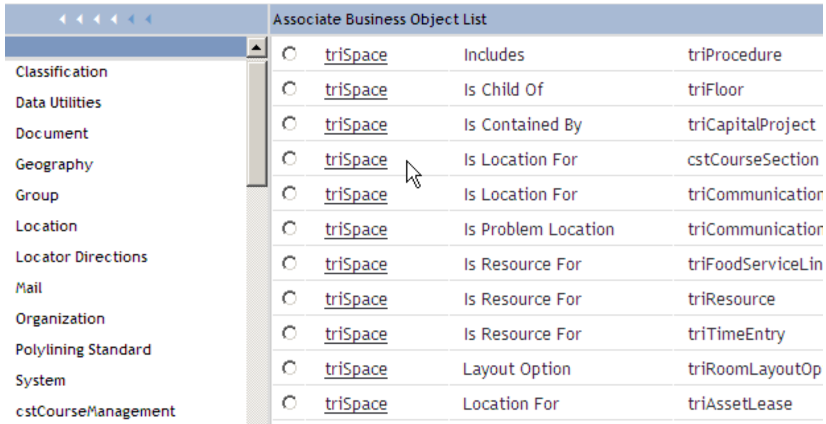
The Associate Business Object window opens.

8. Perform the following steps in the Associate Business Object window:
   a. From the **Business Object** list, select **triSpace**.
   b. From the **Association Object** list, select **Is Location For**.
   c. From the **Associate Modul**e list, select **cstCourseManagement**.
   d. From the **Associate BO** list, select **cstCourseSection**.
   e. From the **Reverse Association** list, select **Has Location**.
   f. Click **OK**.

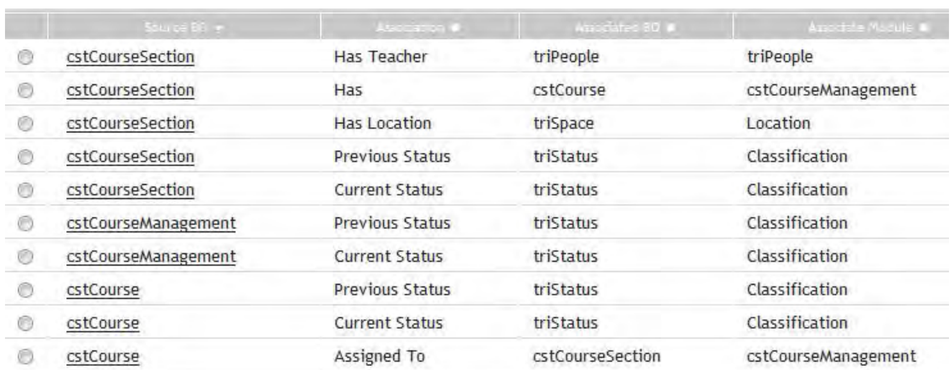


The new, or reverse, association is in the list.

9. Enter the remaining reverse associations within their correct modules.



After you enter all associations, ten associations are displayed in the Associate Business Object List panel.



SOLUTION 13 Smart sections and locator fields exercise solutions

Smart sections and locator fields are direct connections from one record to another.

These exercises have you create smart sections and locator fields in the *course section* business object.

Exercise 1. Creating a Smart section for cstClassroom

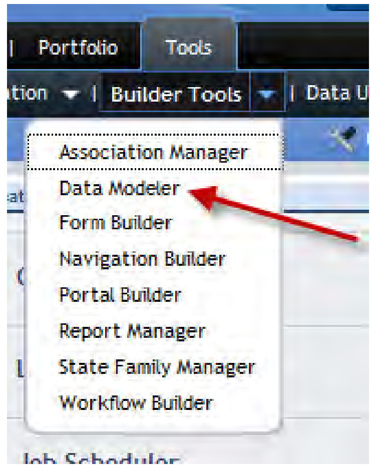
Create a Smart section for cstClassroom with the information shown in Table 20 .

Table 20. Creating a Smart section

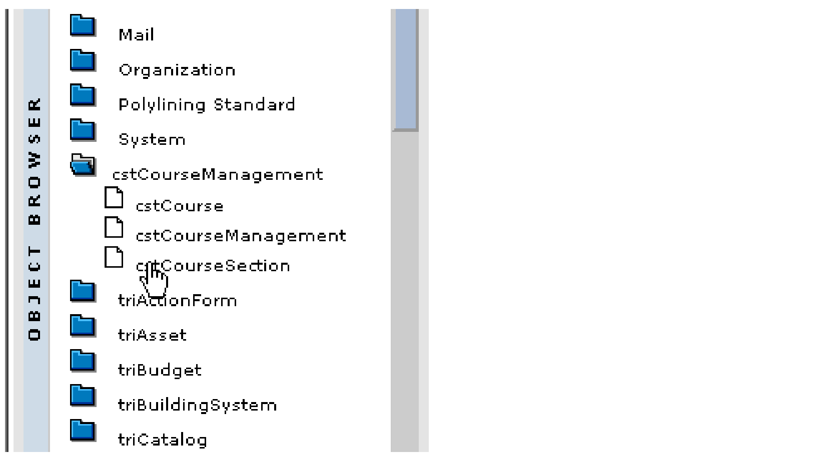
Property	Description	
Section Name	cstClassroom	
Section Label	Classroom	
Associated Business Object	Location - Has Location - triSpace	
Other Properties	Associate One Record Reference Only Live Link	
Field List	**Label**	**Name**
	Capacity	triCapacityNU
	Name* *set to NOT required	triNameTX
	Hierarchy Path	triPathTX
	Status	triStatusCL

To create the smart section for cstClassroom, perform the following steps:

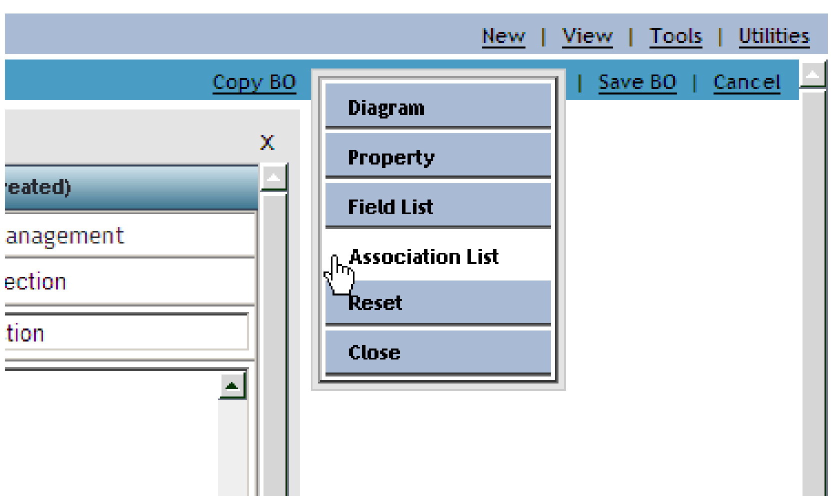
1. On the **Tools** tab, click **Builder Tools > Data Modeler** to open it.



2. Open the Object Browser on the left side, expand the **cstCourseManagement** module, and click the **cstCourseSection** business object.



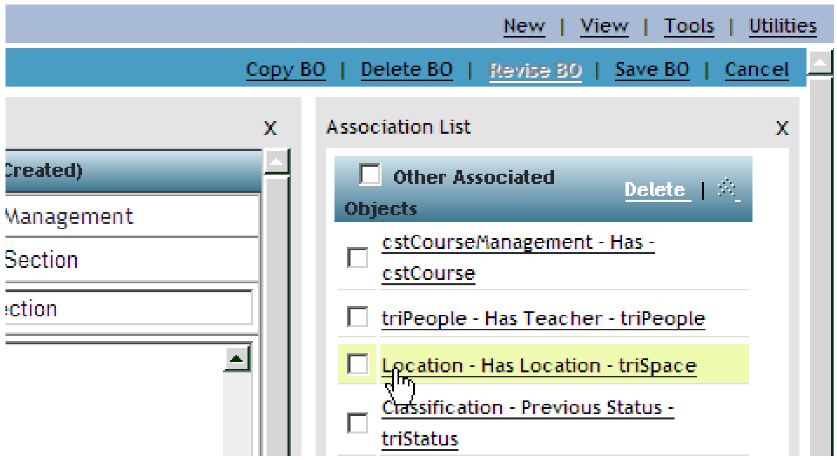
3. Click **View**, and click **Association List**.



4. For the first Smart section in the table, perform the following steps:

   a. Go to the Association List window.

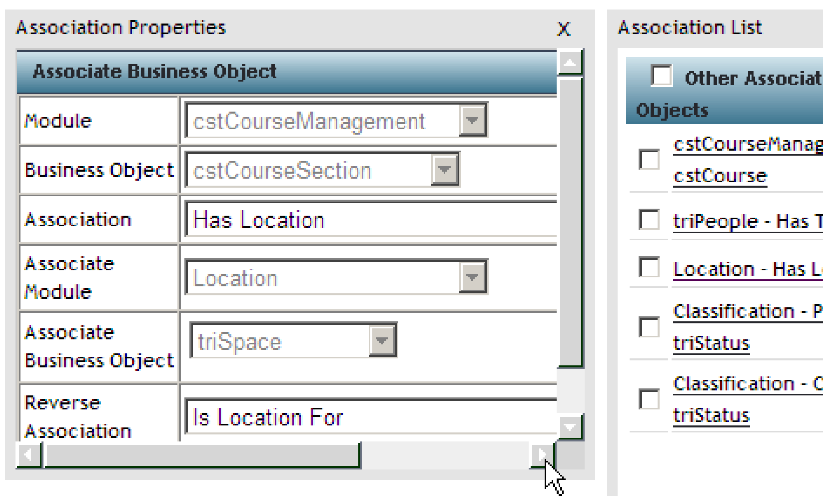
   b. Click the **Location – Has Location - triSpace** name (*not* the check box).



The Association Properties window replaces the Business Object Properties window.

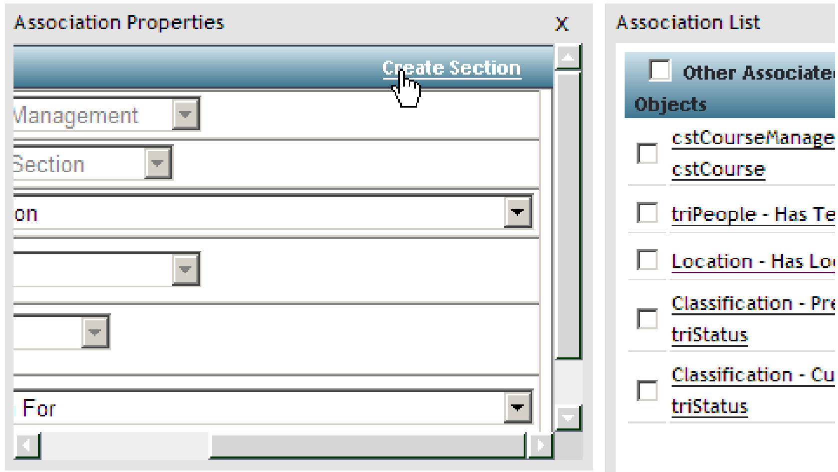
5. In the Association Properties window, scroll to the far right.

   You can also drag and stretch the border.



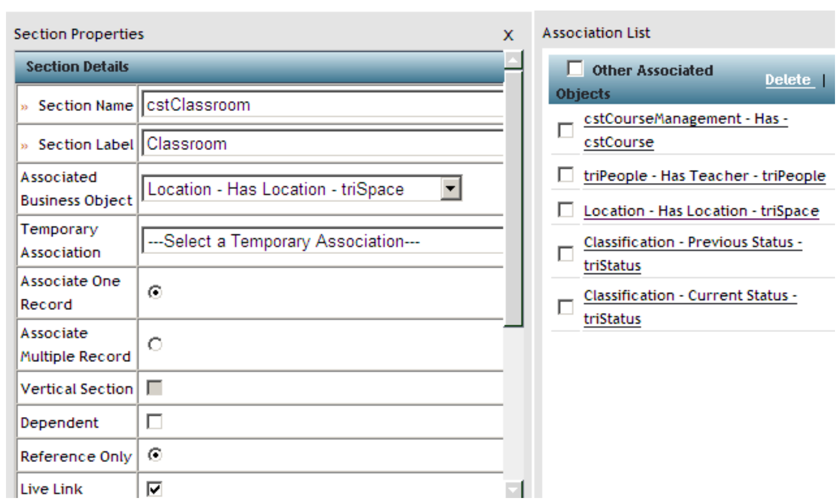
Note: If the window is not scrolled or stretched, the upper-right link might not be viewable.

6. In the upper-right corner, click **Create Section**.



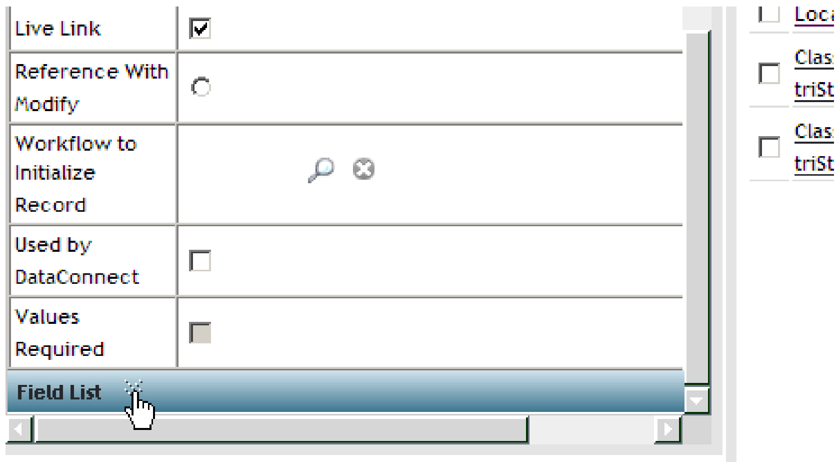
The Section Properties window replaces the Association Properties window.

7. In the Section Properties window, perform the following steps:
    a. In the **Section Name** field, enter **cstClassroom**.
    b. In the **Section Label** field, enter **Classroom**.
    c. Click **Associate One Record**.
    d. Click **Reference Only**.
    e. Select the **Live Link** check box.



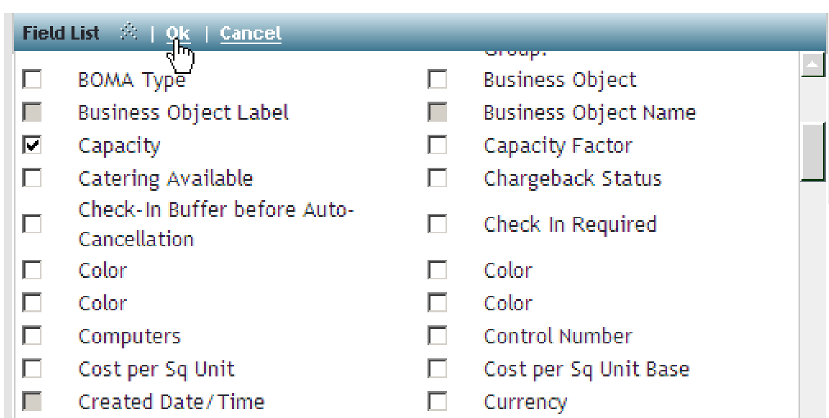
8. Scroll down to the bottom of the Properties window to reach the Field List section.

9. Click the chevron next to **Field List** to open the smart section field selection list.



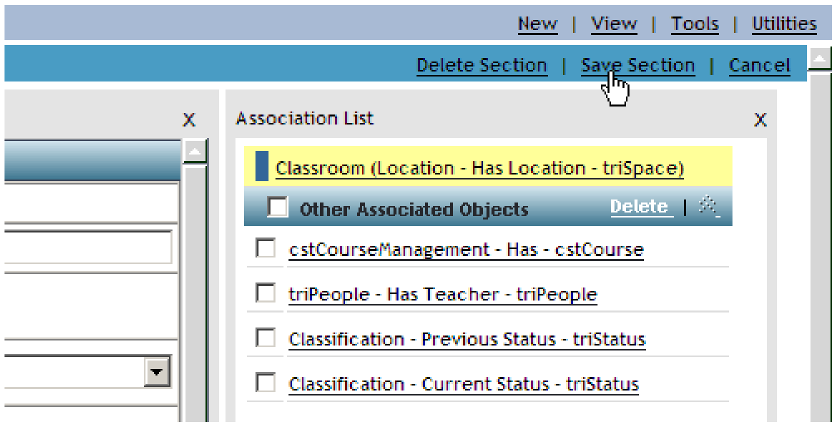
Note: You might have to scroll (or to drag and stretch the border) to view the entire Field List window.

10. Select the following four check boxes:
    - **Capacity**
    - **Hierarchy Path**
    - **Name**
    - **Status**
11. Click **OK**.



12. Click **Save Section** to save the smart section.

Note: The association is displayed in the upper area of the Association List with a yellow background to show that it has a Smart section. The blue box next to the association is a link to the field list of the smart section.

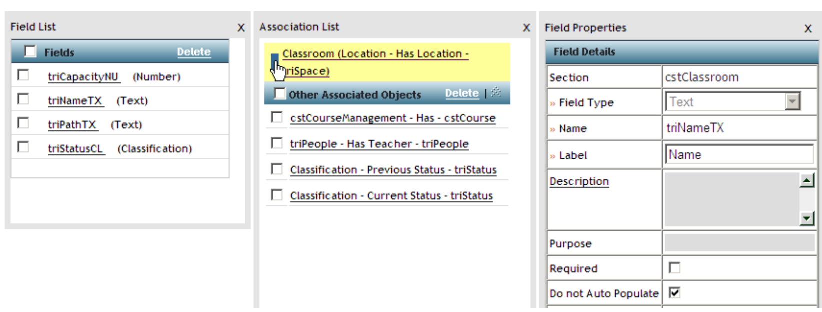


13. In the Association List panel, click the blue square link for **Classroom (Location – Has Location – triSpace)**.

    Your four new field names and their check boxes are displayed.

14. In the Field List panel, click the **triNameTX** link, and in the Field Properties panel, clear the **Required** check box.

15. Click **Save Field**.



Exercise 2. Creating the Smart section named cstCourse

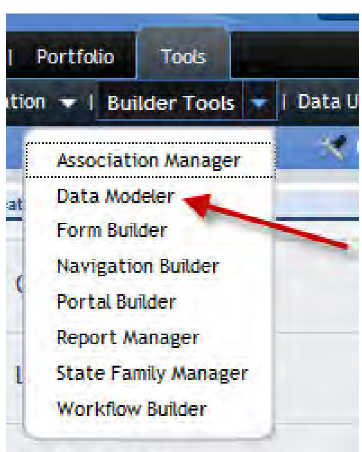
Create the cstCourse Smart section with the information shown in Table 21 .

Table 21. Creating the Smart section

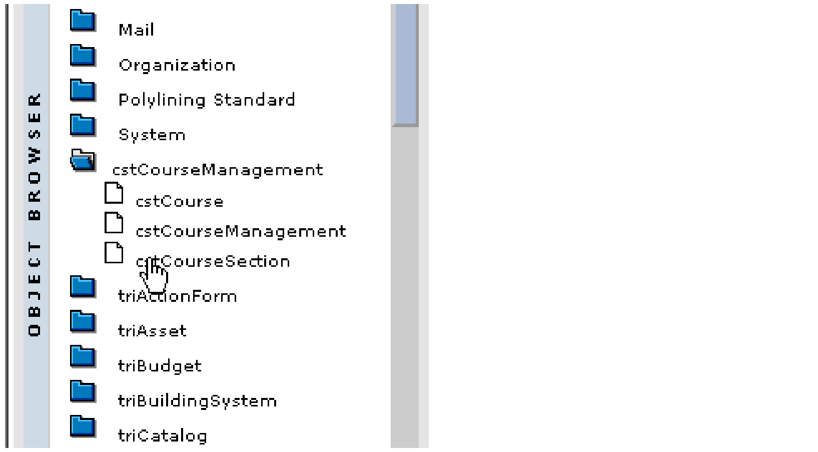
Property	Description	
Section Name	cstCourse	
Section Label	Course	
Associated Business Object	cstCourseManagement - Has - cstCourse	
Other Properties	Associate One Record Reference Only No Live Link	
Field List	**Label**	**Name**
	Course Number	cstCourseNumberTX
	Course Title	cstCourseTitleTX
	Credit Hours	cstCreditHoursNU
	Description	triDescriptionTX
	Fee	cstFeeNU
	Max Enrollment	cstMaxEnrollmentNU

To create the Smart section named cstCourse, perform the following steps:

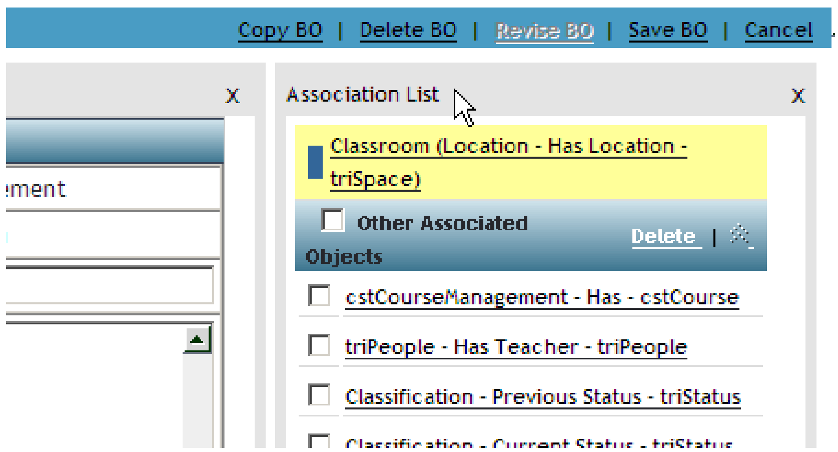
1. On the **Tools** tab, click **Builder Tools > Data Modeler** to open it.



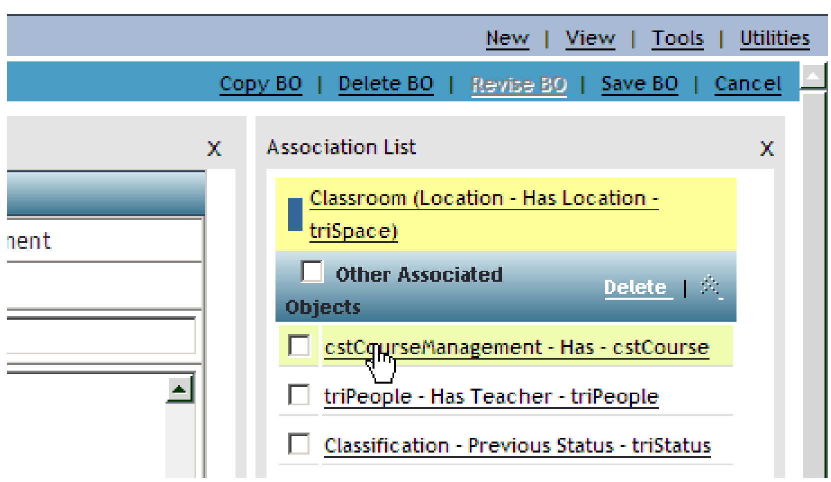
2. Open the Object Browser on the left side, expand the **cstCourseManagement** module, and click the **cstCourseSection** business object.



3. If the Association List is not already open, click **View**, and select **Association List**.

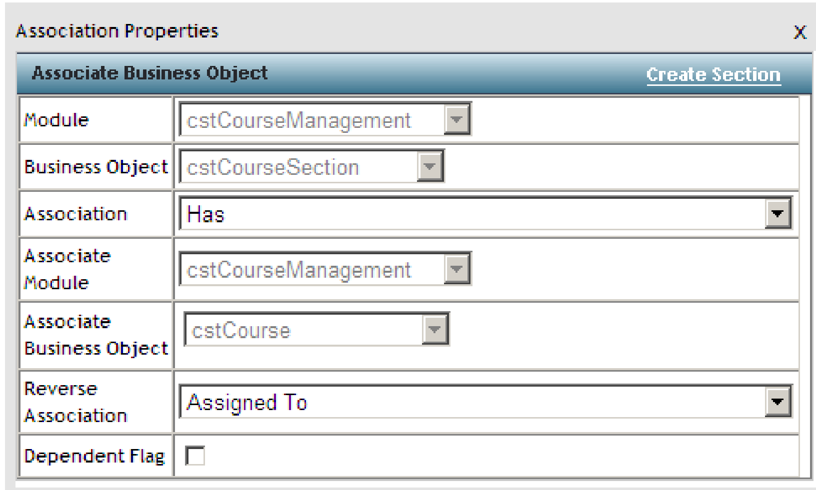


4. For the next Smart section, in the Association List panel, select **cstCourseManagement - Has - cstCourse**.



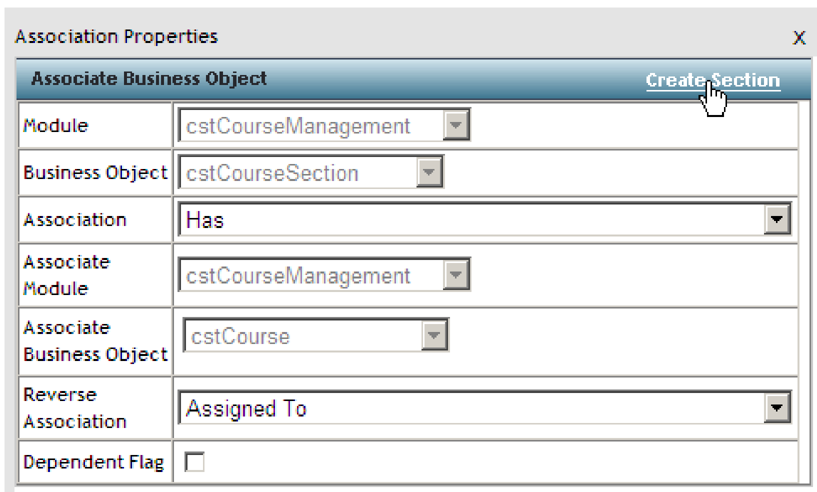
The Association Properties window replaces the Business Object Properties window.

5. In the Association Properties window, scroll (or drag and stretch the border) to the far right.



If the window is not scrolled or stretched, the link on the upper far right might not be viewable.

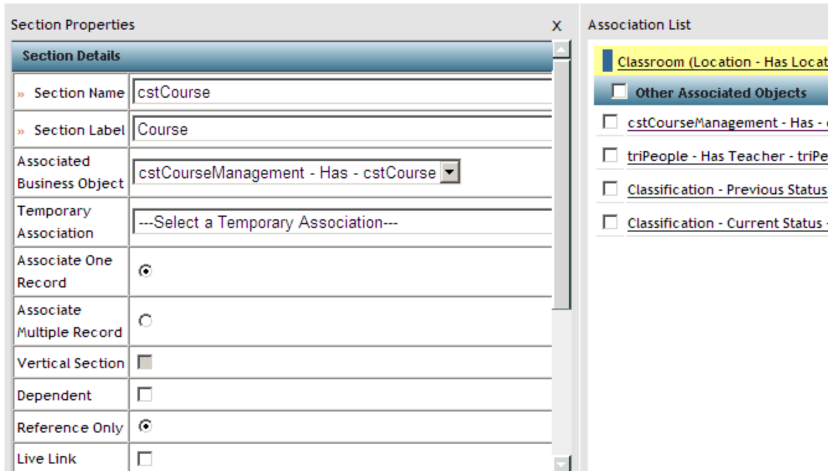
6. In the upper-right corner, click **Create Section**.



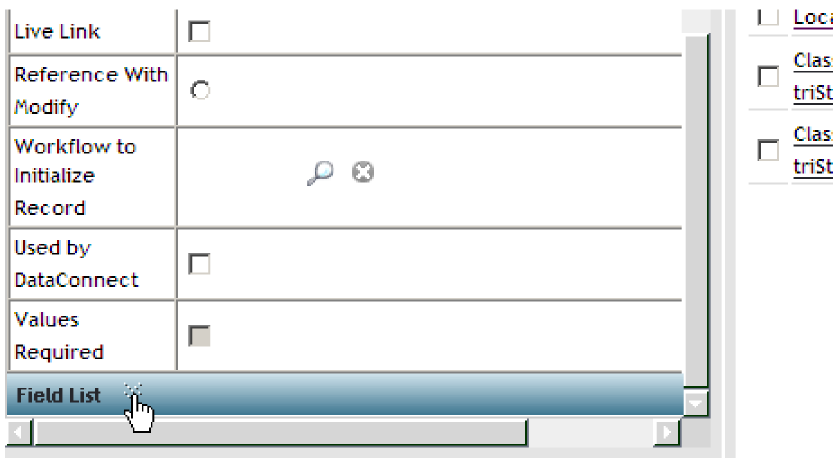
The Section Properties window replaces the Association Properties window.

7. In the Section Properties window, perform the following steps:
   a. In the **Section Name** field, enter **cstCourse**.
   b. In the **Section Label** field, enter **Course**.
   c. Ensure that **Associate One Record** is selected.
   d. Ensure that **Reference Only** is selected.
   e. Clear the **Live Link** check box.

f. Ensure that the **Live Link** check box is *not* selected.



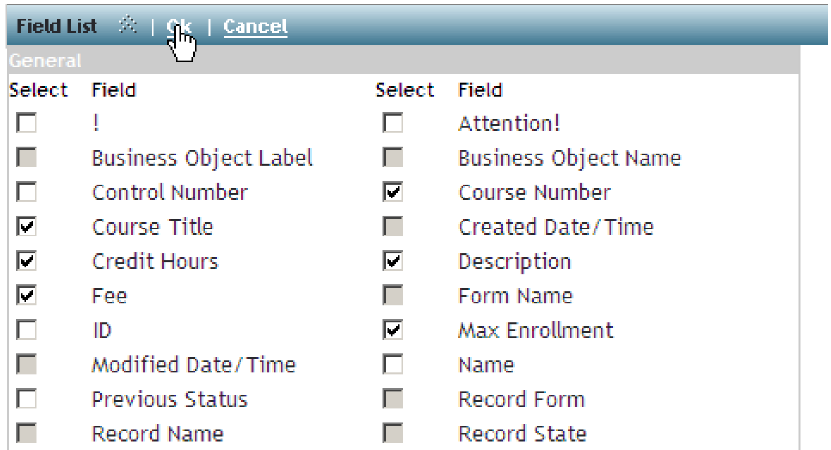
8. Click **Field List** to add the smart-section fields.



You might have to scroll (or drag and stretch the border) to view the entire Field List window.

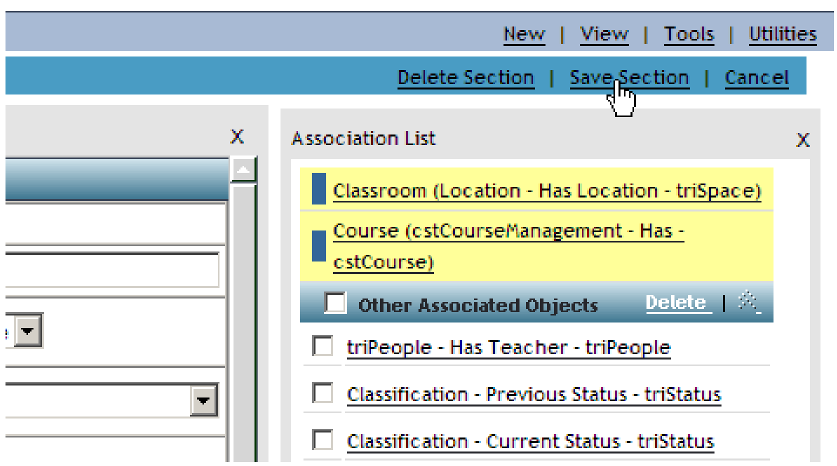
9. Select the following six check boxes:
   - **Course Number**
   - **Course Title**
   - **Credit Hours**
   - **Description**
   - **Fee**
   - **Max Enrollment**

10. Click **OK**.



Note: **Course Number** and **Course Title** are already selected because they have the **Result Column** property.

11. Click **Save Section** to save the smart section.



Exercise 3. Setting up the instructor locator field

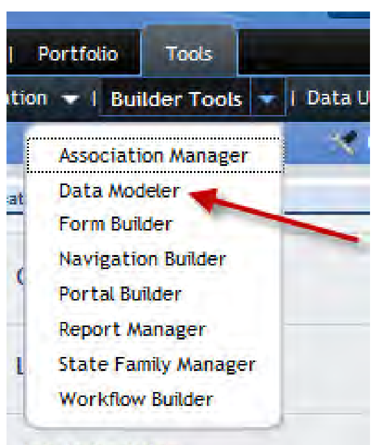
In this exercise, you set up the **Instructor** locator field by using the **Has Teacher** association that you created. Be sure to perform the additional field mapping to get the **Email** field value.

The properties for the Locator field are listed in the following table.

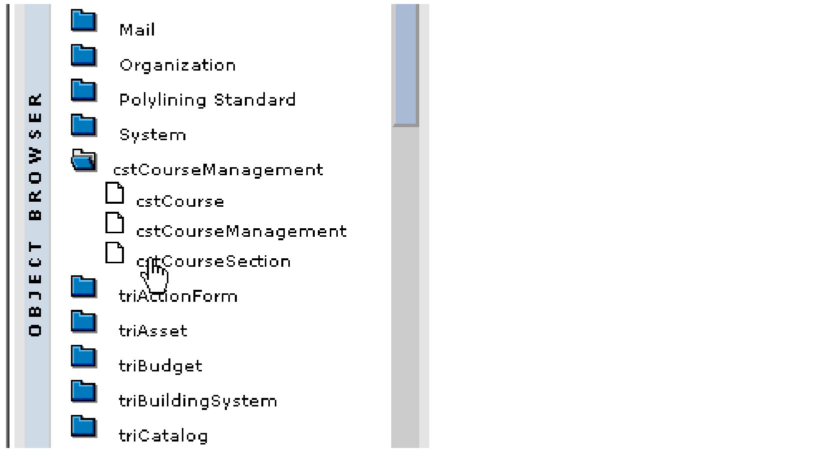
<table>
<tr><th>Property</th><th colspan="2">Value</th></tr>
<tr><td>Field Name</td><td colspan="2">cstInstructorTX</td></tr>
<tr><td>Locator Field</td><td colspan="2">Checked</td></tr>
<tr><td>Locator Module</td><td colspan="2">triPeople</td></tr>
<tr><td>Business Object Name</td><td colspan="2">triPeople</td></tr>
<tr><td>Associated String</td><td colspan="2">Has Teacher</td></tr>
<tr><td>Locator Field mapping</td><td colspan="2">General::Name</td></tr>
<tr><td rowspan="2">Additional field mapping</td><td>Existing field</td><td>Source field</td></tr>
<tr><td>General::Email</td><td>General::eMail</td></tr>
</table>

To set up the **Instructor Locator** field, perform the following steps:

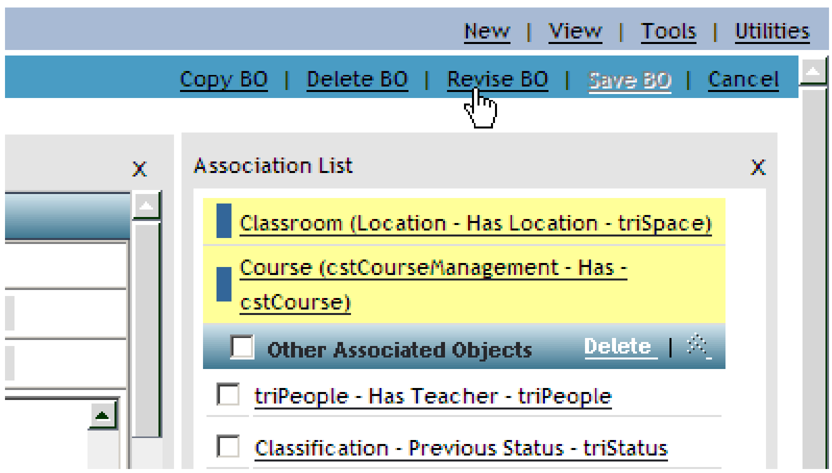
1. If your cstCourseSection business object is not already open, on the **Tools** tab, click **Builder Tools > Data Modeler** to open it.



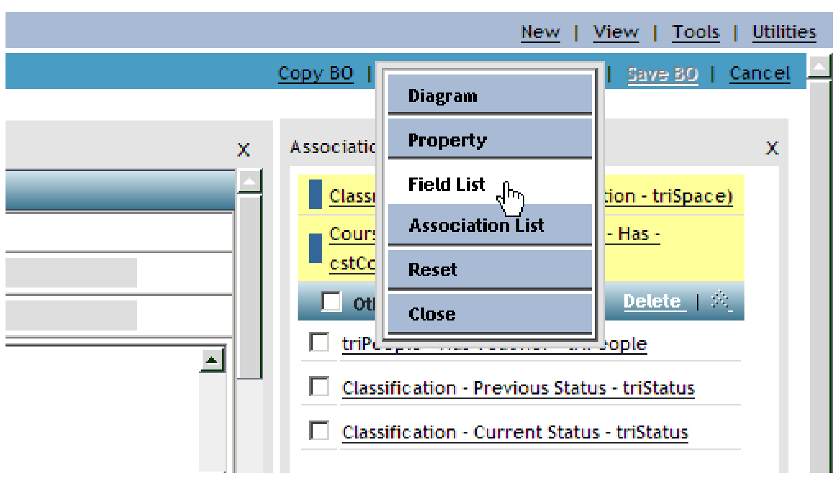
2. Open the Object Browser on the left side, expand the **cstCourseManagement** module, and click the **cstCourseSection** business object.



3. If necessary, click **Revise BO.**

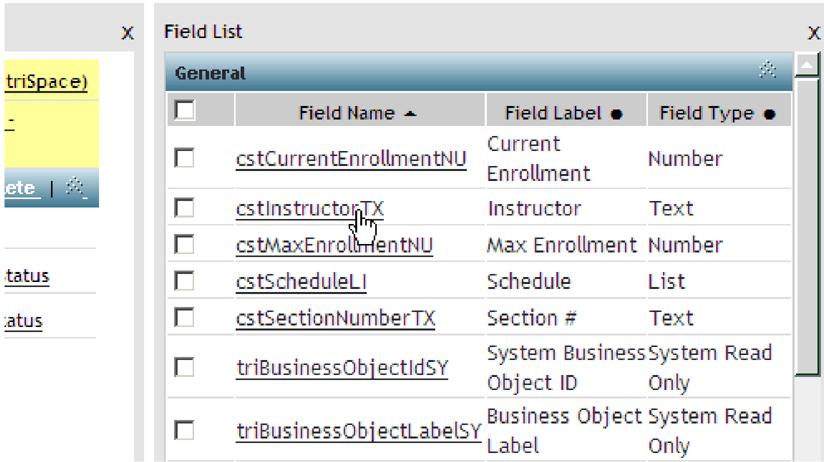


4. Click **View**, and click **Field List**.



The Field List window opens.

5. Click the **cstInstructorTX** link to edit the **Instructor** field.



The Field Properties window replaces the Business Object Properties window.

6. In the Field Properties window, perform the following steps:

   a. Select the **Locator Field** check box.

   b. From the **Locator Module** list, select triPeople.

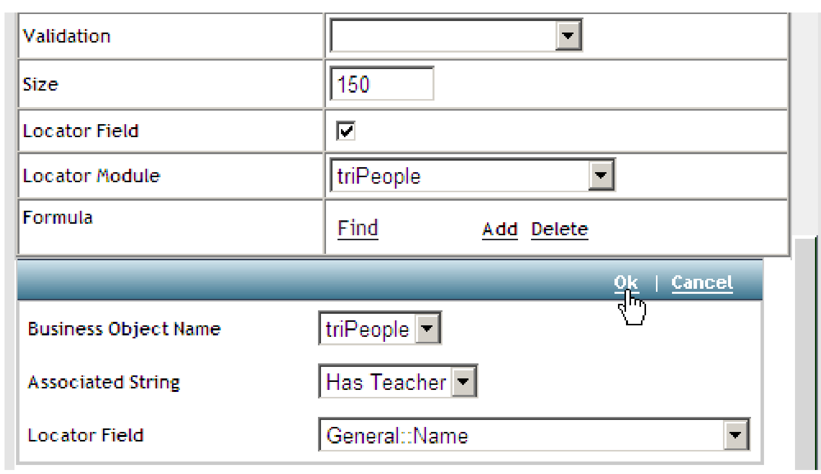
      Three more list menus open at the bottom of the properties window.

   c. From the **Business Object Name** list, select **triPeople**.

   d. From the **Associated String** list, select **Has Teacher**.

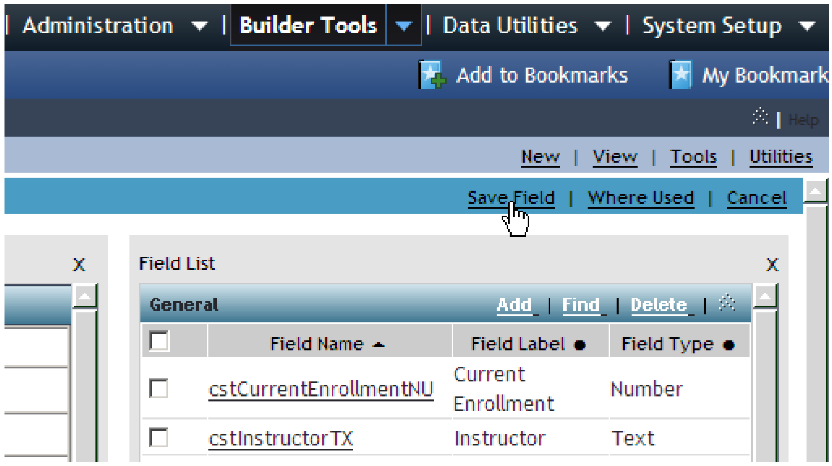
   e. From the **Locator Field** list, select **General::Name**.

   f. Click **OK**.



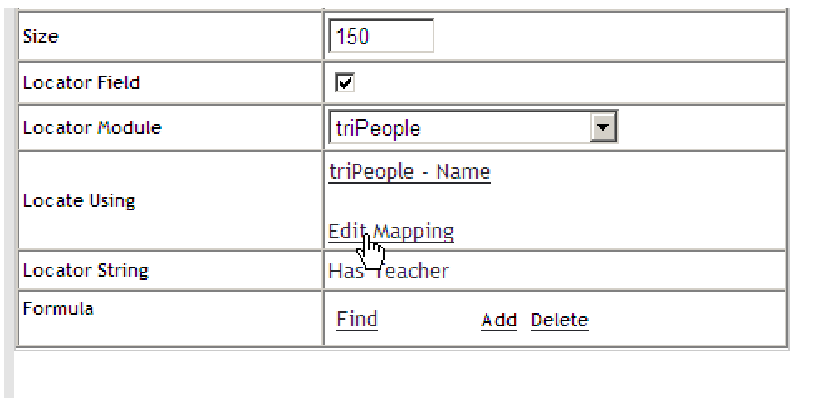
The list menus close.

7. Click **Save Field** to save your changes.



The **Edit Mapping** link is displayed in the Field Properties window.

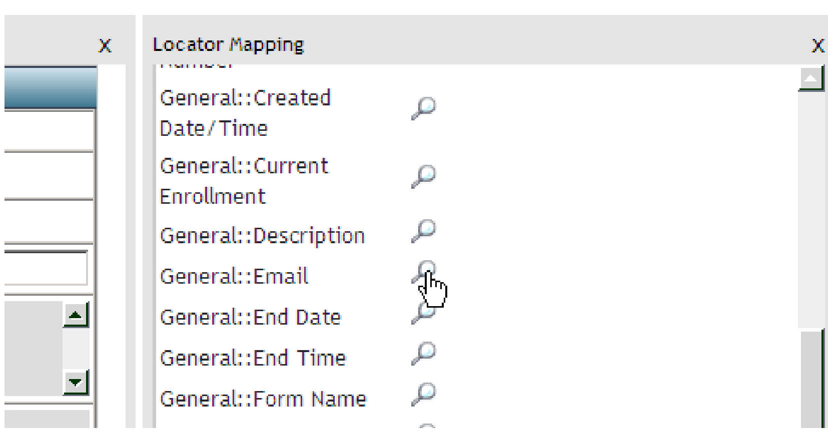
8. Click the **Edit Mapping** link.



The Locator Mapping window replaces the Field List window.

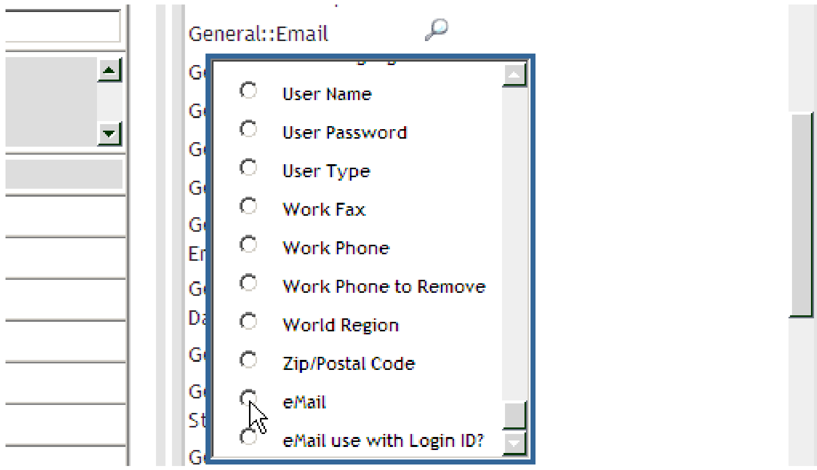
9. Scroll down the list to **General::Email**.

10. Click the magnifying glass icon to open a list.



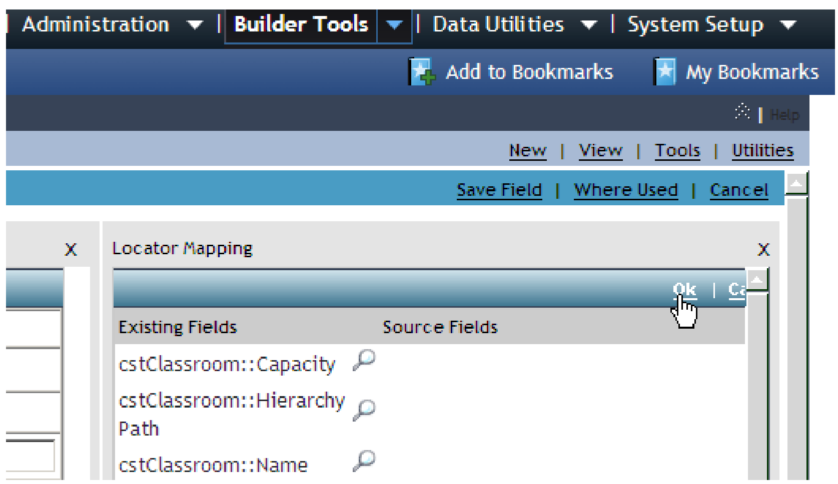
11. In the list, scroll down to the bottom.

12. Click **eMail**.

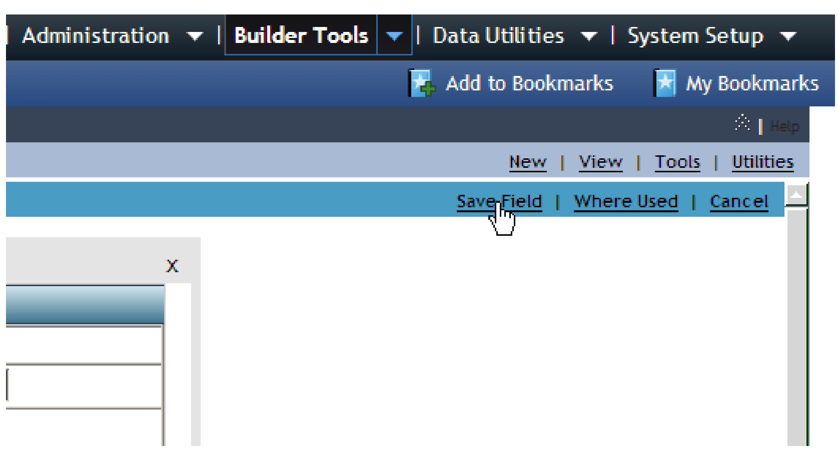


13. Scroll to the top of the Locator Mapping window.

14. Click **OK**.



15. Click **Save Field** to save your changes.



16. Click the **View** menu, and click **Field List** to reactivate the Field List window.

Solution 14 Formulas exercise solutions

Formulas are a mechanism that is used to add business logic to an application.

In these exercises, you complete the creation of the *course section* business object and publish it. You then create a form and query for the *course section*, and add them to the navigation. Then you create an *enrollment* business object and do the same for it.

Exercise 1. Creating the Max Enrollment formula

In this exercise, you create a formula to set the Max Enrollment field to be the lesser of the Course capacity or the Classroom capacity.

To create the formula, you perform the following steps:

1. Open the cstMaxEnrollmentNU field properties. Select the **Formula** check box.
2. Select **Extended** for the formula type and click the **Enter** link.
3. In the Extended Formula window, perform the following steps:
    a. Add an Input named **RoomCapacity** to hold the capacity (triCapacityNU) from the Classroom smart section.

    b. Add an Input named **CourseCapacity** to hold the capacity (cstMaxEnrollmentNU) from the Course smart section.

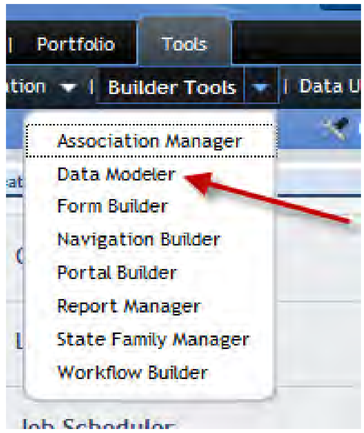
    c. Enter the following information into the formula window:

    if (RoomCapacity < CourseCapacity, RoomCapacity, CourseCapacity)

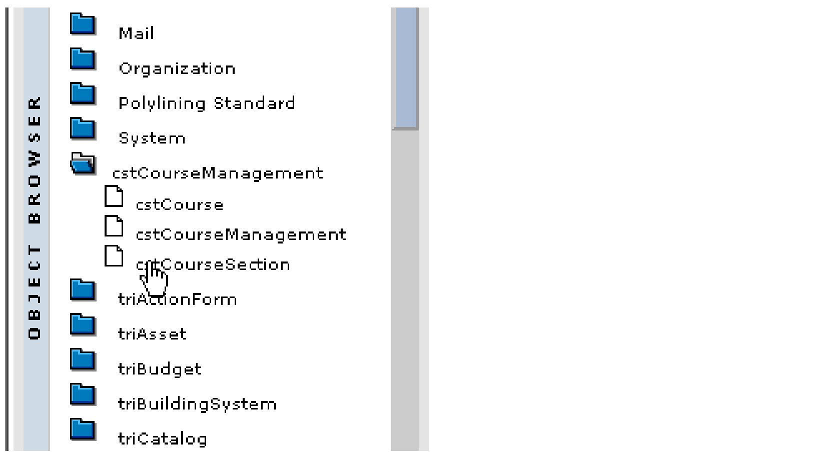
    d. Save the formula, and save the field.

The following are more detailed instructions on how to set up the Max Enrollment formula:

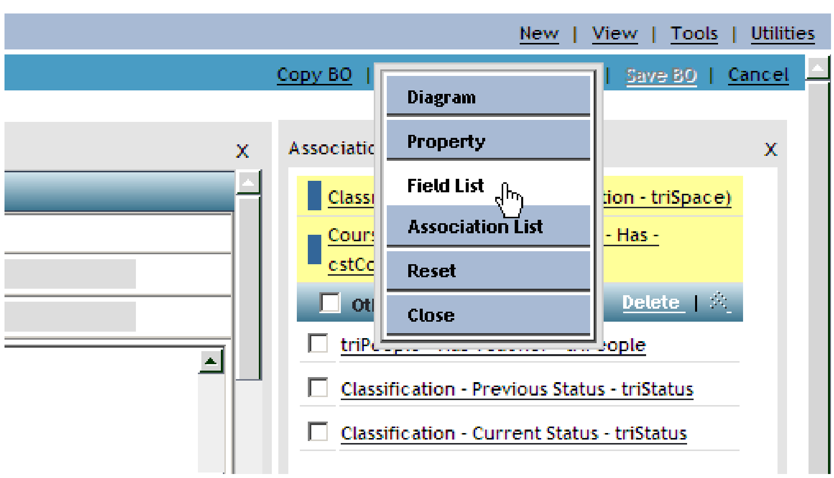
1. On the **Tools** tab, click **Builder Tools > Data Modeler** to open it.



2. Open the Object Browser, expand the **cstCourseManagement** module, and click the **cstCourseSection** business object.

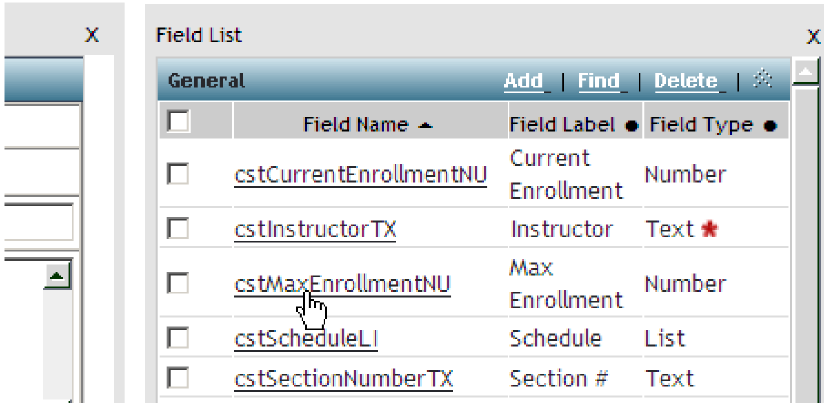


3. If the Field List window is not currently displayed, click **View**, and select **Field List**.



The Field List window opens.

4. Click the **cstMaxEnrollmentNU** link to edit the **Max Enrollment** field.



The Field Properties window replaces the Business Object Properties window.

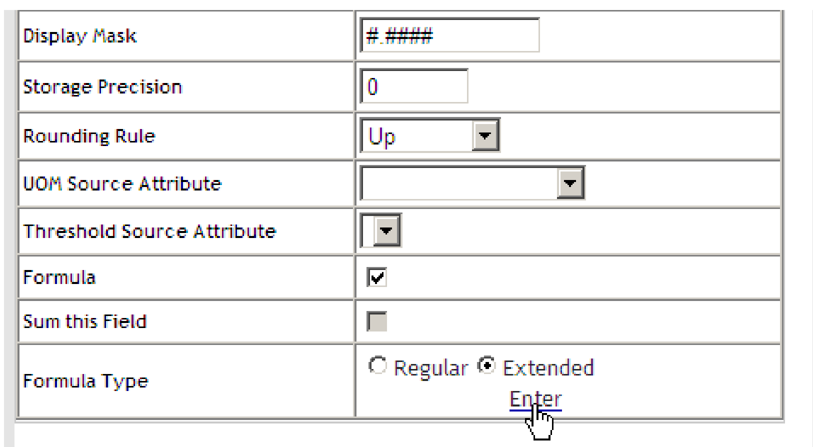
5. In the Field Properties window, perform the following steps:

   a. Select the **Formula** check box.

   b. Click **Extended** as the **Formula Type.**

      The **Enter** link is displayed.

   c. Click the **Enter** link.

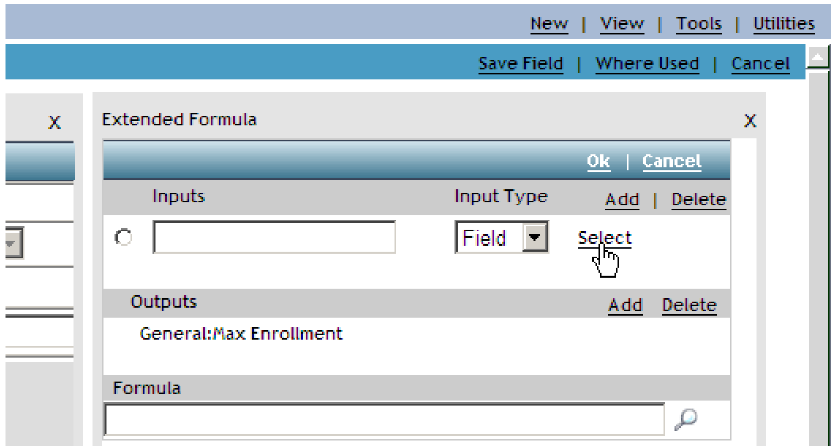


The Extended Formula window replaces the Field List window.

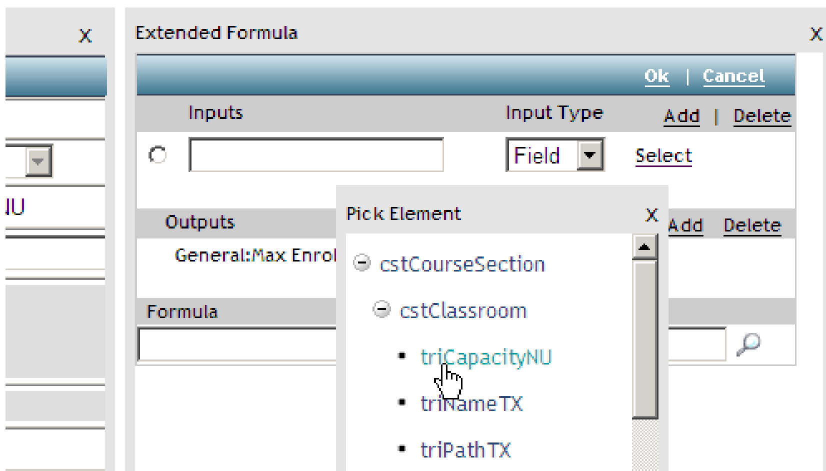
6. In the **Inputs** section, click **Add**.

   An input line is displayed.

7. Add the first line by performing the following steps:
   a. Click the **Select** link.



   b. Open the **cstClassroom** folder, and click **triCapacityNU**.

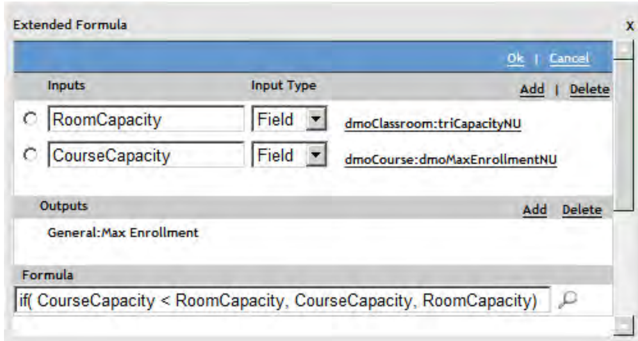


   c. Enter **RoomCapacity** in the **Inputs** field.

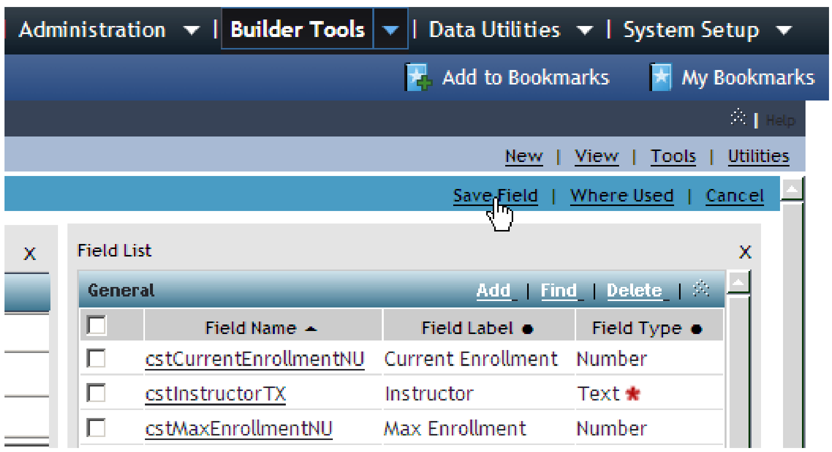
8. Add the second line by performing the following steps:
   a. Open the **cstCourse** folder, and click **cstMaxEnrollmentNU**.
   b. Enter **CourseCapacity** in the Inputs field for **cstMaxEnrollmentNU**.
   c. In the **Formula** field, enter this formula:

      if(CourseCapacity <RoomCapacity, CourseCapacity, RoomCapacity)

d. Click **OK**.



9. Click **Save Field** to save your changes.



Exercise 2. Publishing the Course Section business object

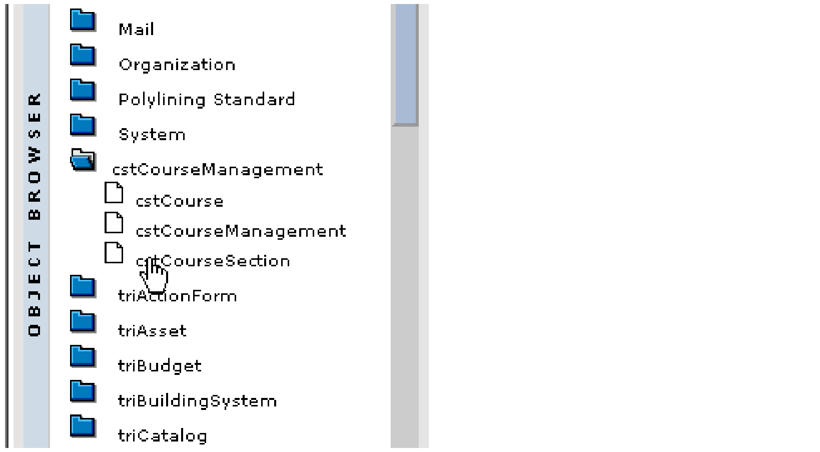
In this exercise, you define the publish name for the Course Section business object with the properties in the following table.

Table 22. Defining the publish name

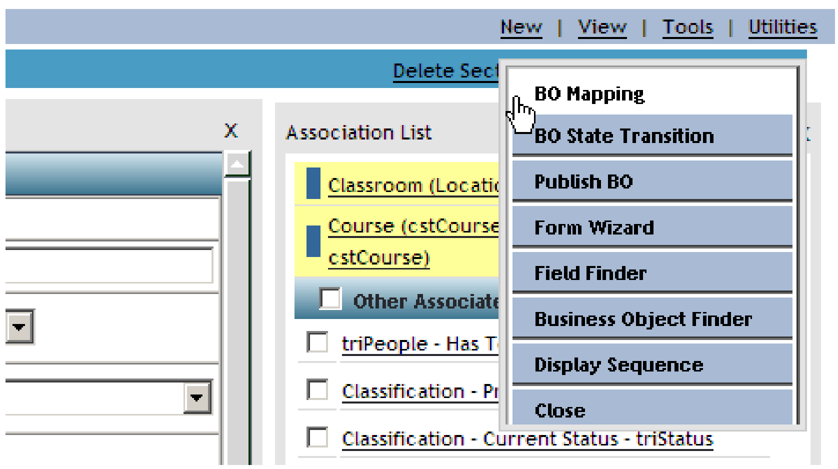
Property	Value
BO Name	cstCourseSection
Publish Name	Course Number - Course Title - Section #
Start With	1000000

To define the publish name for the Course Section business object, perform the following steps:

1. On the **Tools** tab, click **Builder Tools > Data Modeler** to open it.
2. Open the Object Browser, expand the **cstCourseManagement** module, and click the **cstCourseSection** business object.

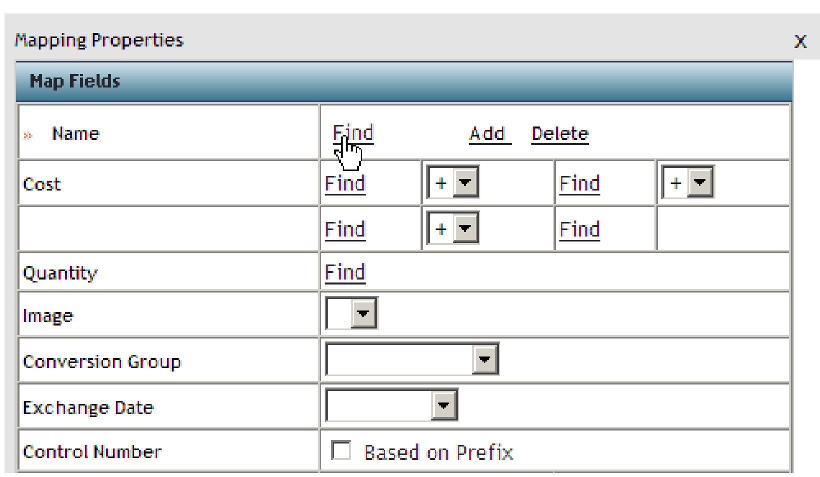


3. Click **Tools**, and click **BO Mapping**.

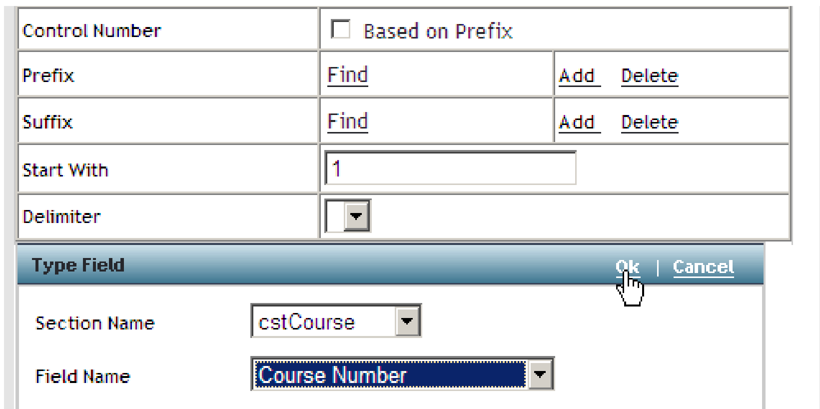


The Mapping Properties window opens.

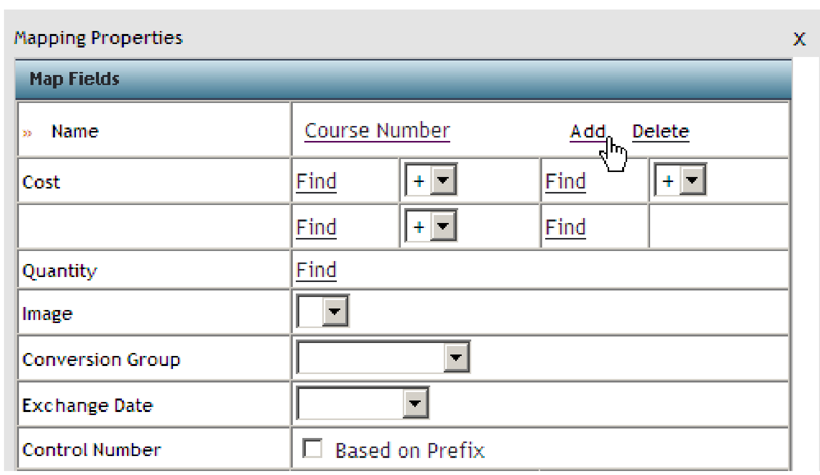
4. Click **Find**.



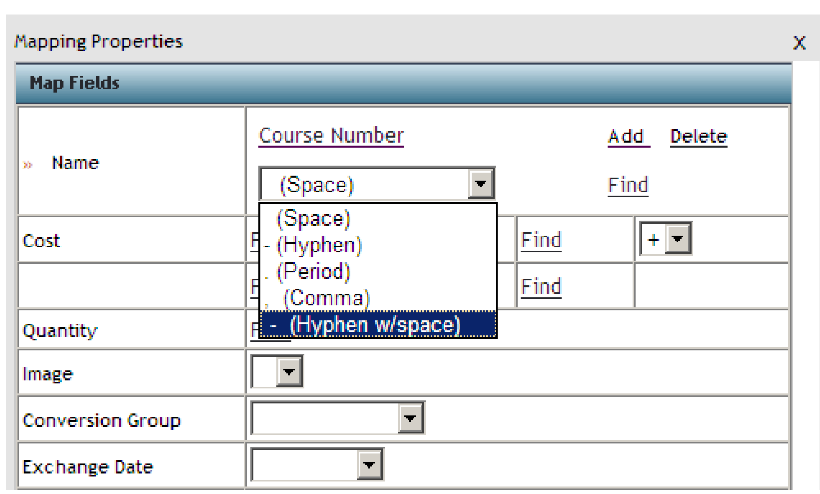
5. In the Type Field section, set the following properties:
   a. From the **Section Name** list, select **cstCourse**.
   b. From the **Field Name** list, select **Course Number**.
6. Click **OK**.



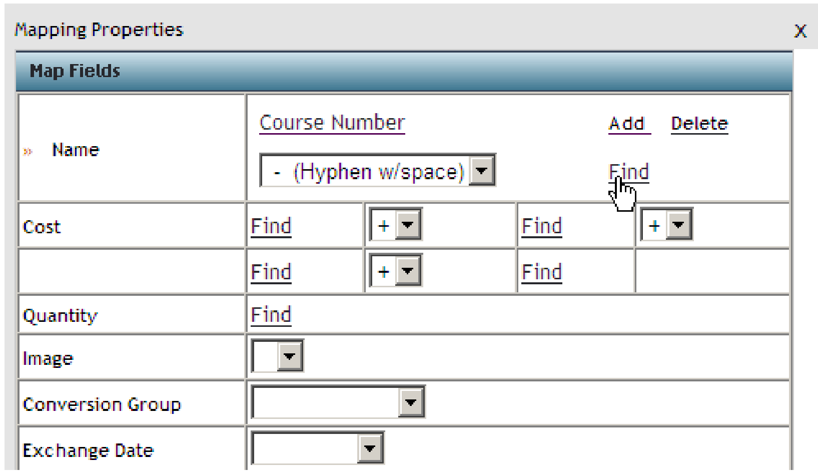
7. For the next part of the Publish Name, click **Add**.



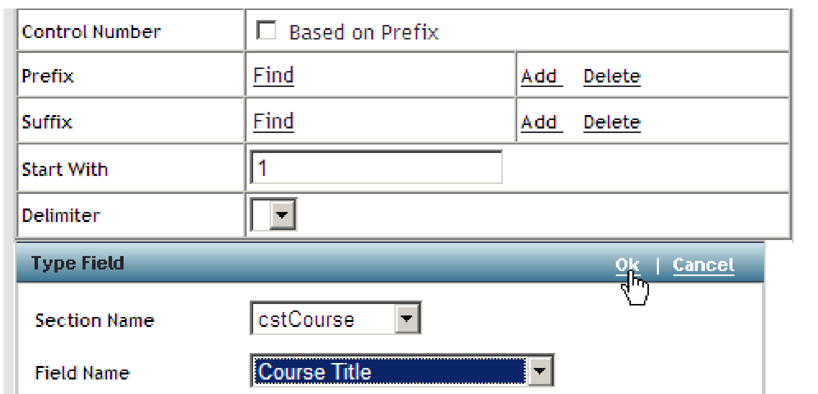
8. From the list, select **– (Hyphen w/space)**.



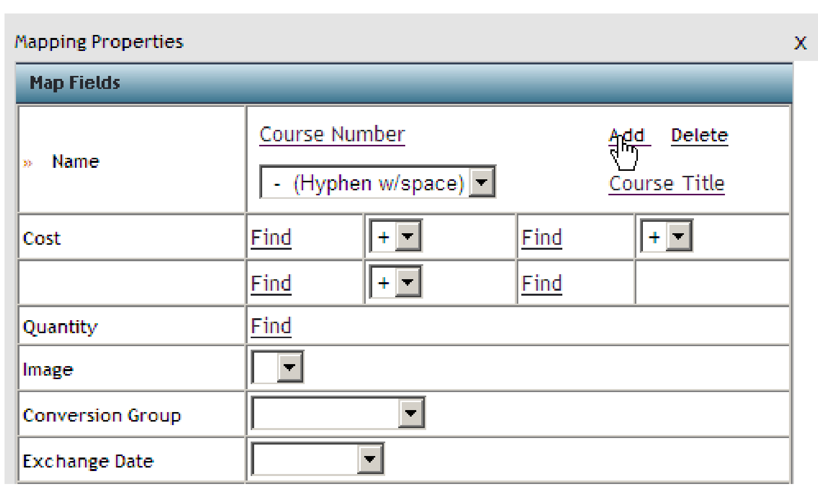
9. For the next part of the Publish Name, click **Find**.



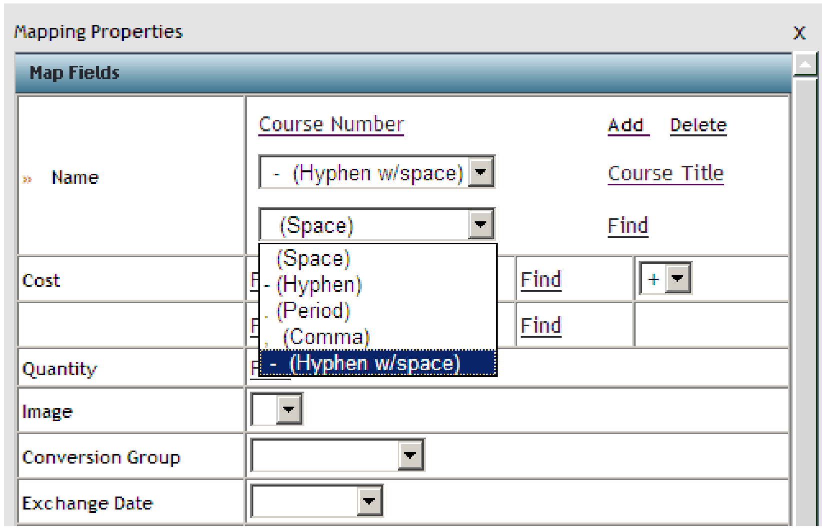
10. In the Type Field section, set the following properties:
    a. From the **Section Name** list, select **cstCourse**.
    b. From the **Field Name** list, select **Course Title**.
11. Click **OK**.



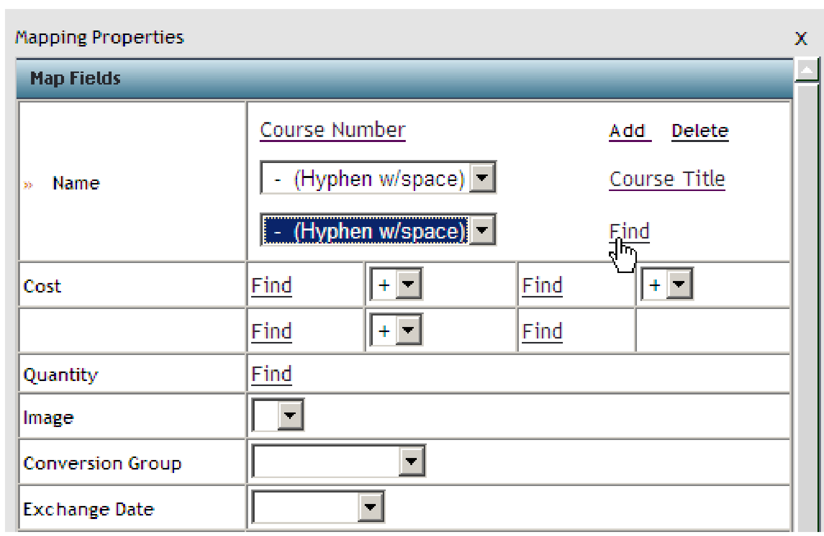
12. Click **Add**.



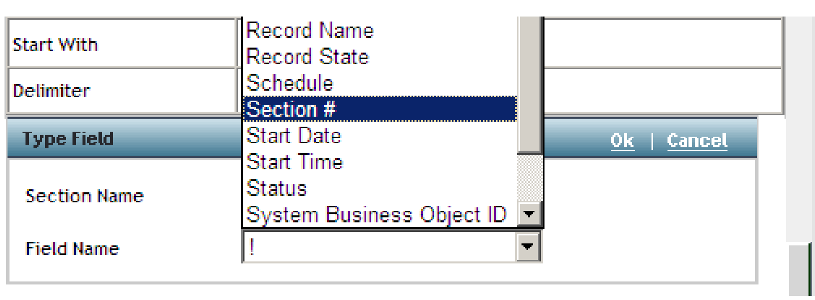
13. From the list, select **Name > – (Hyphen w/space)**.



14. Click **Find**.



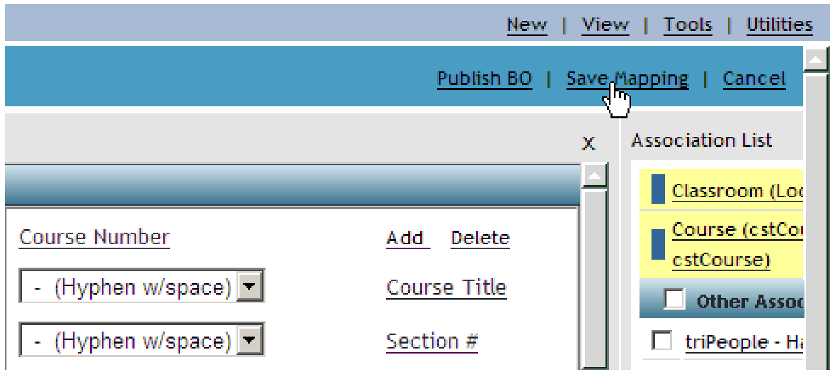
15. In the **Type Field** section set the following properties:
    a. From the **Section Name** list, select **General**
    b. From the **Field Name** list, select **Section #**.
16. Click **OK**.



17. In the **Start With** field, enter 1000000.

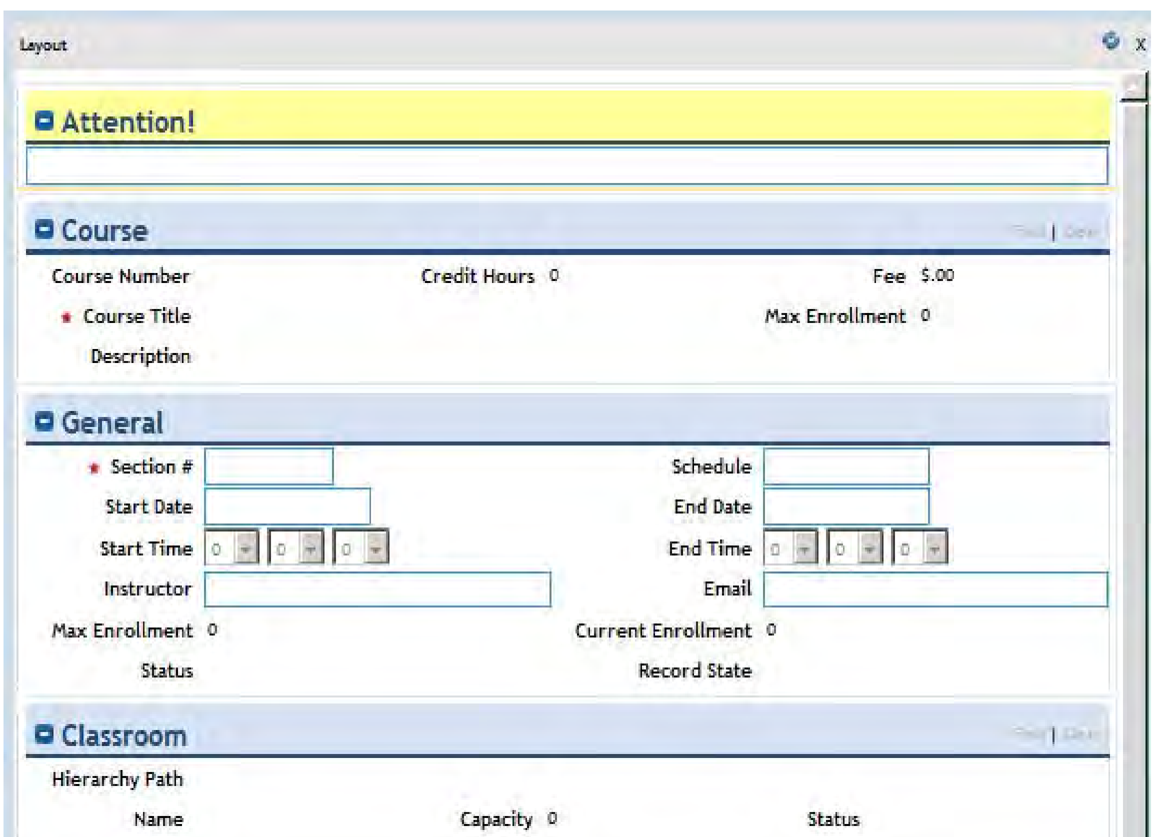
18. Click **Save Mapping**.

19. Click **Tools**, and click **Publish BO**.



Exercise 3. Creating the Course Section form

Create a Course Section form by using the following image as a guide. The Course and Classroom sections are both Smart sections.



Exercise 4. Creating a Course Section Manager query

In this exercise, you create a Course Section Manager query. Use the following properties.

Property	Value
Name	cstCourseSection - cstCourseSection - Manager Query
Header	Course Section
Type	Query
Business Object	cstCourseSection
Columns	Select 6 - 8 fields of your choosing.
Filters	Set user filters for every field in the query.

Exercise 5. Adding the Course section to the portal

Add a navigation item for the Course Section query to the Course Management Quick Links Navigation Collection. Use the following properties.

Property	Value
Name	cst Master Detail - Course Sections
Label	Course Sections
Target Type	Master/Detail Query
Business Object	cstCourseSection
Report	cstCourseSection - cstCourseSection - Manager Query
Other properties	Select the correct properties for the cstCourseSection BO and Form. Do not forget the Add and Delete actions.

Create some Course Section records to be used in later activities.

Exercise 6. Creating an Enrollment business object

Create an Enrollment business object with the information shown in Table 23 and Table 24 .

Table 23. Creating an enrollment business object: Properties

Property	Description
BO Name	cstEnrollment
Display Name	Enrollment
BO Type	Stand Alone

Table 24. Creating an enrollment business object: Field list

Add or Find	Type	Name	Label	Other
Add	Text	cstStudentTX	Student	**Required**. Do Not Auto Populate.
Find	Text	triHomePhoneTX	Home Phone	Search for **HomePhone** if searching by Label; Read Only. Do not Auto Populate.
Add	Classif.	cstGradeCL	Grade	Use **Grades** as Root Classification. Do Not Auto Populate
Add	Text	cstCourseSectionIdTX	Course Section ID	**Required**. Do Not Auto Populate.
Modify	Text	triIdTX	Student ID	Change Label to *Student ID*; Read Only. Do Not Auto Populate.

Exercise 7. Creating associations

Create associations for the Enrollment business object with the following properties.

Table 25. Creating associations

Module	Business Object	Association	Associate Module	Associate Business Object	Reverse association
cstCourse Management	*cstCourseSection	Has	cstCourse Management	cstEnrollment	Enrollment For
cstCourse Management	cstEnrollment	Enrollment For	cstCourse Management	cstCourse Section	Has
cstCourse Management	cstEnrollment	Has Grade	Classification	cstGrades	Grade For
Classification	cstGrades	Grade For	cstCourse Management	cstEnrollment	Has Grade
cstCourse Management	cstEnrollment	Has Student	triPeople	triPeople	Is Enrolled In
triPeople	triPeople	Is Enrolled In	cstCourse Management	cstEnrollment	Has Student

*Dependent association

Exercise 8. Finish the cstGradeCL setup

After the association between the cstEnrollment business object and the cstGrade business object is defined, finish the setup of the cstGradeCL field by following these steps:

1. Open the Data Modeler and select the **cstEnrollment** business object.
2. Select **cstGradeCL** from the **Field** list.

   At the bottom of the properties is the Association string.
3. Select **Has Grade**, and click **Save Field**.

Exercise 9. Defining locator fields

Define the Student and Course Section ID locator fields with the information shown in Table 26 and Table 27 .

Table 26. Properties for the Student Locator field

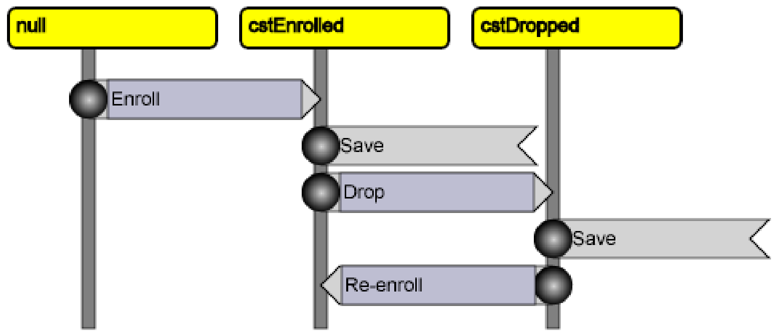
Property	Value	
Field Name	cstStudentTX	
Locator Field	<selected>	
Locator Module	triPeople	
Business Object Name	triPeople	
Associated String	Has Student	
Locator Field mapping	General::Name	
Additional field mapping	Existing field	Source field
	General::Student ID	General::HR ID
	General::Home Phone	General::Home Phone

Table 27. Properties for the Course Section ID locator field

Property	Value
Field Name	cstCourseSectionIdTX
Locator Field	Checked
Locator Module	cstCourseManagement
Business Object Name	cstCourseSection
Associated String	Enrollment For
Locator Field mapping	General::Record Name
Additional field mapping	None

Exercise 10. Creating a state transition family for the Enrollment business object

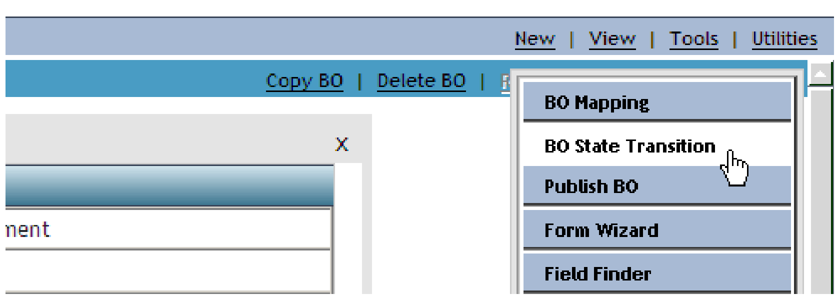
In this exercise, you remove the State Family that was inherited from the Base business object and you create a state family. A completed state family is illustrated in the following diagram.



Note: Select **Default Display** and **Close Window** for the Enroll, Drop, and Reenroll transitions.

To create a state family for the cstEnrollment business object, perform the following steps:

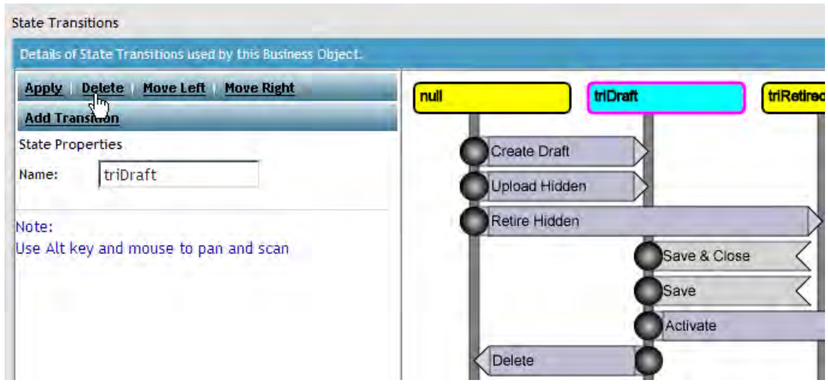
1. If the cstEnrollment business object is not already open, on the **Tools** tab, click **Builder Tools > Data Modeler** to open it.
2. Open the Object Browser, expand the **cstCourseManagement** module, and click the **cstEnrollment** business object.
3. If necessary, click **Revise BO**.
4. Click **Tools**, and click **BO State Transition**.



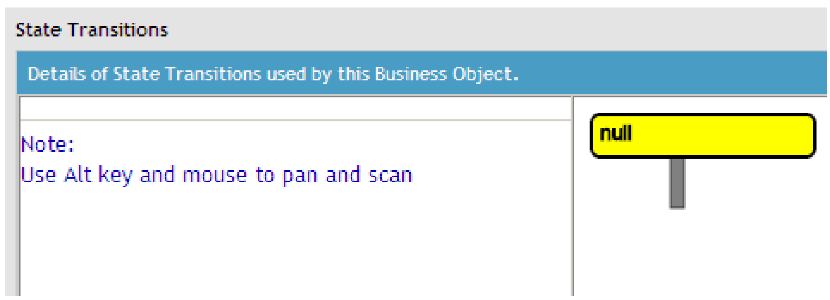
When you created the Enrollment business object, the system copied the state family from the base business object. This exercise replaces the current state family with your own state family.

5. Click each state name, and select **Delete**.

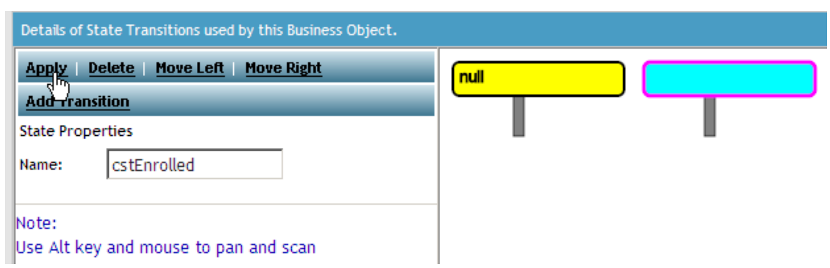
6. When you finish, click **Save.**



The **null** state remains in the State Transitions window.



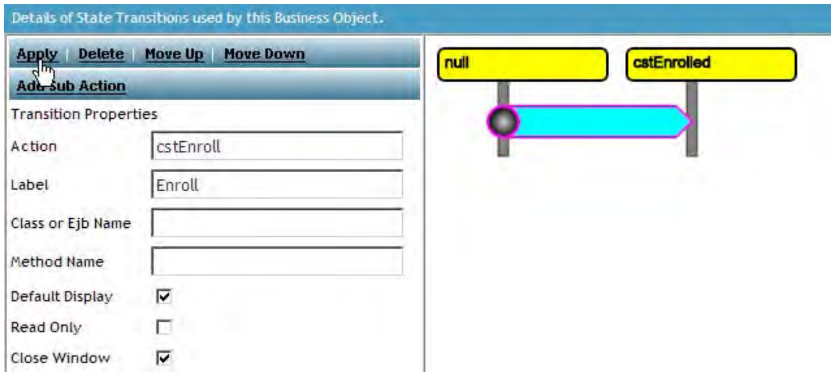
7. Click **Add State**.
8. In the **Name** field, set the State Name to **cstEnrolled**.
9. Click **Apply**.
10. Click the **null** state to select it.



11. Click **Add Transition**.
12. Click the **cstEnrolled** state.

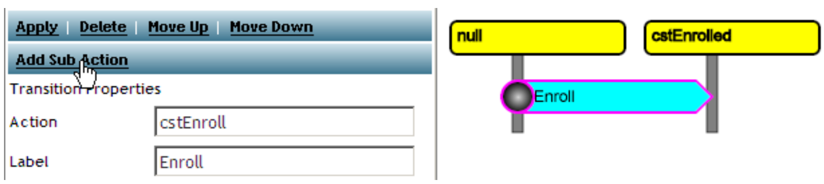
    A transition from the null state to the cstEnrolled state and its properties are displayed.
13. In the **Action** field, enter **cstEnroll**.
14. In the **Label** field, enter **Enroll**.
15. Select the **Default Display** check box.
16. Select the **Close Window** check box.
17. Click **Apply**.

18. Click **Save** to save the state family.



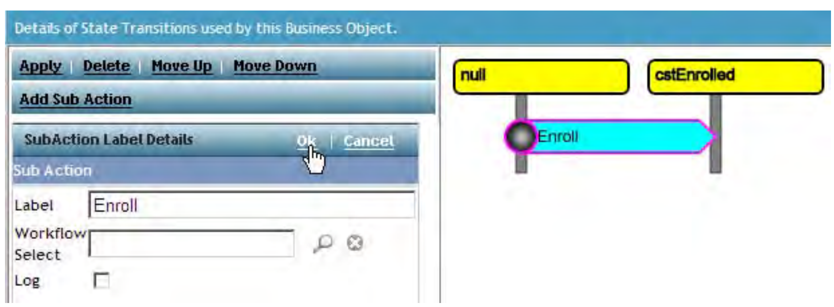
19. Click the **cstEnroll** action.

20. Click **Add Sub Action**.



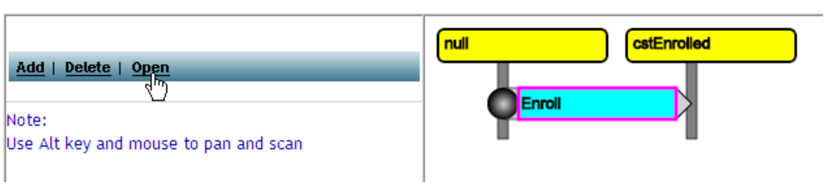
21. In the **Label** field, enter **Enroll**.

22. Click **OK**.

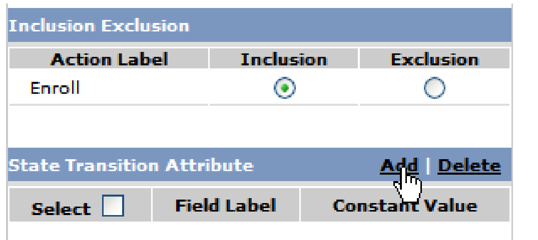


23. Click the **Enroll** sub action **(**that is, click inside the box on the Enroll action).

24. Click **Open**.

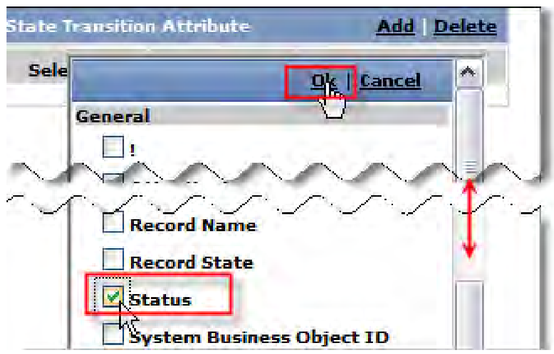


25. In the **State Transition Attribute** section, click **Add**.



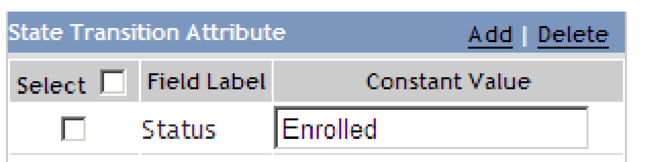
26. Select the check boxes for **Status** and **Previous Status**.

27. Scroll up and click **OK**.



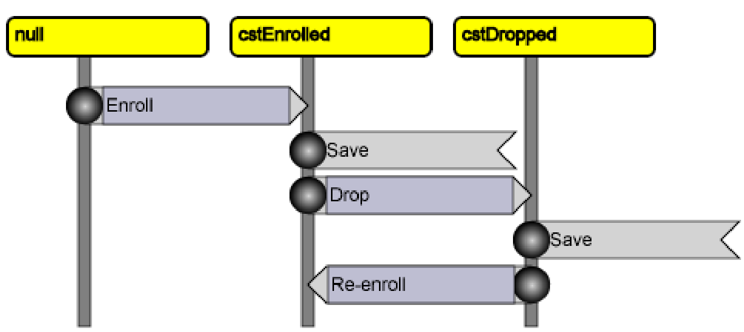
28. In the **Status** field, enter the constant value **Enrolled**. Leave the **Previous Status** field blank.

29. Click **OK** at the top of the window to save the **Sub Action** properties.



30. Click **Save**.

31. Repeat the process of adding **States**, **Transition Actions**, and **Sub Actions** until the state family resembles the following state family diagram. Use **Enrolled** and **Dropped** where appropriate for the **Status** and **Previous Status** values.



32. Click **Save**.

33. Click **Cancel** to close the State Family window.

Exercise 11. Publishing the Enrollment business object

1. Define the publish name for the Enrollment business object by using the information in the following table.

Property	Description
BO Name	cstEnrollment
Publish Name	Student - Student ID - Course Section ID
Start With	1000000

2. Publish the business object.

Exercise 12. Adding status classification records

Add the **Enrolled** and **Dropped** status values to the Status classification hierarchy by performing the following steps:

1. Open the Classification manager.
2. Select the **Status** root entry.
3. Click **New**.
4. Select **Status**.
5. Enter **Enrolled** in the **Name** field and click **Create Draft**.
6. Repeat Step 3 - Step 5 for the **Dropped** status.

Exercise 13. Creating the Enrollment form

1. Copy the cstCourseManagement Form again to create the Form for the cstEnrollment business object. Use **cstEnrollment** for both the business object name and the form name.
2. Add a **cstGeneral** section. Use the following image as a guide to the fields and layout for the section.

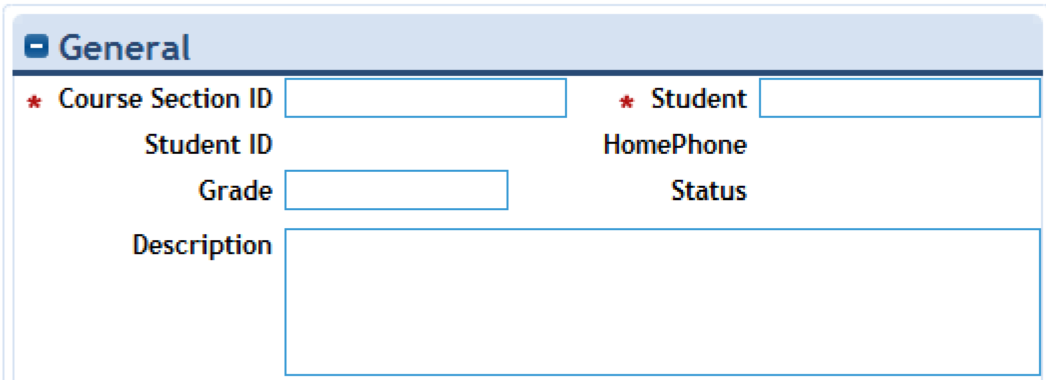
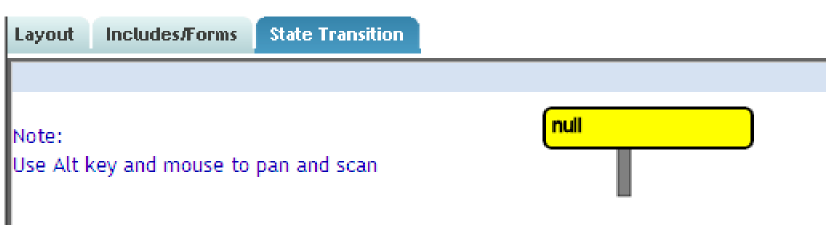


Figure 8. The Enrollment form

Important: Remember to change the **Label** of the form to **Enrollment**.

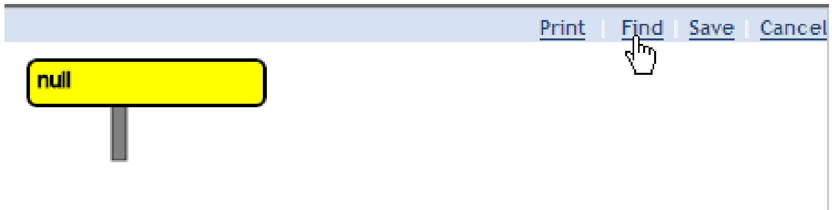
3. Import the modified state family. None of the original states or actions from the base business object exist in the Enrollment business object state family.
   a. Click the **State Transition** tab.

      The State Family page is blank, except for the **null** state.

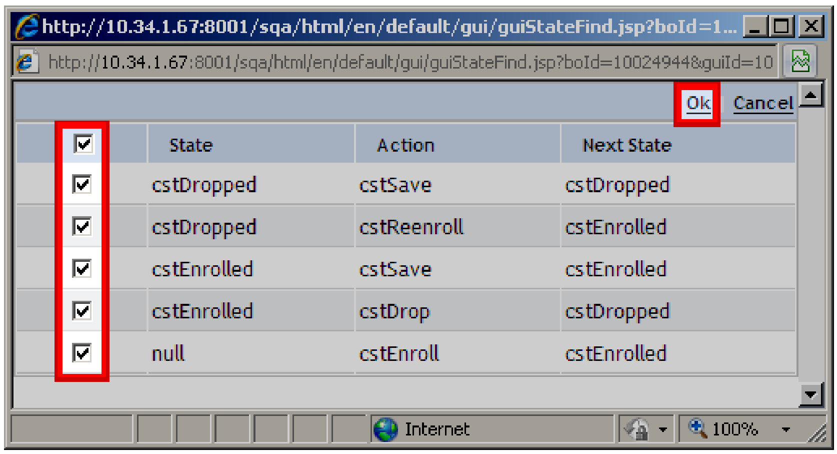


   b. Click the **Find** link.

Clicking **Find** opens a list of all states and actions that are in the business object state family but not in the form state family.



c. Select the check box at the top of the list to select all of the actions.

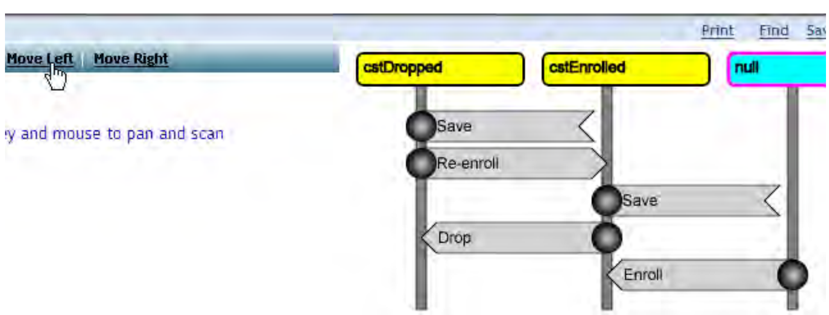


d. Click **OK**.

The state family now has all three states and all of the actions, although they might not be in the correct order.

e. Click the **null** state.

f. Click the **Move Left** link twice to move the **null** state to the far left.



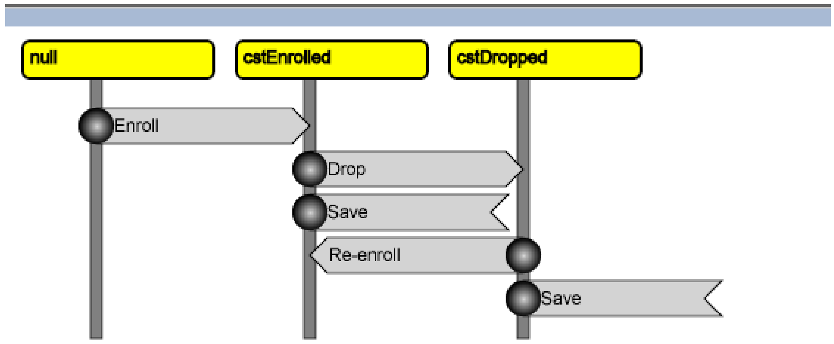
g. Click the **cstEnrolled** state.

h. Click **Move Left**.

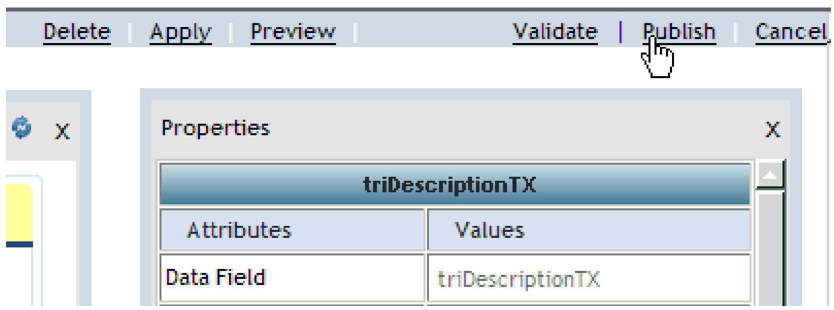
i. Click **Save** to save the state family.

4. Review your state family.

The state family resembles the following image.



5. Click the **Layout** tab, and click **Publish**.



Exercise 14. Creating an Enrollment Manager query

Create a query that shows all available Enrollment records with the following properties.

Property	Value
Name	cstEnrollment - cstEnrollment - Manager Query
Header	Enrollment
Type	Query
Business Object	cstEnrollment
Columns	Course Section ID, Student, Student ID, HomePhone, Grade, Status
Filters	Set user filters for the fields in this list: Course Section ID, Student, Student ID, HomePhone, Grade, Status

Exercise 15. Adding enrollment to the portal

Add a navigation item for the Enrollment query to the Course Management Quick Links Navigation Collection with the following properties.

Property	Value
Name	cst Master Detail - Enrollments
Label	Enrollments
Target Type	Master/Detail Query
Business Object	cstEnrollment
Report	cstEnrollment - cstEnrollment - Manager Query
Other properties	Select the correct properties for the cstEnrollment BO and Form. Do not forget the Add and Delete actions.

To test, add some Enrollment records.

Solution 15 Workflows exercise solutions

Workflows are used to add business logic to an application. They can perform many tasks and can be called in many ways.

In these exercises you plan out and create several workflows to validate data.

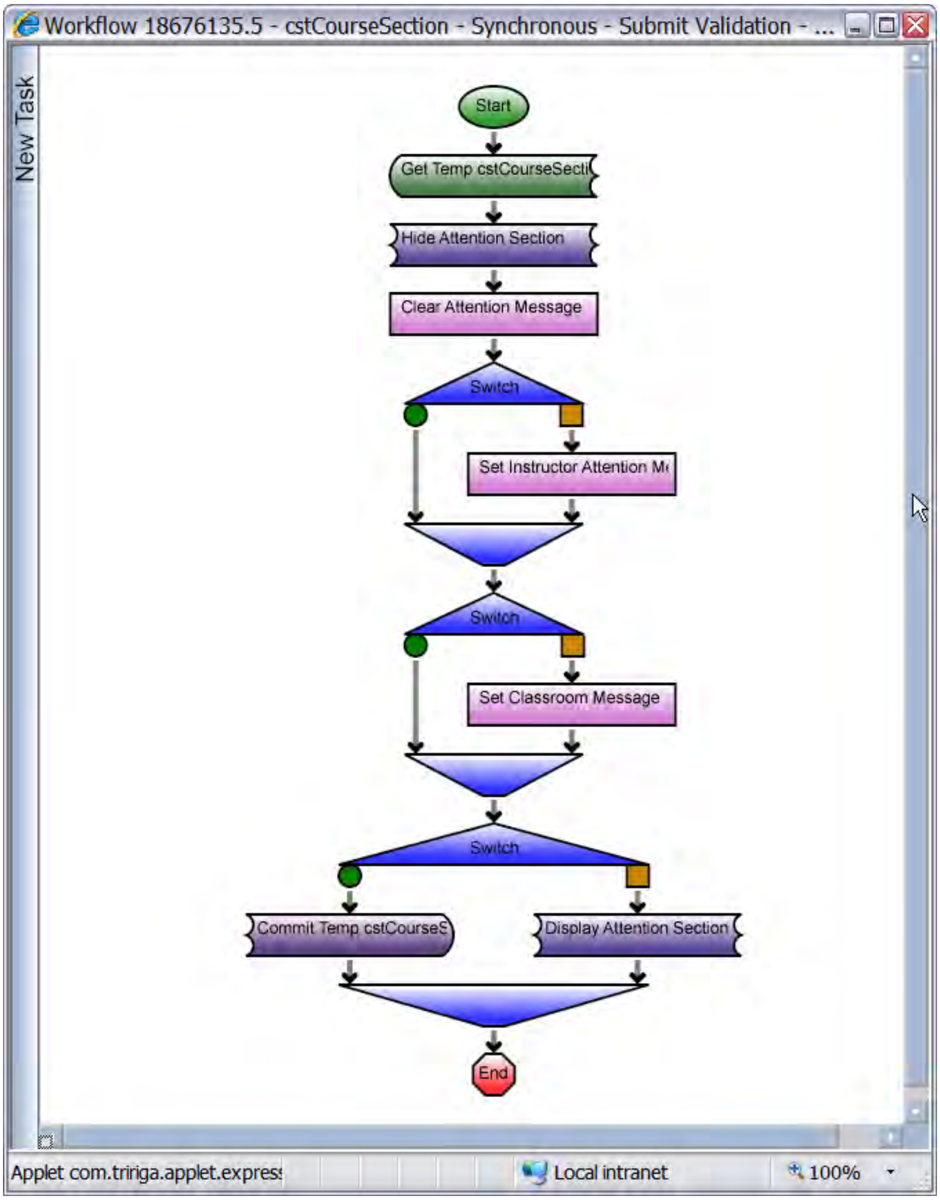
Exercise 1. Creating an Activation validation workflow

In this exercise, you create a workflow to validate Course Section data by following this business requirement: *Course Section records must have an Instructor and a Classroom before they can be activated*.

A more detailed plan for the workflow contains the following items:

- Triggered when the user clicks the Activate button in a Course Section form.
- Accesses the temporary data, and then performs the following cleanup actions:
  - Hide the Attention! sections.
  - Clear the message and the message flag in the Temporary data.
- Checks to see if a classroom is selected. If one is not selected, a message is created.
- Checks to see if an instructor is selected. If one is not selected, a message is created.
- If no messages are created, the record can make a transition from one state to another by performing a Save Permanent Record task. Otherwise, the messages are displayed to the user.

The following image shows the completed Activation Validation workflow.



The purpose of each task that is contained in the workflow, in order, are described in the following list:

- **Start:** This task is where the properties of the workflow are set. Start is always the first task of a workflow.
- **Get Temp cstCourseSection (Get Temp Record task):** Establishes a connection from the workflow to the record that is open to the user in a form; that is, the temporary copy of the data. Can be used both for bringing data into the workflow and for storing data from the workflow.
- **Hide Attention Section (Modify Metadata task)**: Changes the Attention! section on all tabs to set the Visible property to **No**.
- **Clear Attention Message (Modify Records task):** Sets the message and message flag fields to blank, in case they already contained values.

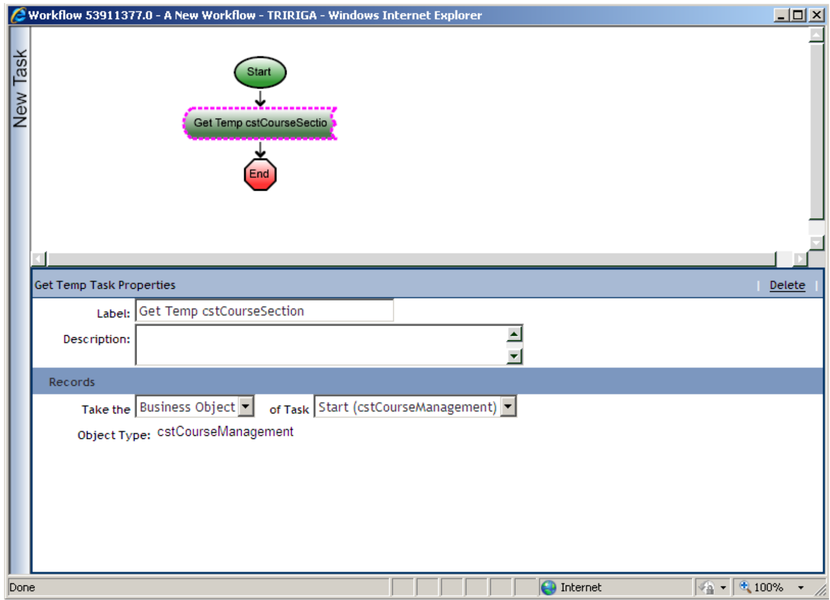
- **Switch #1:** Determines if the name of the Classroom is blank.
- **Set Classroom Attention Message (Modify Records task):** Sets the message field to a message for the user about the blank Classroom field.
- **Switch #2:** Determines if the Instructor value is blank.
- **Set Instructor Attention message (Modify Records task):** Sets the message field to a message for the user about the blank Instructor field.
- **Switch #3:** Determines if any messages are issued during validation.
- **Commit Temp cstCourseSection (Save Permanent Record task):** If no messages are issued, the temporary copy of the data is saved permanently so that the record can change states.
- **Display Attention Section (Modify Metadata task):** The following actions are performed:
  - Sets the Close Window flag to No
  - Changes the Visible value to Yes for the Attention! section in each tab
- **End:** Always the last task in a workflow.

Building the workflow

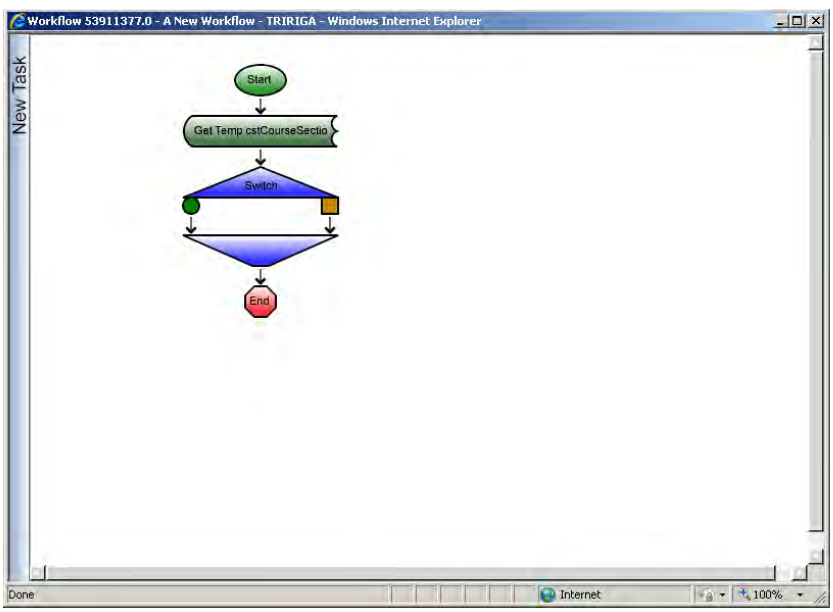
Perform the following steps to create the Activation Validation workflow:

1. On the **Tools** tab, click **Builder Tools > Workflow Builder** to open it.
2. Select **cstCourseManagement** from the list on the left of the window.
3. Click **New** to create a workflow.
4. Open the **Start** task and set the following properties:
   a. Name: **cstCourseSection - Synchronous - Activation Validation**
   b. Select **Synchronous** for the **Concurrence** value.
   c. Select **Temporary** for the **Temporary Data** field value.
   d. In the **Object Type** field, select **cstCourseSection**
5. Insert a **Get Temp Record** task.

6. Set **Get Temp Record** task properties as follows:
   a. In the **Label** field, enter **cst Get Temp cstCourseSection**.
   b. In the **Records** section, select **Take the > Business Object** and **of Task > Start (cstCourseSection)**.

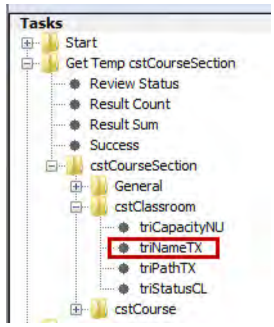


7. Insert a switch.



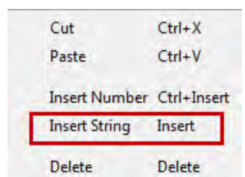
8. Set switch condition as follows:

   a. Select the **triNameTX** field from the **cstClassroom** section of the **cstCourseSection** business object of the Get Temp cstCourseSection task.



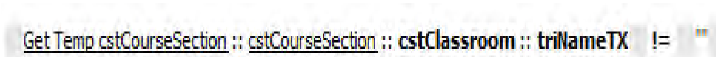
   b. Select the != (not equal) operator.

   c. Right-click, and select **Insert String**.



Note: Do not enter anything into the field. Click below it to close the input field and see the empty quotation marks.

   d. The completed condition is like the following example.



9. Insert a Modify Records task before the switch.

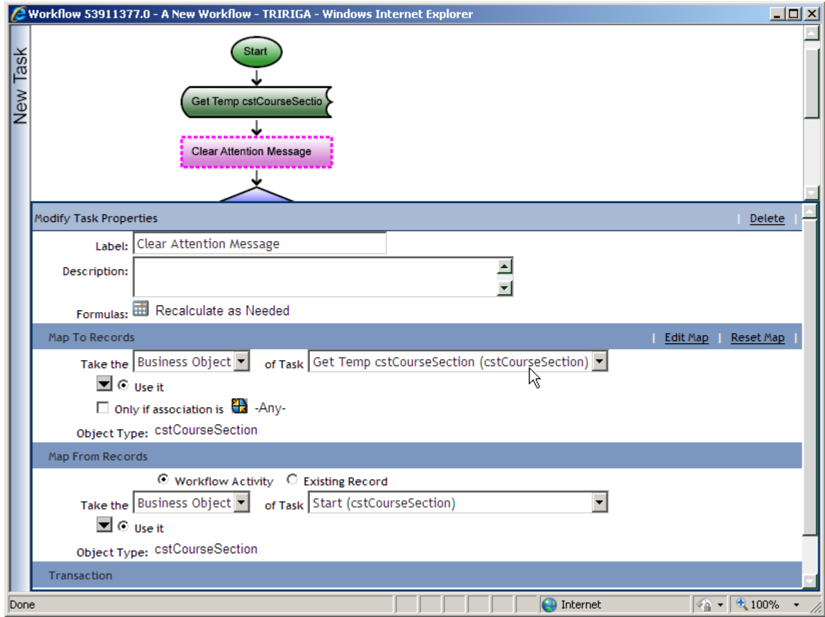
10. Set Modify Records task properties as follows:

    a. In the **Label** field, enter **cst Clear Attention Message**.

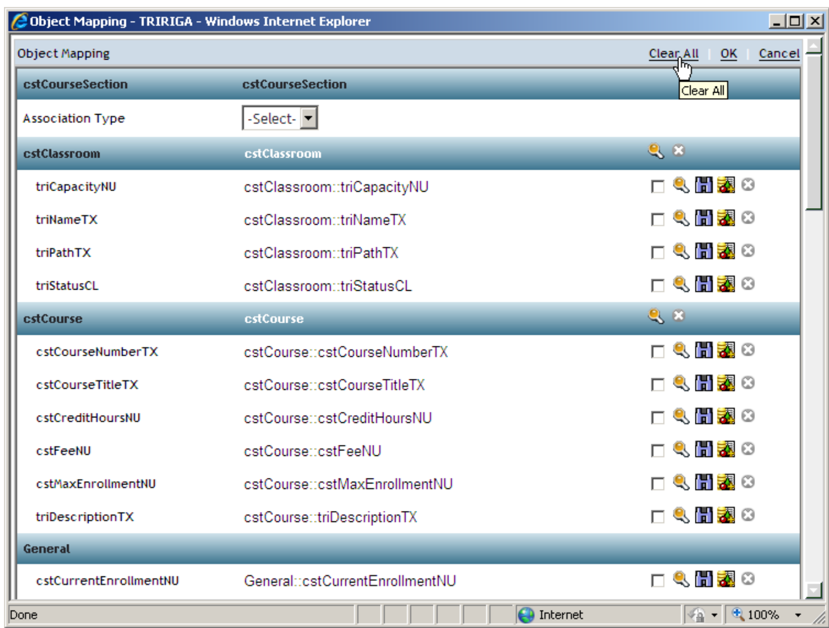
    b. In the Map to Records section, select **Take the > Business Object** and **of Task > Get Temp cstCourseSection**.

    c. In the Map from Records section, select **Take the > Business Object** and **of Task > Get Temp cstCourseSection**.

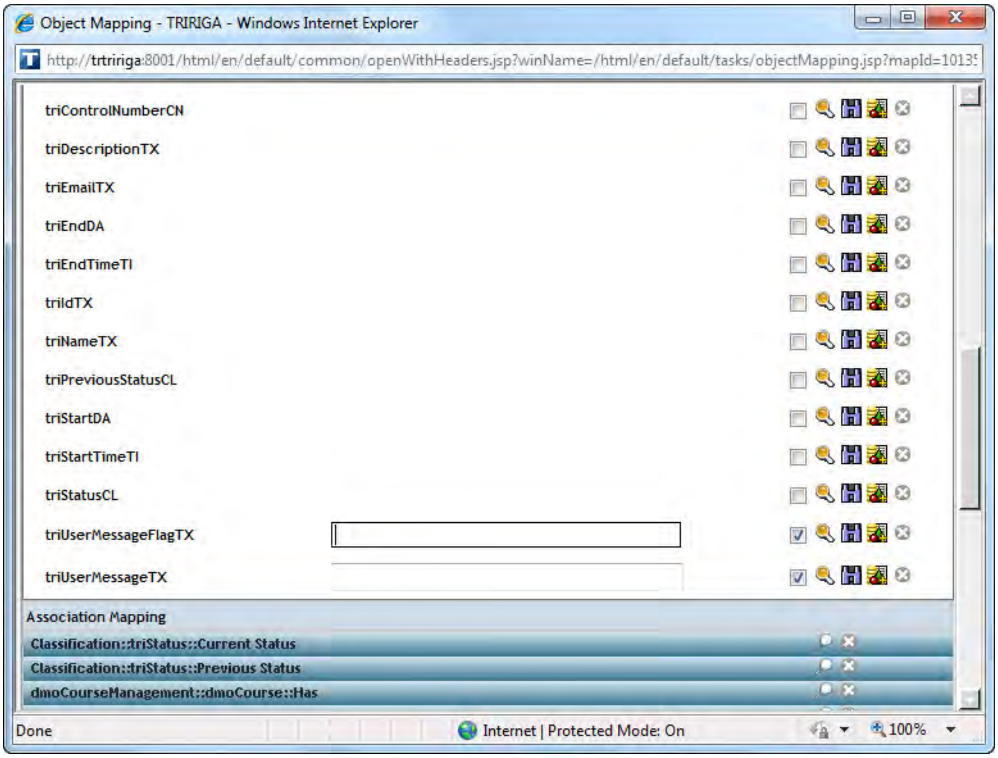
d. On the Map To Records section heading, click **Edit Map**.



e. Click **Clear All**.

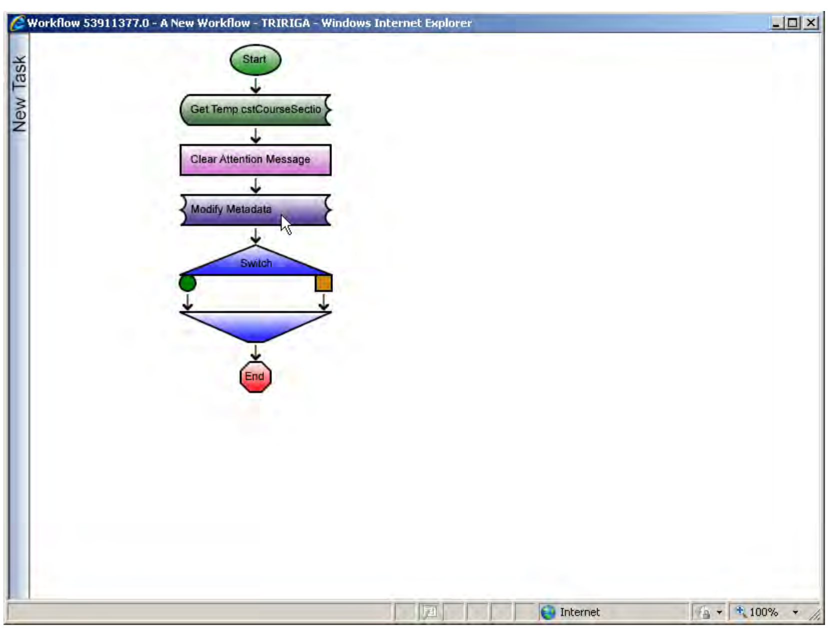


f. Select the **triUserMessageFlagTX** and **triUserMessageTX** check boxes, but do not enter any text in the text boxes.

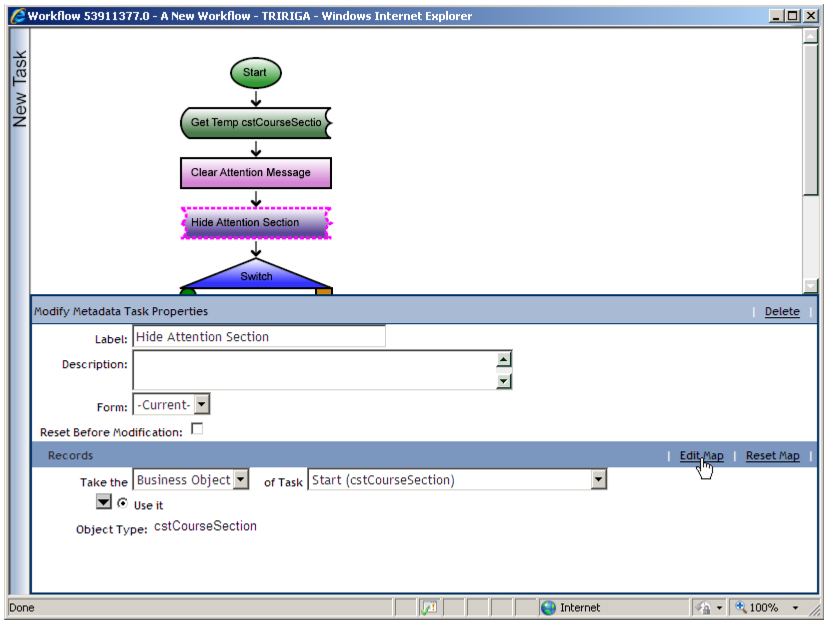


g. Click **OK** at the top of the list.

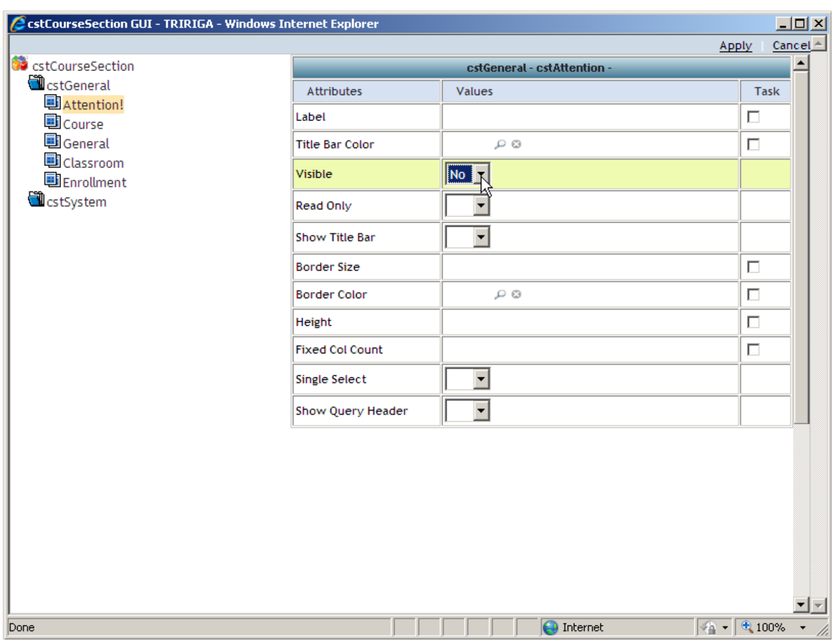
11. Add a Modify Metadata task before the switch.



12. Set Modify Metadata Task properties as follows:
    a. In the **Label** field, enter **cst Hide Attention Section**.
    b. In the Records section, select **Take the > Business Object** and **of Task > Start (cstCourseSection)**.
    c. On the Records section heading, click **Edit Map**.



    d. Expand the **General** tab and select the **Attention** section.
    e. From the **Visible** list, select **No**.

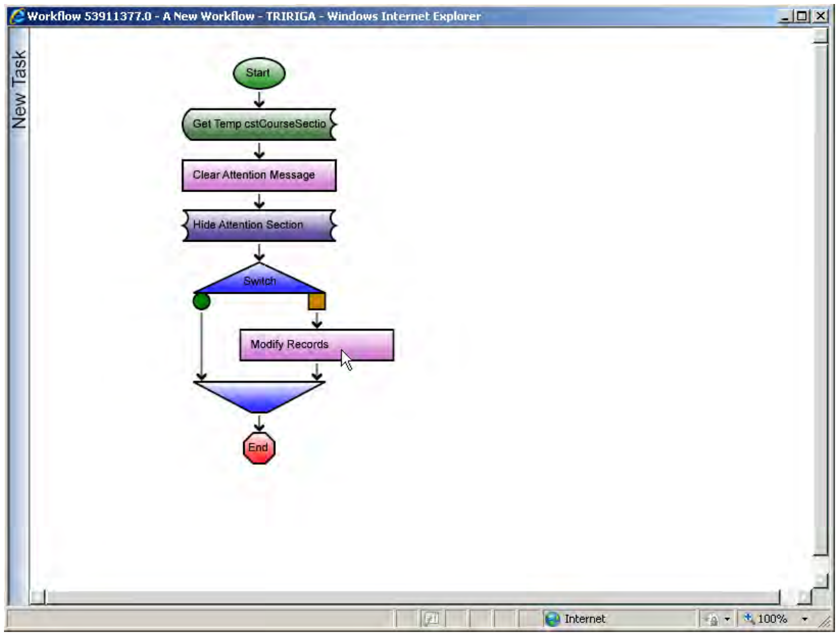


    f. Click **Apply**.

g. Repeat for the **Attention** section in the **System** tab.

h. Close the window.

13. In the switch, in the right-side path, insert a Modify Records task.



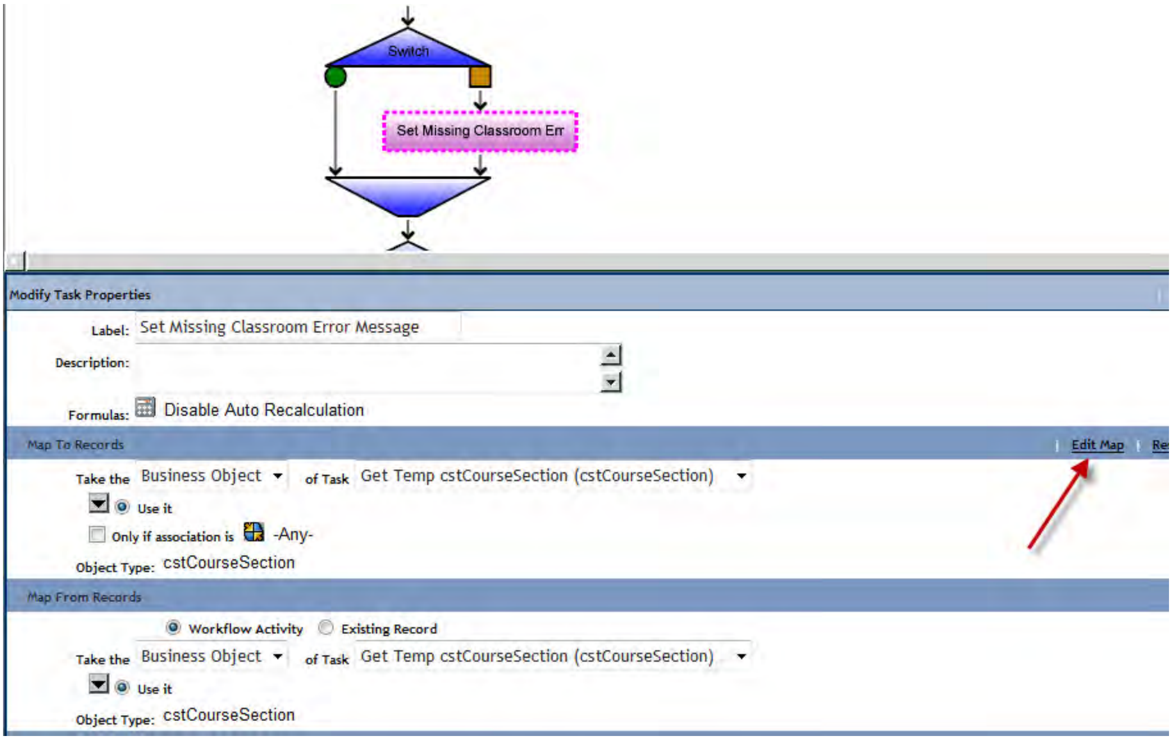
14. Set Modify Records task properties as follows:

a. In the **Label** field, enter **cst Set Missing Classroom message**.

b. In the Map to Records section, select **Take the > Business Object** and **of Task > Get Temp cstCourseSection**.

c. In the Map from Records section, select **Take the > Business Object** and **of Task > Get Temp cstCourseSection**.

d. On the **Map to Records** section heading, click **Edit Map**.

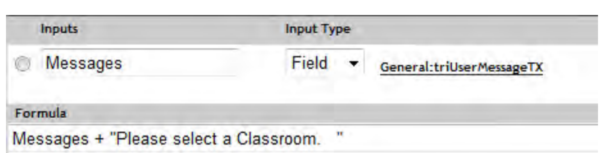


e. Click **Clear All**

f. Select the **triUserMessageFlagTX** check box. Enter an exclamation mark (!) in the text window.

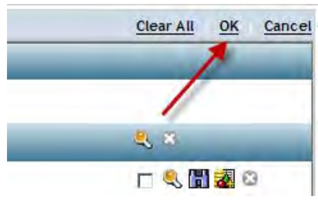
g. Click the Formula picker for the **triUserMessageTX** field.

h. Set up a formula that captures existing messages and adds a message about the missing classroom. An example of a formula is shown in the following image.



i. Click **OK** at the top of the Formula window.

j. Click **OK** at the top or bottom of the Edit Map window.

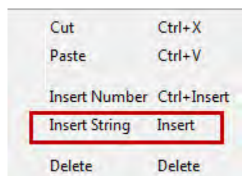


15. Add another switch below the first. Set the Switch Condition as follows:

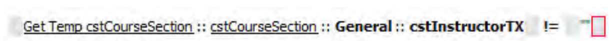
a. Select the **cstInstructorTX** field from the General section of the **cstCourseSection** business object of the **Get Temp cstCourseSection** task.

b. Select the **!= (not equal)** operator.

c. Right-click, and select **Insert String**.



d. Do not enter anything into the field, but click below it to close the input field and see the empty quotation marks. The completed condition is like the following example.



16. In the switch, in the right-side path, add a Modify Records task.

17. Set the Modify Records task properties as follows:

a. In the **Label** field, enter **cst Set Missing Instructor message**.

b. In the Map to Records section, select **Take the > Business Object** and **of Task > Get Temp cstCourseSection**.

c. In the Map from Records section, select **Take the > Business Object** and **of Task > Get Temp cstCourseSection**.

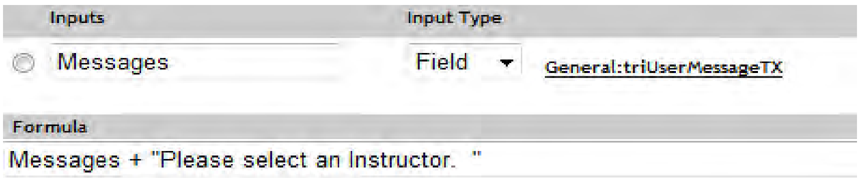
d. On the Map to Records section heading, click **Edit Map**.

e. Click **Clear All**.

f. Select the **triUserMessageFlagTX** check box. Enter an exclamation mark (!) in the text window.

g. Click the Formula picker for the **triUserMessageTX** field.

h. Set up a formula that captures existing messages and adds a message about the missing Instructor. An example of a formula is illustrated in the following image.



i. Click **OK** at the top of the Formula window.

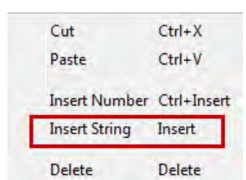
j. Click **OK** at the top or bottom of the Edit Map window.

18. Insert a Switch task below the other tasks to determine whether messages were produced by the workflow. Set the Switch Condition as follows:

a. Select the **triUserMessageFlagTX** field from the General section of the **cstCourseSection** business object of the Get Temp **cstCourseSection** task.

b. Select the **== (equal)** operator.

c. Right-click, and select **Insert String**.



Note: Do not enter anything into the field, but click below it to close the input field and see the empty quotation marks.

19. In the switch, in the True (left-side) path, insert a Save Permanent Record task.

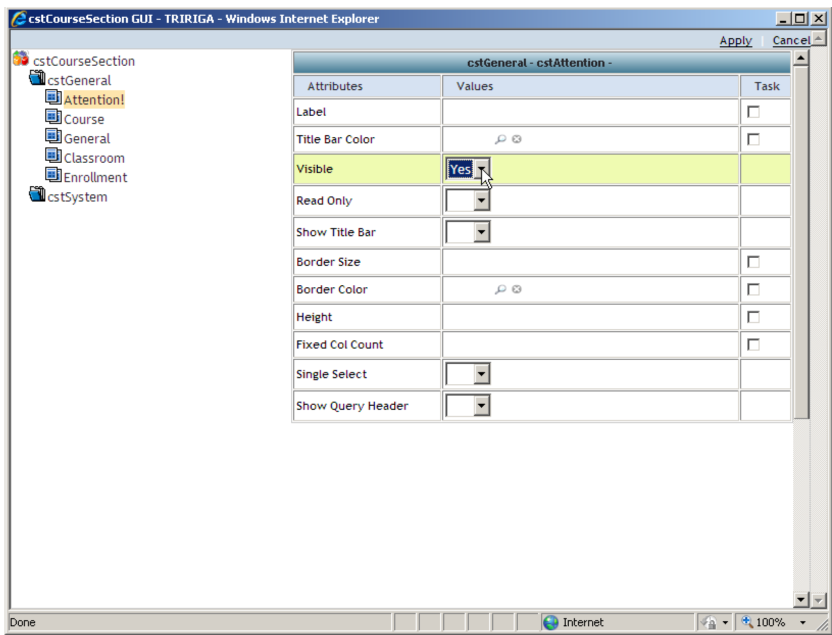
20. Set the properties of the Save Permanent Record task as follows:

a. In the **Label** field, enter **cst Save Permanent cstCourseSection**.

b. In the Records section, select **Take the > Business Object** and **of Task > Get Temp cstCourseSection**.

21. In the switch, in the right-side path, insert a **Modify Metadata** task.

22. Set Modify Metadata task properties as follows:
    a. In the **Label** field, enter **cst Display Attention Section**.
    b. In the Records section, select **Take the > Business Object** and **of Task > Start (cstCourseSection)**.
    c. On the Records section heading, click **Edit Map**.
    d. Select **cstCourseSection** to see the form-level properties.
    e. For the **Close Window** attribute, select **No** and click **Apply**.
    f. Expand the **General** tab.
    g. Select the **Attention** section.
    h. From the **Visible** list, select **Yes**.

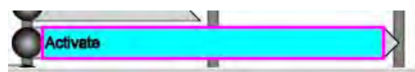


    i. Click **Apply**.
    j. Repeat for the Attention section in the **System** tab.
    k. Close the window.
23. Open the **Start** task.
24. In Workflow Properties, click **Publish**. Close the window.

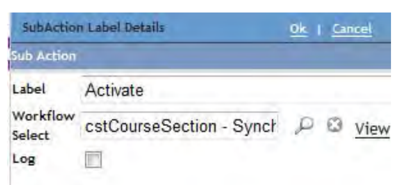
Exercise 2. Triggering the activation validation workflow

This workflow is triggered when the user clicks the Activate action of a Course Section record. Follow these steps to attach the workflow to the Activate actions:

1. Navigate to the **Data Modeler** tool.
2. Expand the **cstCourseManagement** module, and open the **cstCourseSection** business object.
3. Click **Tools**, and select **BO State Transition**.
4. Find an **Activate** action and click the sub action box on the action.



5. Click the **Open** link at the left side of the window to open the sub action properties.
6. Use the picker next to the **Workflow Select** field to select the **cstCourseSection - Synchronous - Activation Validation** workflow.



7. Click **OK**.
8. Click **Save**, and click **Cancel** to close the business object State Transition window.
9. Click **Tools**, and select **Publish BO**.
10. Test the workflow. Make sure to test all of the following conditions:
    a. When both Classroom and Instructor are blank.
    b. When Classroom has a value, but Instructor does not.
    c. When Classroom does not have a value, but Instructor has a value.
    d. When both Classroom and Instructor have values.

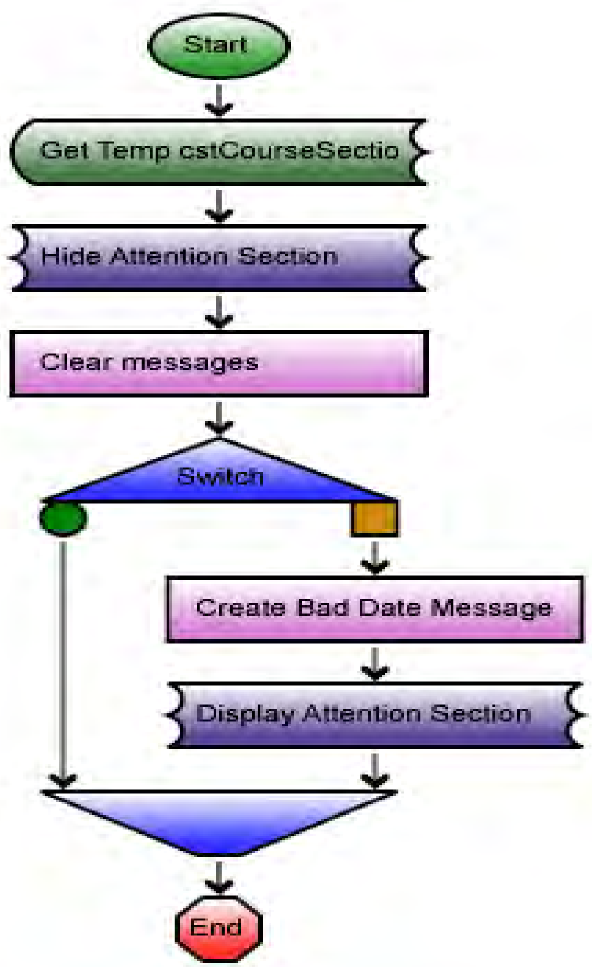
Exercise 3. Creating a date validation workflow

In this exercise, you create a workflow that enforces this business rule: *The Start date for a Course Section must be less than or equal to the End date*.

A more detailed plan for the workflow contains the following items:

- Triggered when the user changes the End date.
- Determines whether the Start date is less than or equal to the End date. If it is not, an appropriate message is created.
- If no message was created, no further action is taken. Otherwise, the message is displayed to the user.

The following image shows the completed Activation Validation workflow.

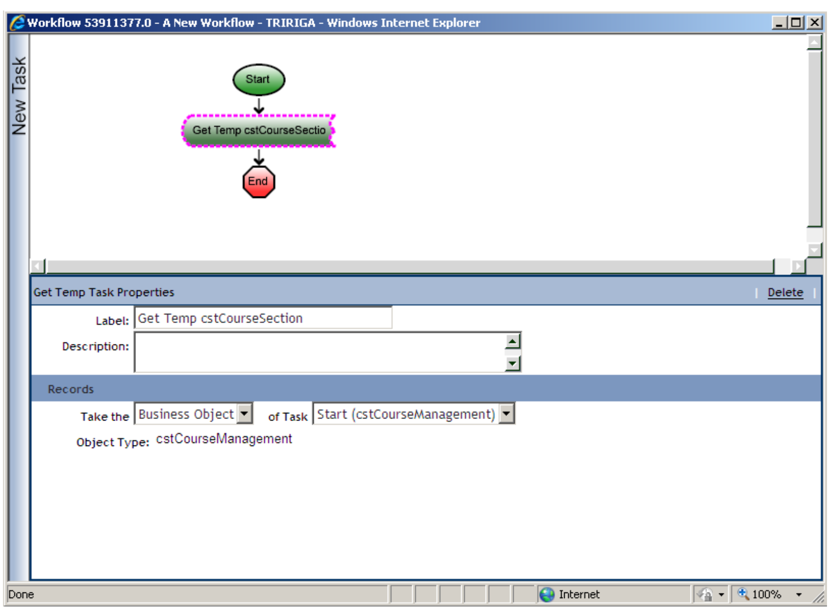


Building the workflow

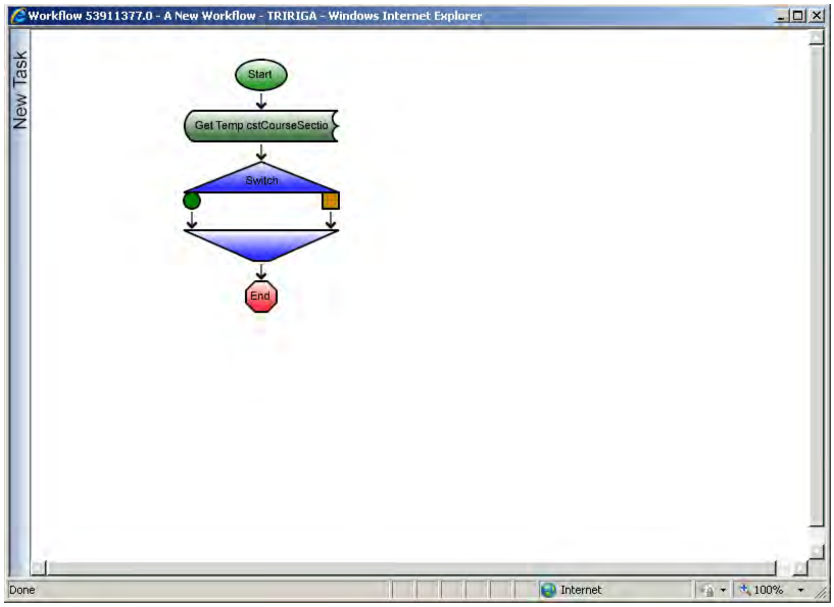
To create the Date Validation workflow, perform the following steps:

1. On the **Tools** tab, click **Builder Tools > Workflow Builder** to open it.
2. Select **cstCourseManagement** from the module list.
3. Click **New** to create a workflow.
4. Open the **Start** task and set the following properties:
   a. In the **Name** field, enter **cstCourseSection - Synchronous - Date Validation**.
   b. Select **Synchronous** for the **Concurrence** value.
   c. Select **Temporary** for the **Temporary Data** field value.
   d. In the **Object Type** field, select **cstCourseSection**.
5. Insert a **Get Temp Record** task.
6. Set Get Temp Record task properties as follows:
   a. In the **Label** field, enter **cst Get Temp cstCourseSection**.
   b. In the **Records** section, select **Take the > Business Object** and **of Task > Start (cstCourseSection)**.

Note: The workflow graphic inside the following image depicts the settings that are in the lower part of the figure. Most of the rest of the subsequent screen captures also reflect workflows and settings.



7. Insert a switch.

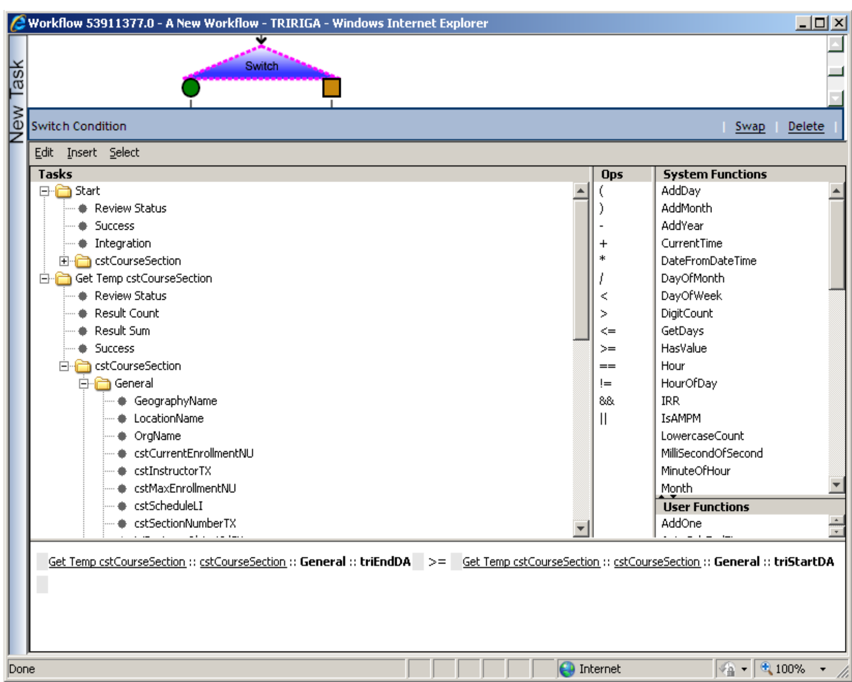


8. Set Switch Condition as follows:

    a. Select the **triEndDA** field from the Get Temp cstCourseSection task.

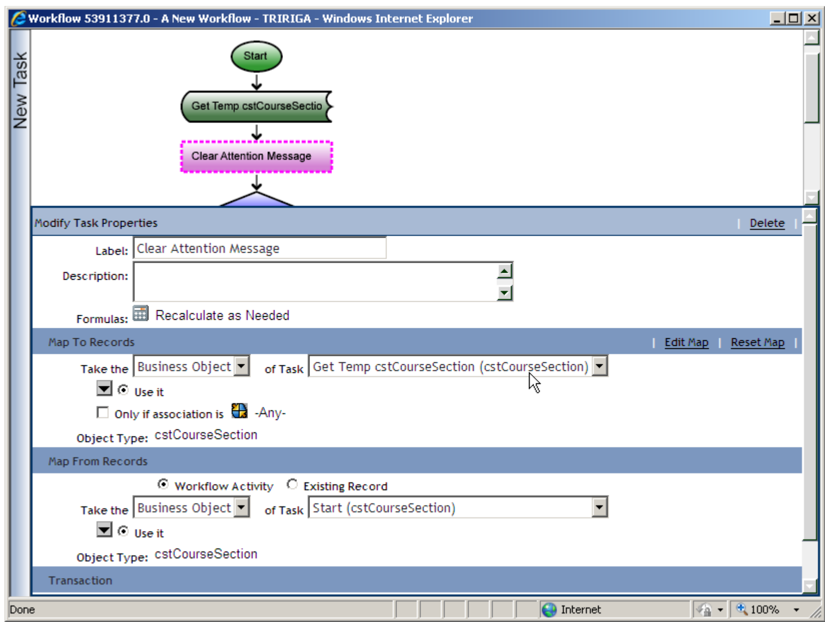
    b. Select the **>=** (greater than or equal to) operator.

    c. Select the **triStartDA** field from the Get Temp cstCourseSection task.

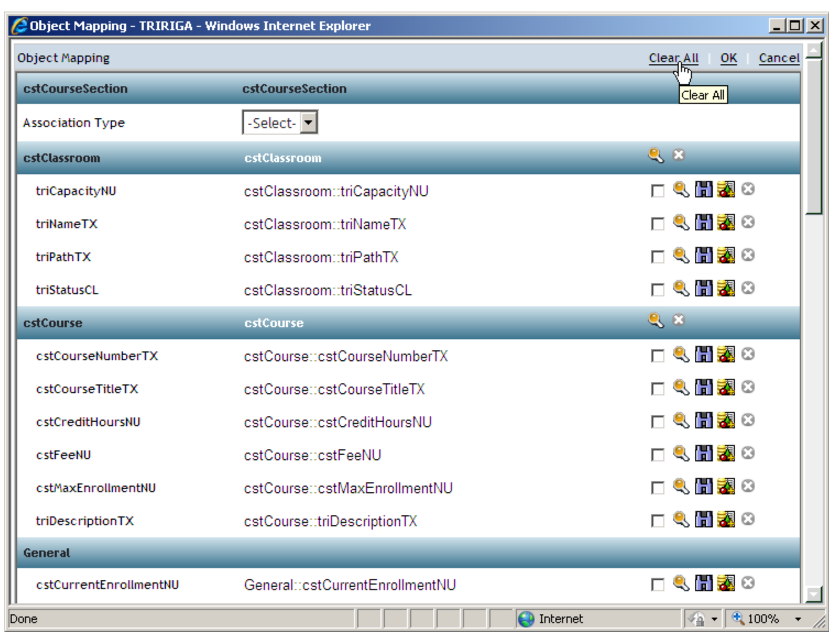


9. Insert a Modify Records task before the switch.

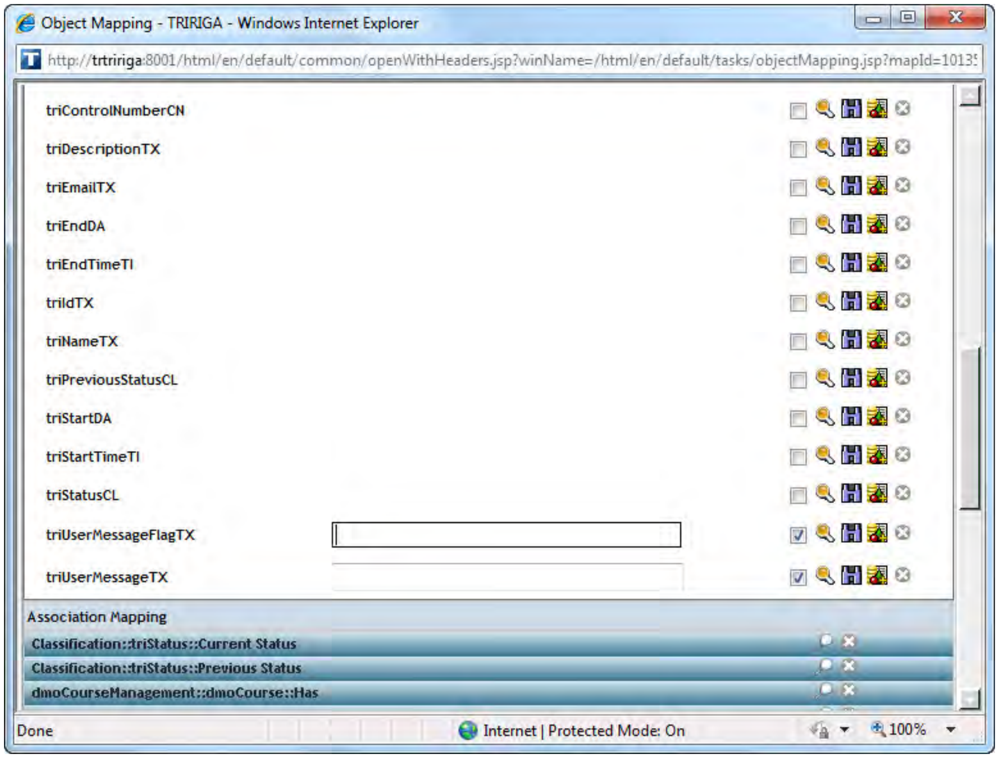
10. Set Modify Records task properties as follows:
    a. In the **Label** field, enter **cst Clear Attention Message**.
    b. In the Map to Records section, select **Take the > Business Object** and **of Task > Get Temp cstCourseSection**.
    c. In the Map from Records section, select **Take the > Business Object** and **of Task > Get Temp cstCourseSection**.
11. On the Map To Records section heading, click **Edit Map**.



12. Click **Clear All**.

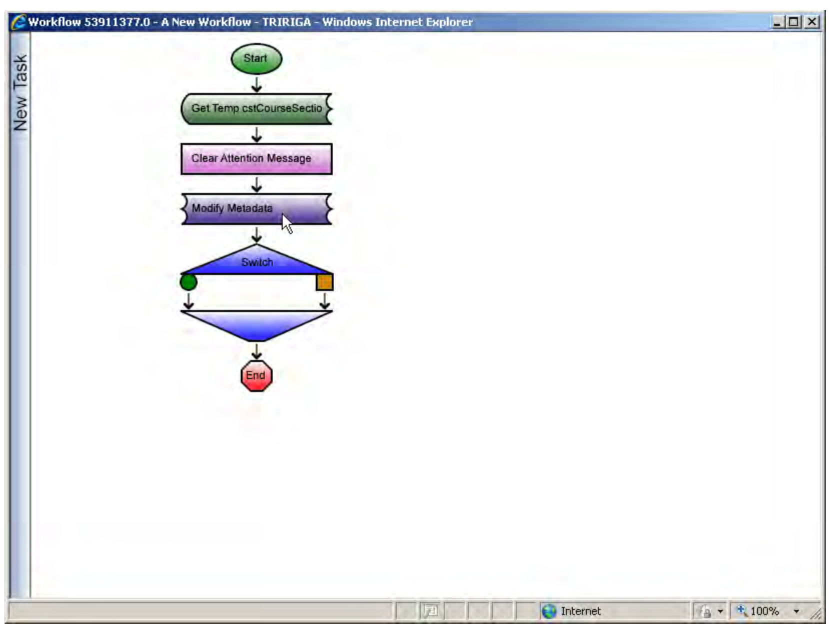


13. Select the **triUserMessageFlagTX** and **triUserMessageTX** check boxes, but do not enter any text in the text boxes.

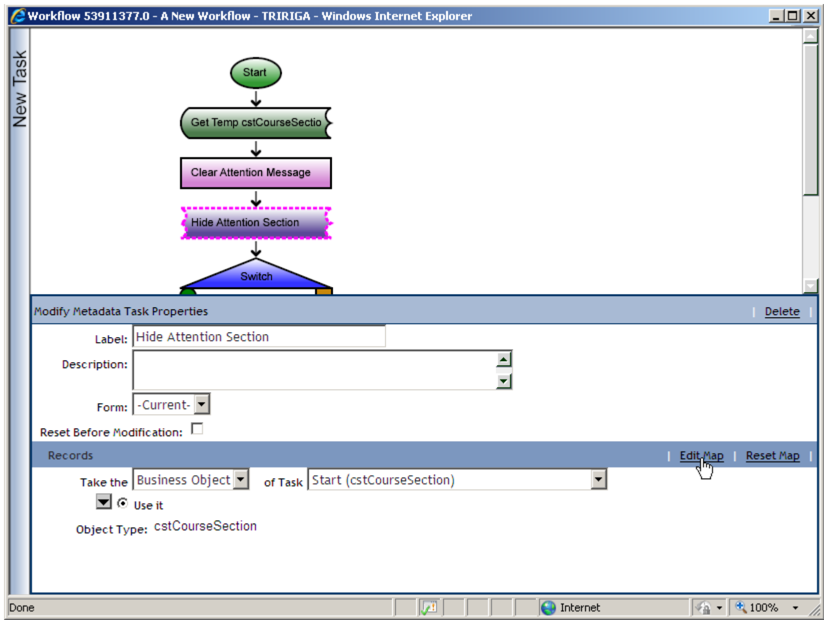


14. Click **OK** at the top of the list.

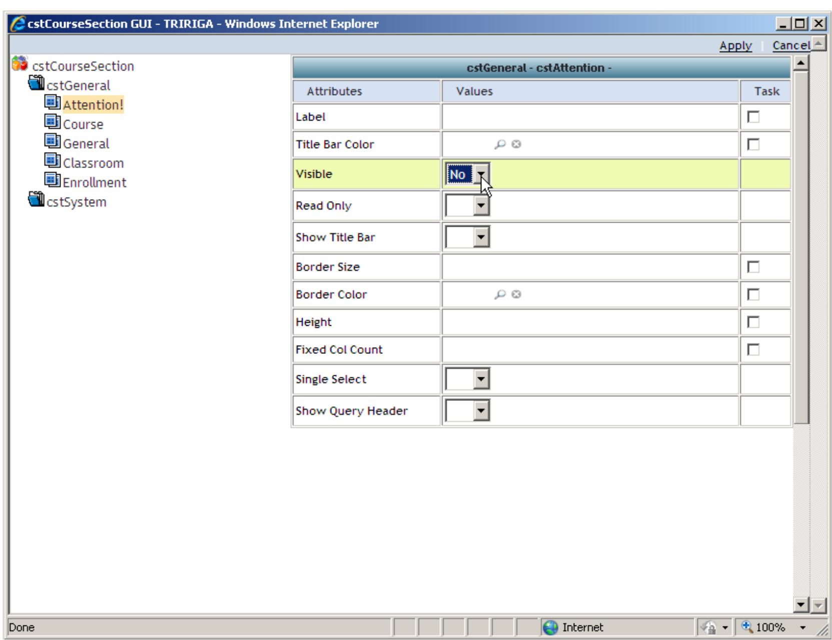
15. Add the **Modify Metadata** task before the switch.



16. Set Modify Metadata Task Properties as follows:
    a. In the **Label** field, enter **cst Hide Attention Section**.
    b. In the Records section, select **Take the > Business Object** and **of Task > Start (cstCourseSection)**.
17. On the Records section heading, click **Edit Map**.

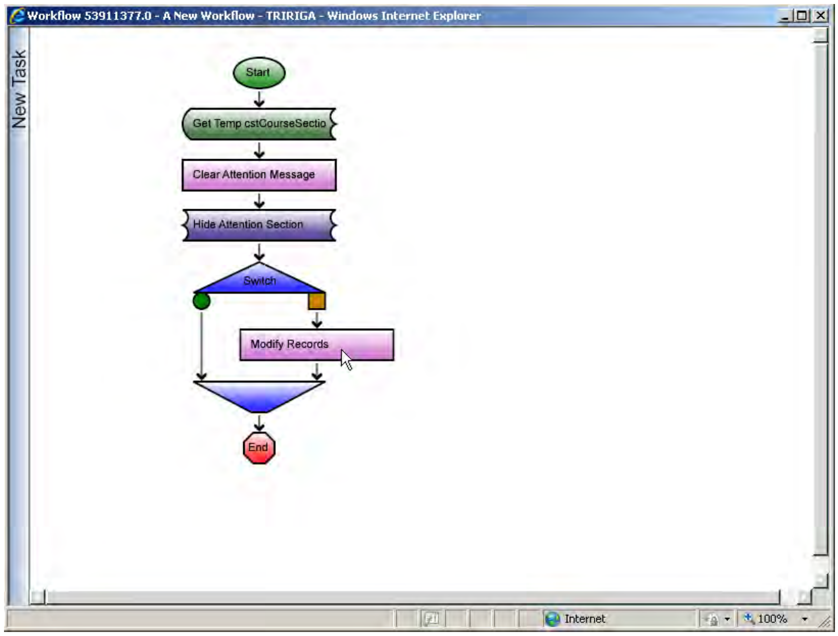


18. Select the **Attention** section.
19. From the **Visible** list, select **No**.



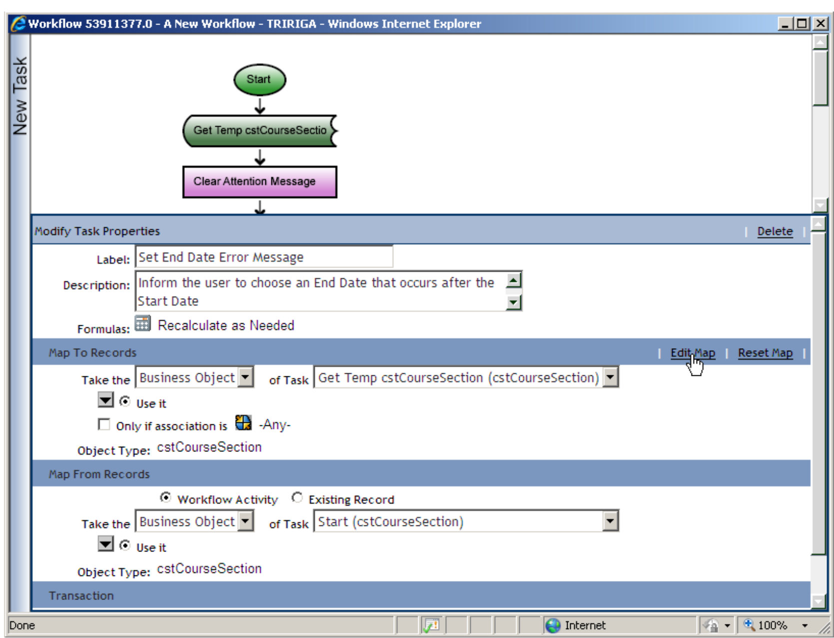
20. Click **Apply**. Close the window.

21. In the switch, insert a Modify Records task.



22. Set Modify Task Properties as follows:
    a. In the **Label** field, enter **cst Set End Date message**.
    b. In the Map to Records section, select **Take the > Business Object** and **of Task > Get Temp cstCourseSection**.
    c. In the Map from Records section, select **Take the > Business Object** and **of Task > Get Temp cstCourseSection**.

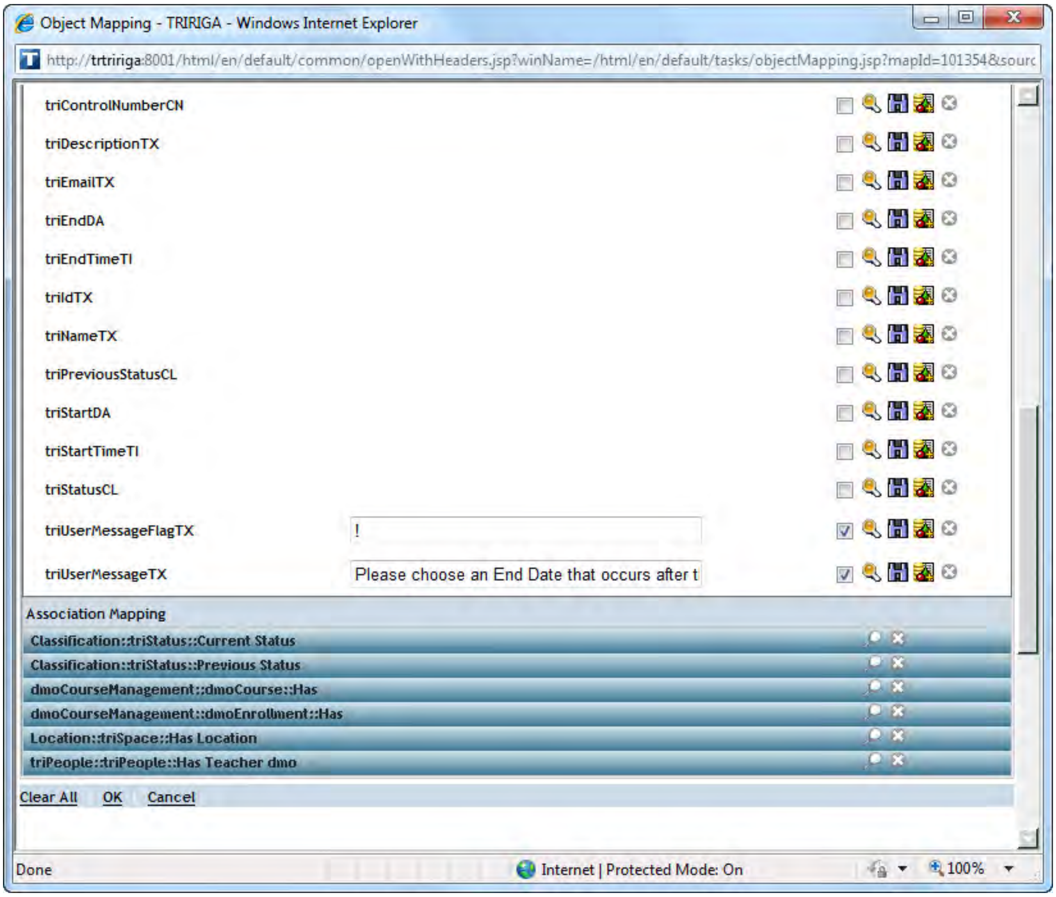
23. On the Map to Records section heading, click **Edit Map**.



24. Click **Clear All**.

25. Select the **triUserMessageFlagTX** check box. Enter an exclamation mark (!) in the text window.

26. Select the **triUserMessageTX** check box. Enter a message (of your choice) in the text window.



27. Click **OK** at the top of the window.

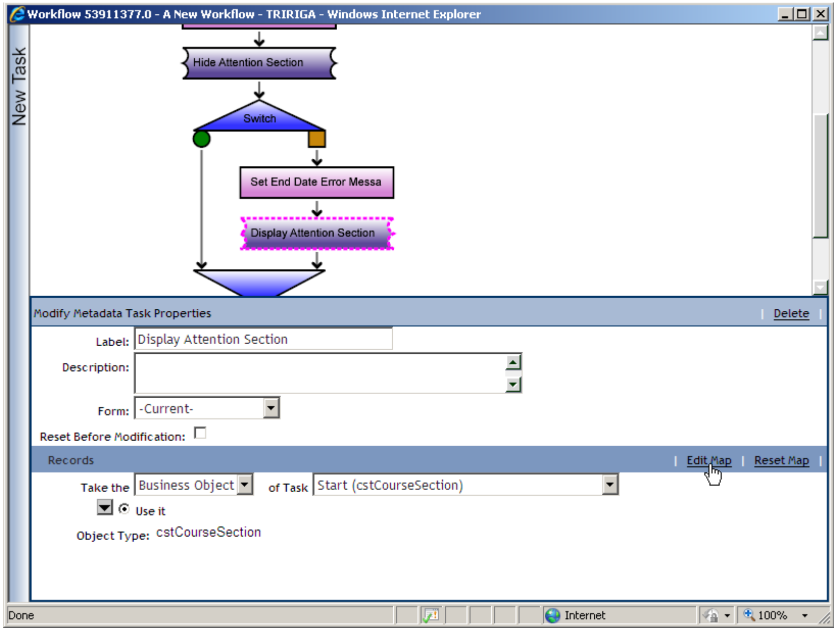
28. In the switch, insert a Modify Metadata task.

29. Set Modify Metadata Task properties as follows:

    a. In the **Label** field, enter **Display Attention Section**.

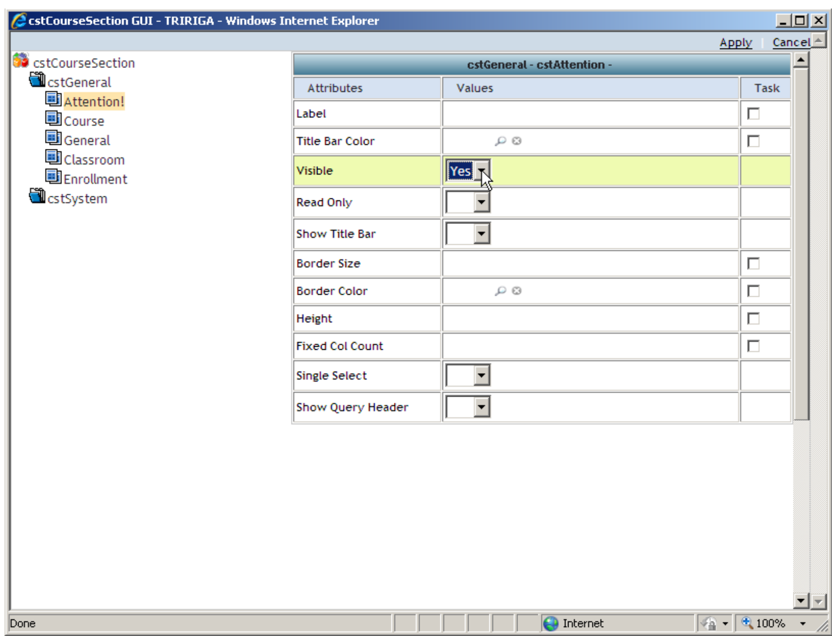
    b. In the Records section, select **Take the > Business Object** and **of Task > Start (cstCourseSection)**.

30. On the Records section heading, click **Edit Map**.



31. Select the **Attention** section.

32. From the **Visible** list, select **Yes**.



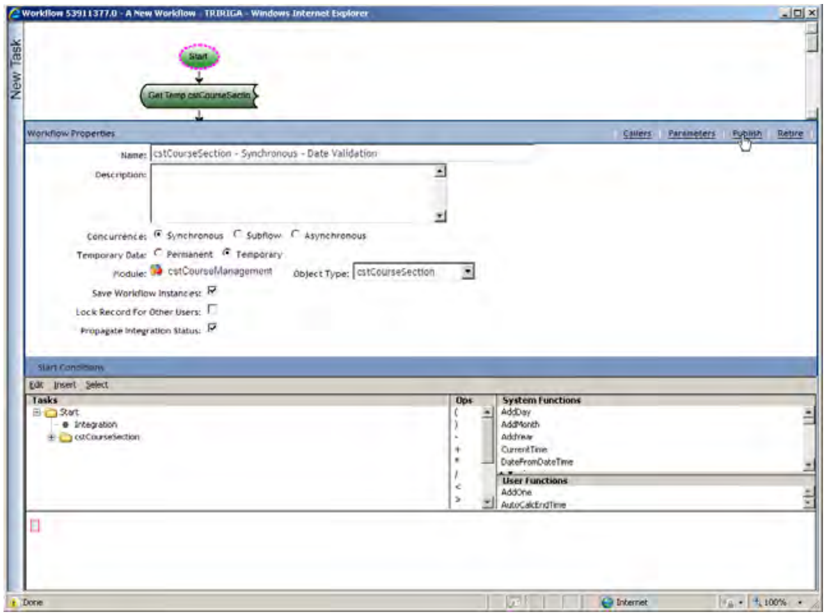
33. Click **Apply**. Close the window.

34. Open the **Start** task.

35. In Workflow Properties, click **Publish**.

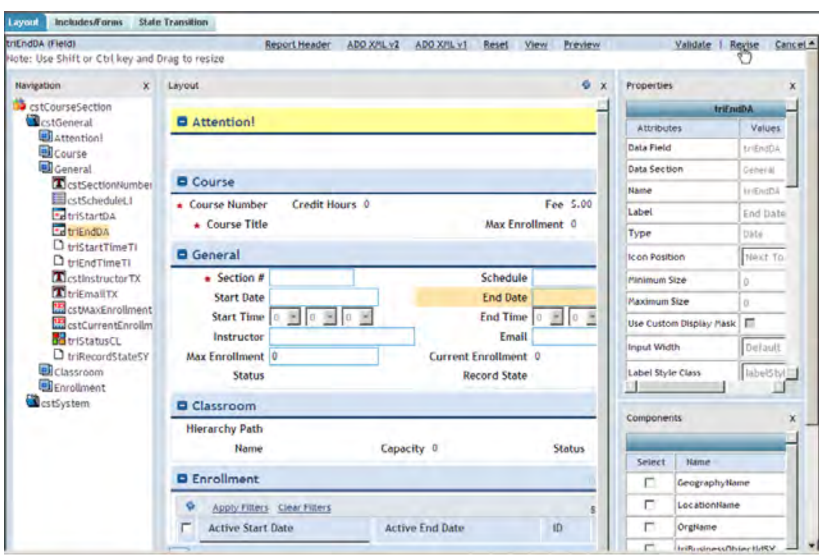
    The properties portion of the window closes, which is your confirmation that the workflow is published.

36. Close the window.



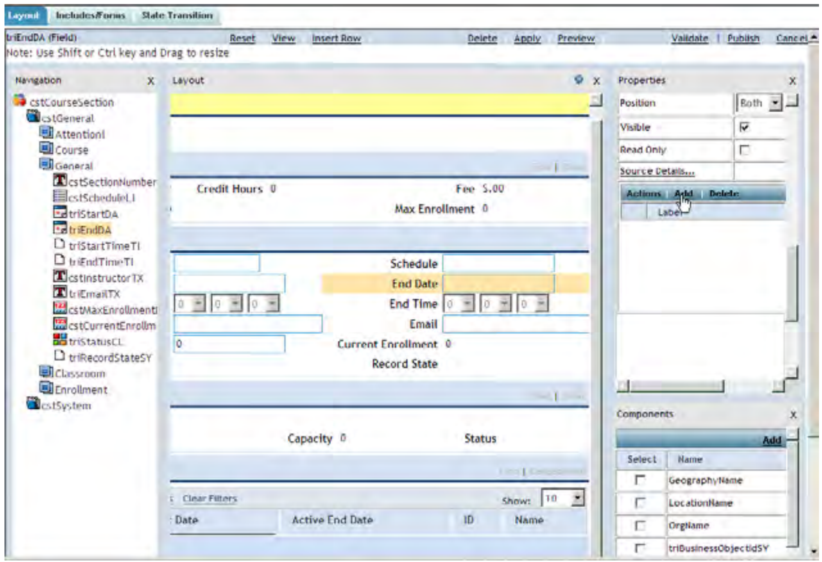
Triggering the workflow

1. Navigate to the **Form Builder** tool.
2. Select the **cstCourseManagement** module and open the **cstCourseSection** form.
3. In the Navigation pane, expand the **cstGeneral** tab and select the **General** section.

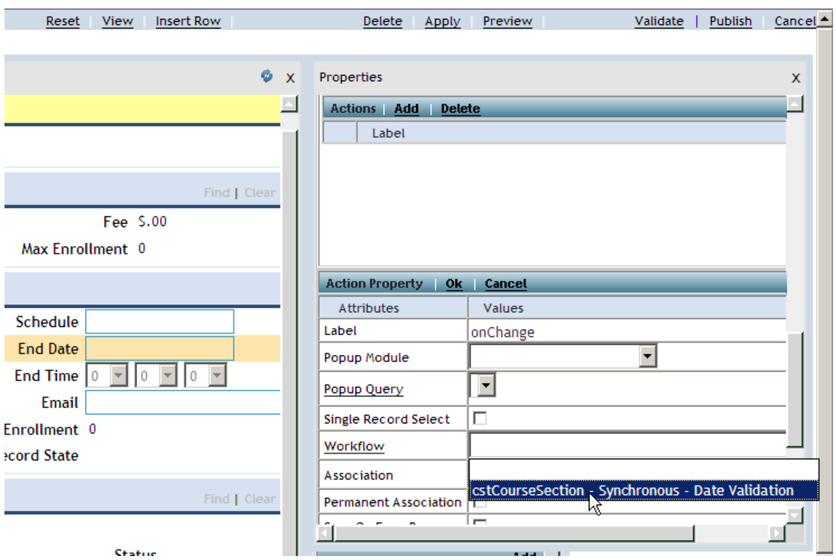


4. Click the **triEndDA** field, and scroll to the Actions section of the Properties panel.

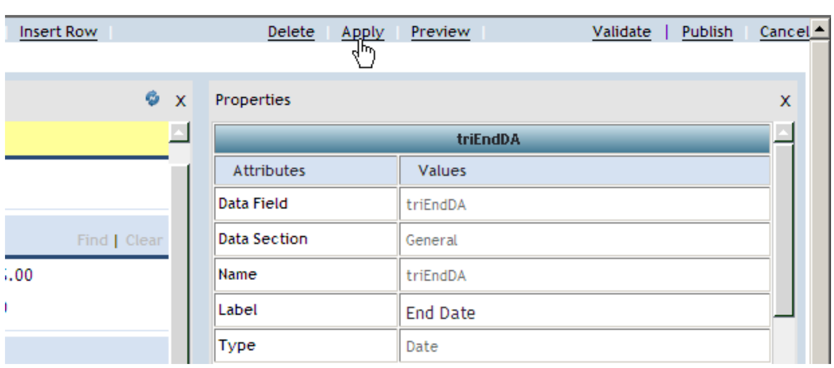
5. Click **Add**.



6. In the Property panel, in the Action Property section, from the **Workflow** list, select **cstCourseSection – Synchronous - Date Validation**, and click **OK**.



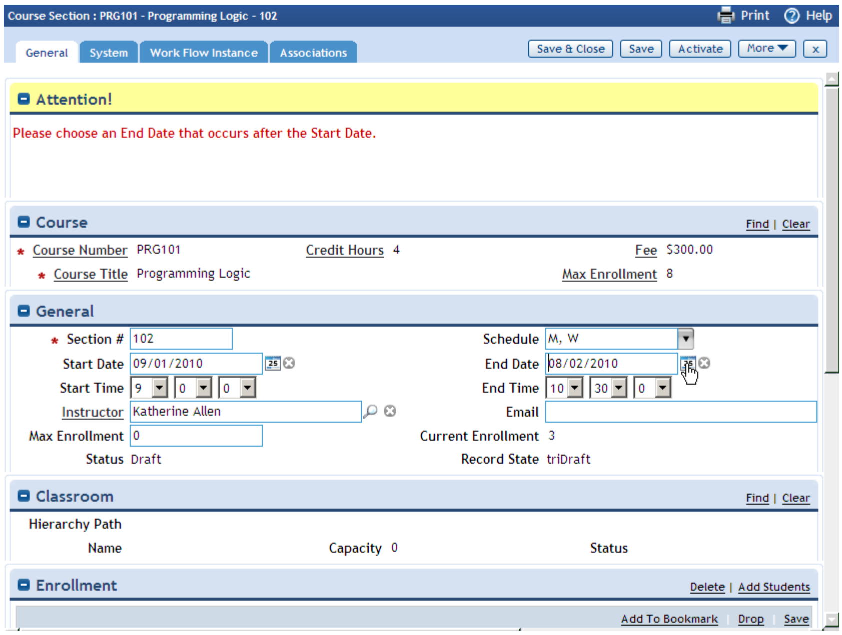
7. Click **Apply**.



8. Click **Publish**. Close the window.

9. Test the workflow.

   The following image shows an example of a message from bad dates.

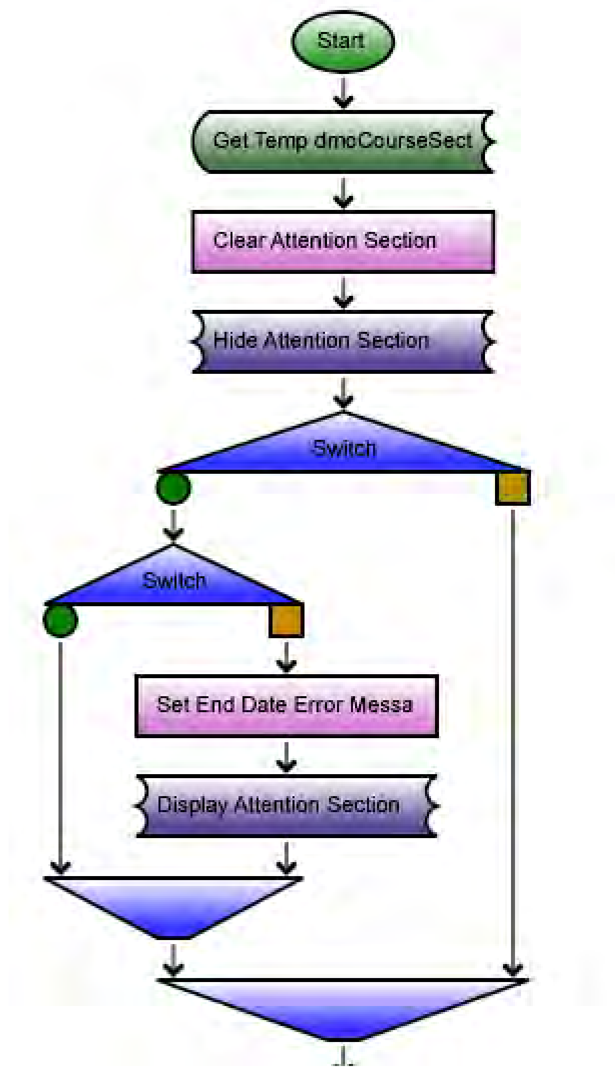


Exercise 4. Date validation for Start date

In the previous exercise, you attached the Date Validation workflow to the End date. In this exercise, you attach it to the Start date.

As you test this change, notice that the message is generated if either the Start or End date is blank. Change the workflow so that no message is generated if either date is blank. To change the workflow, you add an extra switch to the workflow.

An image of the modified workflow is shown in the following example.



Follow these steps to modify the workflow:

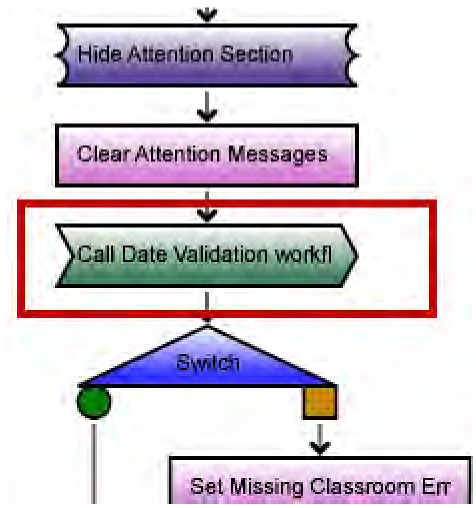
1. Add a switch to the workflow, just below the existing switch.
2. Click and drag the original switch to attach it to the pointer.
3. Place the original switch inside the newly added switch, in the path on the left.
4. Open the newly added switch.
5. Set the conditions of the switch to test the Start Date and End Date fields. The date validation (done in the inner switch) is performed only if both dates have a value (that is, are not null). An example of this validation is shown in the following image.

Get Temp dmoCourseSection Record :: dmoCourseSection :: **General** :: **triStartDA** != "" &&
Get Temp dmoCourseSection Record :: dmoCourseSection :: **General** :: **triEndDA** != ""

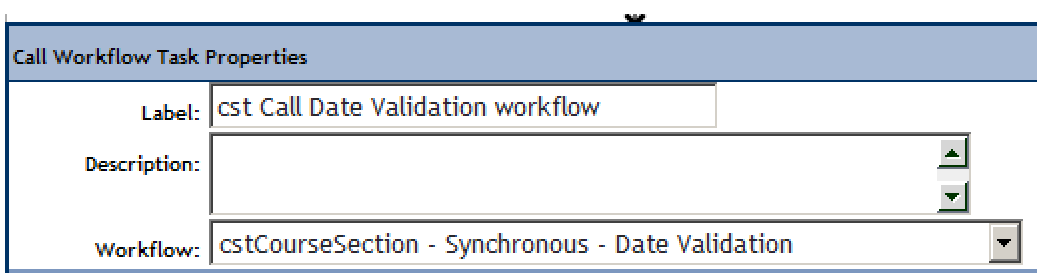
Exercise 5. Combining validations

In this exercise, you call the Date Validation workflow from the Activation Validation workflow. This process prevents a record from being activated if it fails either the date validation or is missing the instructor or classroom.

This modification requires only the addition of a Call Workflow task. The following image shows the change to the Activation Validation workflow to call the Date Validation workflow.



The following image shows the properties of the Call Workflow task.


Call Workflow Task Properties

Label: cst Call Date Validation workflow

Description:

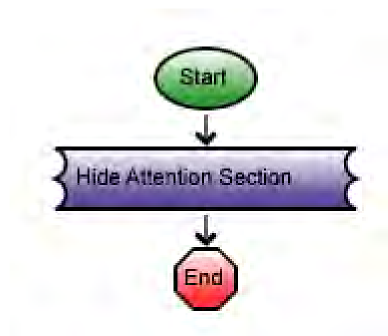
Workflow: cstCourseSection - Synchronous - Date Validation

Important: Be careful to not call the Activation Validation workflow from itself.

Exercise 6. Workflow for hiding the Attention section

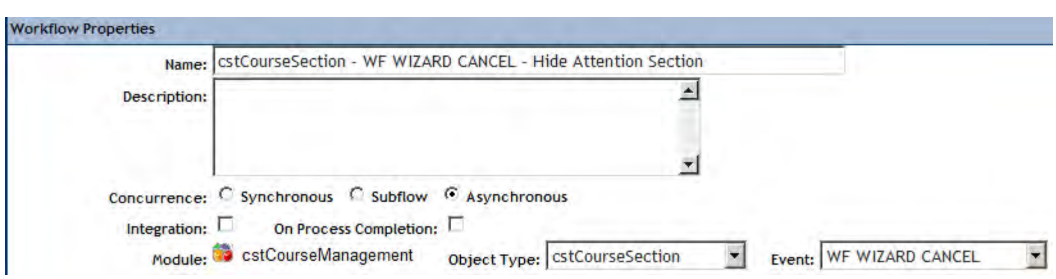
In this exercise, you create an asynchronous workflow to hide the Attention section if the user uses the cancel action to exit a form. Another requirement is that if the record has a permanently saved message, then the workflow is skipped.

An example of the completed workflow is shown in the following image.

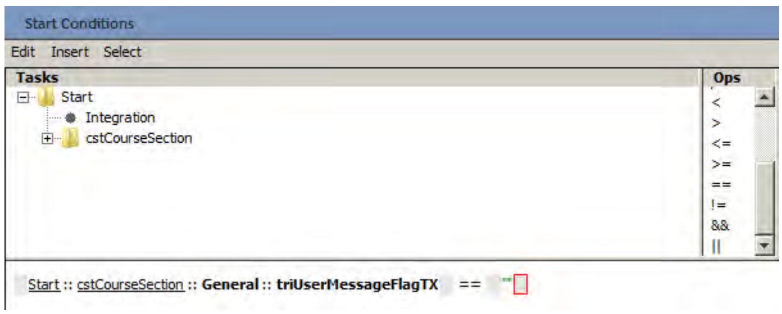


To create the workflow for hiding the Attention section, perform the following steps:

1. On the **Tools** tab, click **Builder Tools > Workflow Builder** to open it.
2. Select **cstCourseManagement** from the module list.
3. Click **New** to create a workflow.
4. Open the **Start** task and set the following properties:
   a. In the Name field, enter **cstCourseSection - WF WIZARD CANCEL - Hide Attention Section**.
   b. Select **Asynchronous** for the **Concurrence** value.
   c. In the **Object Type** field, select **cstCourseSection**.
   d. Select **WF WIZARD CANCEL** for the **Event**.



5. Set the **Start Conditions** as follows:
   a. Select **triUserMessageFlagTX** from the General section of cstCourseSection.
   b. Select the **==** (exactly equal) operator from the Ops column.
   c. Click **Insert String**. Do not enter any value into the string input field.



6. Add a Modify Metadata task.
7. Set Modify Metadata task properties as follows:
   a. In the **Label** field, enter **Hide Attention Section**.
   b. In the Records section, select **Take the > Business Object** and **of Task > Start (cstCourseSection)**.
8. On the Records section heading, click **Edit Map**.
9. Select the **Attention** section.
10. From the **Visible** list, select **No**.
11. Click **Apply**. Close the window.
12. Open the **Start** task.
13. In **Workflow Properties**, click **Publish**.
14. Close the workflow window.

Testing the workflow

Test the workflow by following these steps:

1. Open a Course Section record.
2. Cause a validation message to be generated by using bad dates or by omitting the instructor or classroom and triggering the Activate validation workflow.
3. Click the **X** button to exit the record.
4. Reopen the same record.

Note: This Asynchronous workflow might not complete as quickly as you expect. If you open the record and the Attention section is still visible, the workflow is not complete. Use the F5 button to refresh the form and the Attention section is no longer visible.

SOLUTION 16 Advanced queries exercise solutions

You can replace default system queries that are used in the platform with custom queries that you create. You can also configure queries so that values can be edited directly in the query.

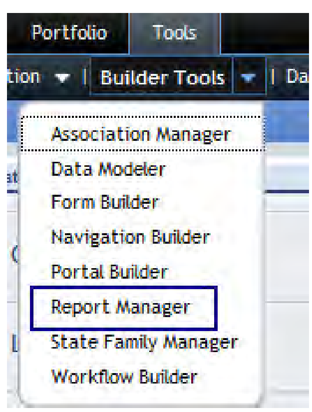
These exercises have you replace a default Find query with a custom query. You also create several editable reports and connect them together in a related reports chain.

Exercise 1. Creating a Course Find query

In this exercise, you create a Course Find query and attach it to the Course section Find action in the Course Section form.

To create the Course Find query, perform the following steps:

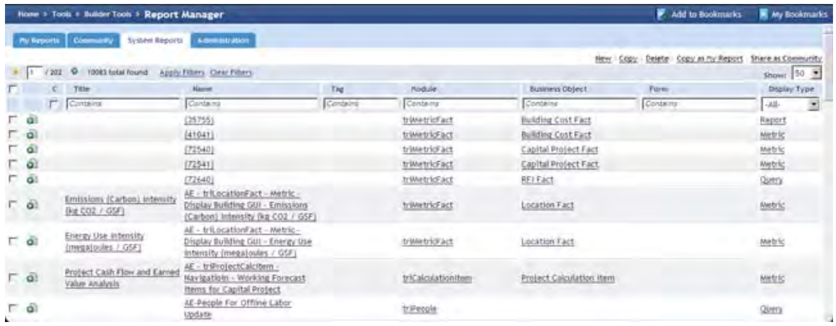
1. On the **Tools** tab, select **Builder Tools > Report Manager**.



The Report Manager window opens.

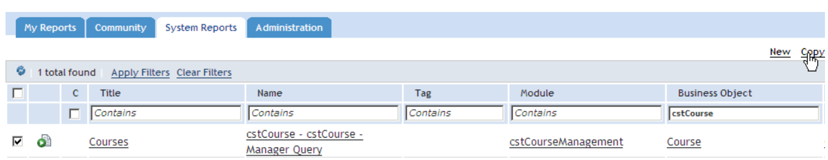
2. Click the **System Reports** tab.

The page lists all system reports.



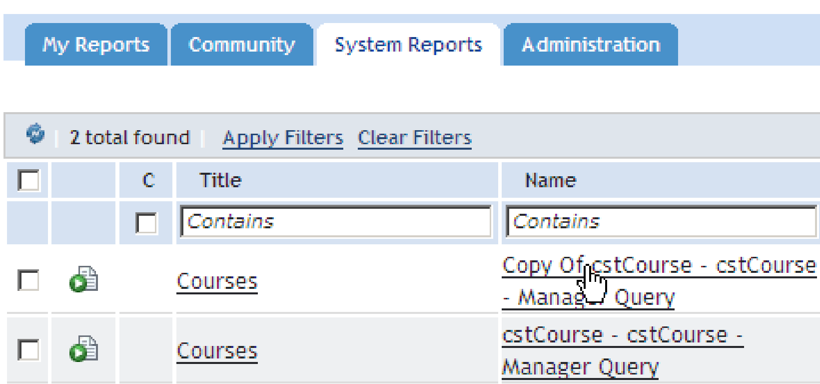
3. Display only the reports if the business object name contains **cstCourse** by performing the following steps:
   a. In the **Business Object** column field, enter **cstCourse**.
   b. Click **Apply Filters**.

4. Select **cstCourse – cstCourse – Manager Query**, and click **Copy**.



The page lists the query results.

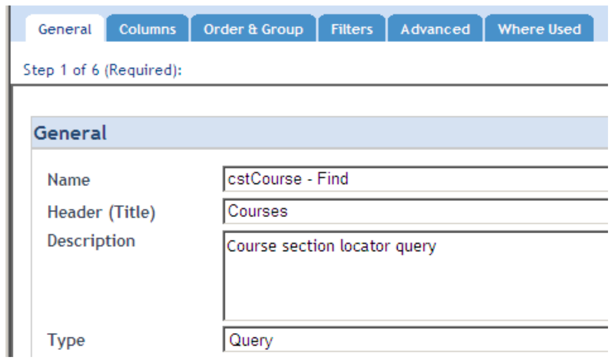
5. Click **Copy of cstCourse – cstCourse – Manager Query**.



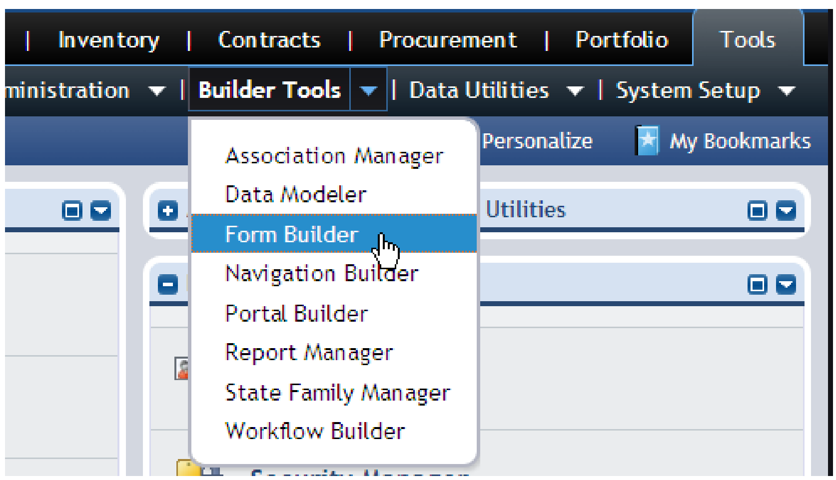
The Report window opens.

6. Set the **General** properties as follows:
   - Name: **cstCourse - Find**
   - Header (Title): **Courses**

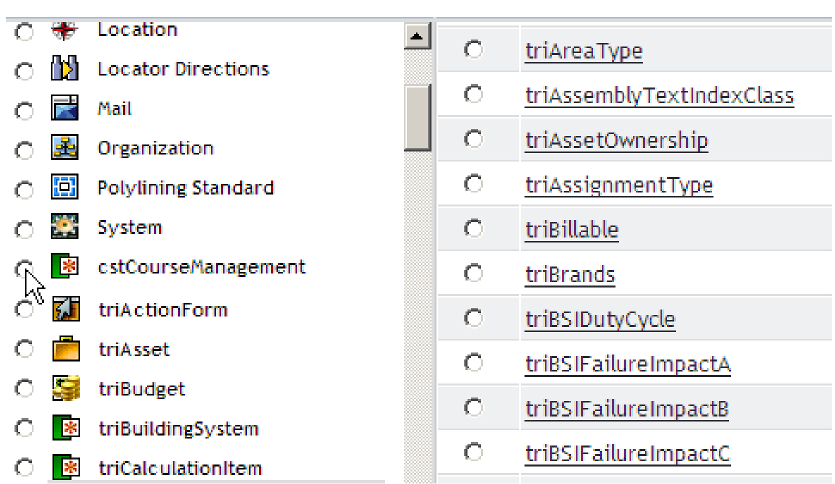
- Description: **Course locator query**
- Business Object: **cstCourse**
- Form: **cstCourse**



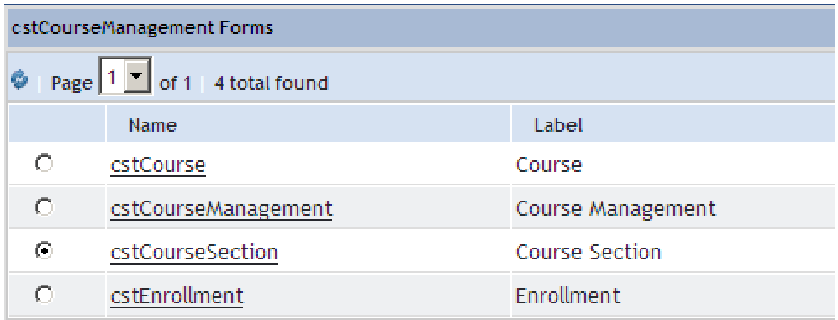
7. In the upper-right corner, click **Save & Close**.
8. On the System Reports page, click **Clear Filters**.
9. On the **Tools** tab, select **Builder Tools > Form Builder**.



10. In the left-side Module pane, select **cstCourseManagement** to display the list of current course management forms.

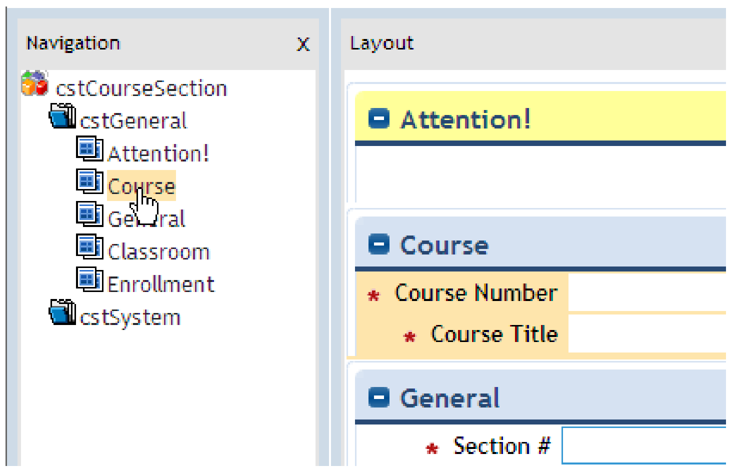


11. Click **cstCourseSection**.

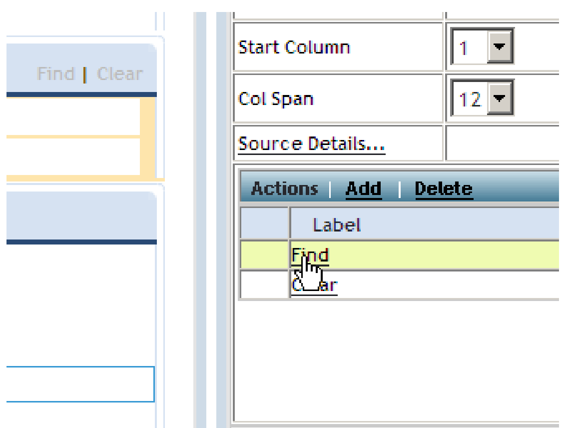


12. Because the form is already published, click **Revise**.

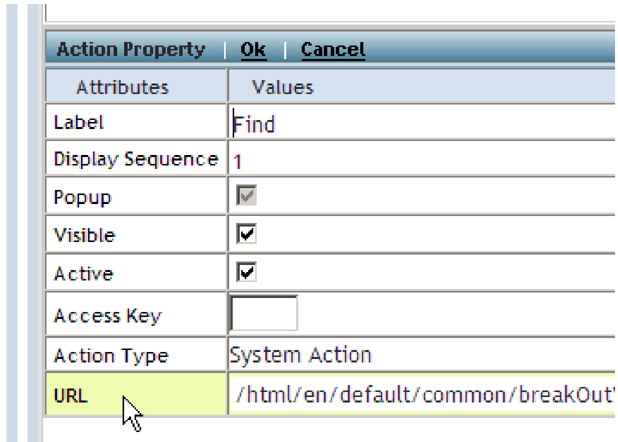
13. In the Form Builder, select **Course** to highlight the Course Smart section.



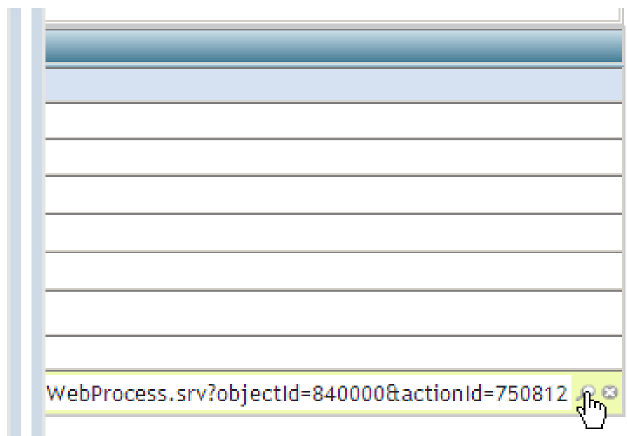
14. In the Properties panel, click **Find**.



15. In the **Action Property** column, find the **URL** attribute.

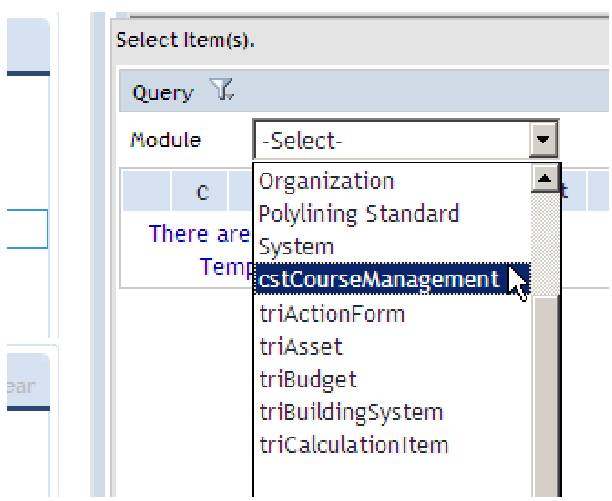


16. Click the magnifying glass icon (the picker).



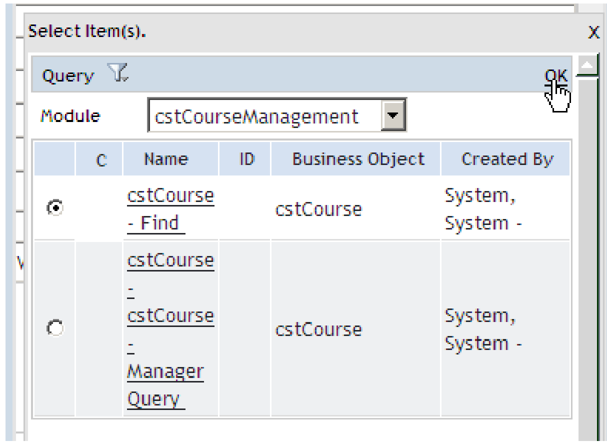
The Select Items panel opens.

17. From the **Module** list, select **cstCourseManagement**.

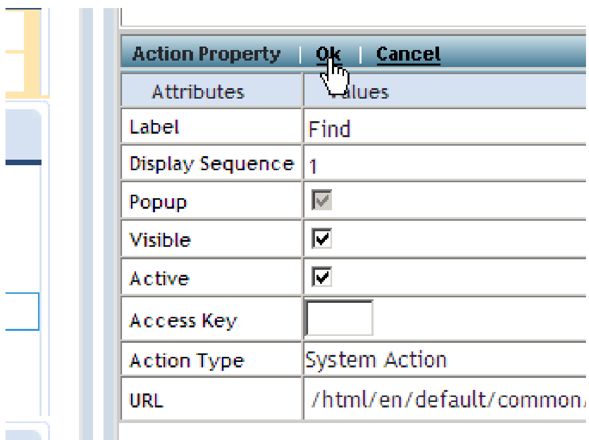


18. From the list of queries, select **cstCourse – Find**.

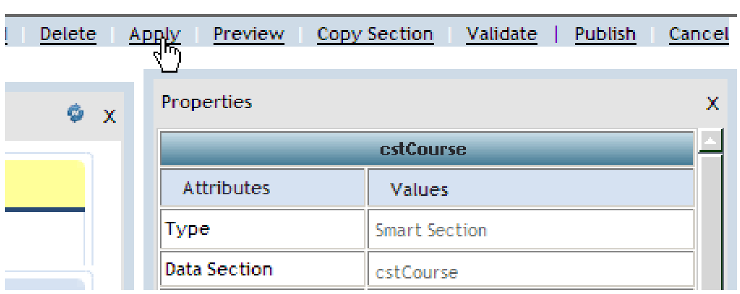
19. Click **OK**.



20. In the Action Property pane, click **OK**.



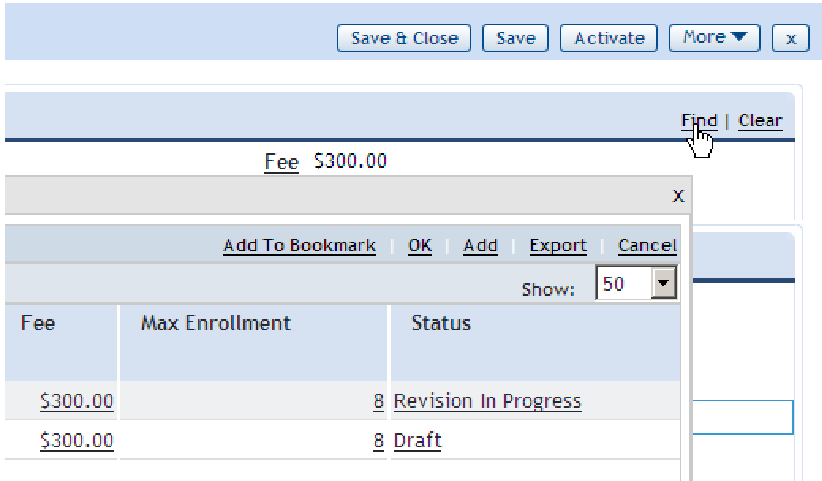
21. Click **Apply** to complete the process.



22. Publish the form, and click **Cancel** to close the window.

23. Open any existing Course Section record, or create a new one.

24. Click the **Find** action in the Course section heading to test the new course Find query.

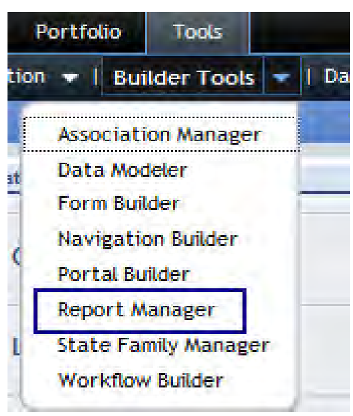


Exercise 2. Creating a Course editable query

In this exercise, you create an Editable query for courses in Draft status.

To create a course editable query, perform the following steps:

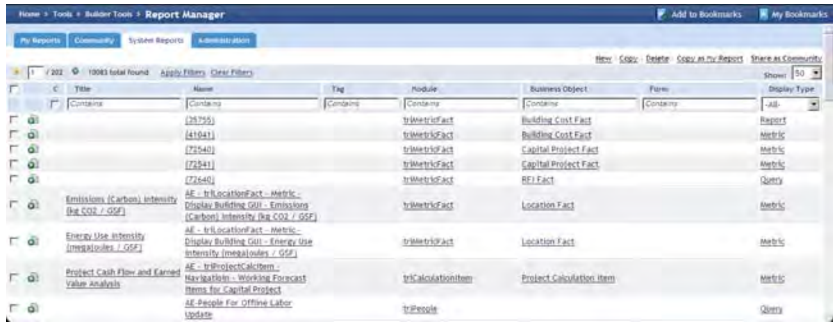
1. On the **Tools** tab, select **Builder Tools > Report Manager**.



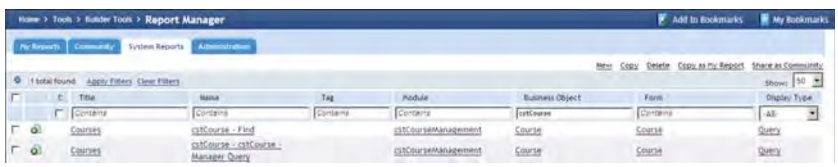
   The Report Manager window opens.

2. Click the **System Reports** tab.

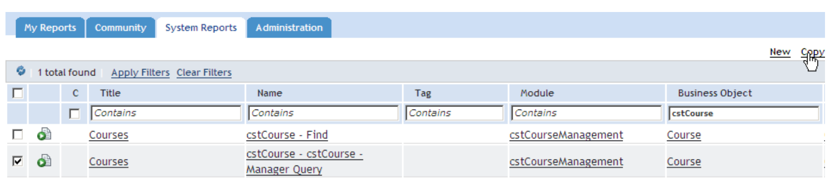
The page lists all system reports.



3. Display only the reports if the business object name contains **cstCourse** by performing the following steps:
   a. In the **Business Object** field, enter **cstCourse**.
   b. Click **Apply Filters**.

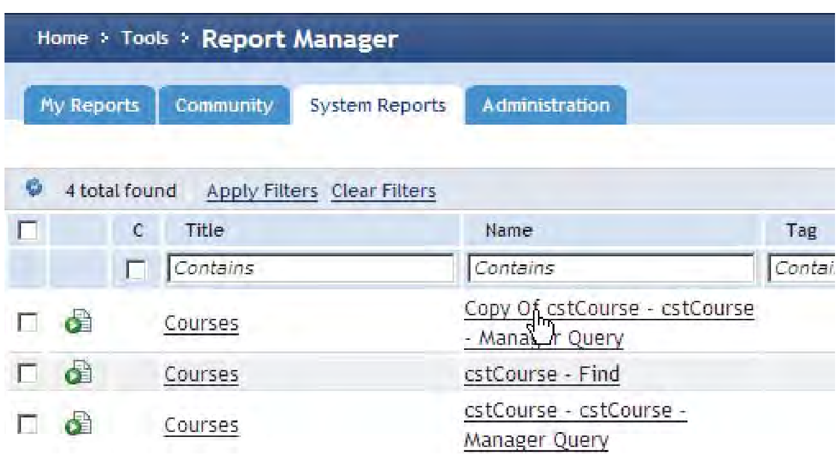


4. Select **cstCourse – cstCourse – Manager Query**, and click **Copy**.



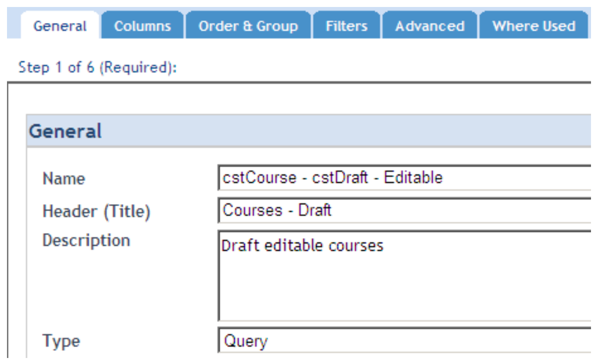
The page lists the query results.

5. Click **Copy of cstCourse – cstCourse – Manager Query**.



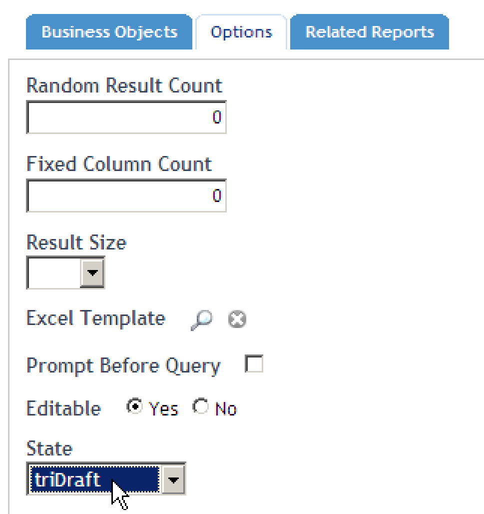
The Report window opens.

6. Set the **General** properties as follows:
   - Name: **cstCourse – cstDraft - Editable**
   - Header (Title): **Courses – Draft**
   - Description: **Draft editable courses**
   - Type: **Query**
   - Business Object: **cstCourse**
   - Forms: **cstCourse**



   c. On the **Options** subtab, for **Editable**, click **Yes**.
   d. From the **State** list, select **triDraft**.

7. In the upper-right corner, click **Save**.

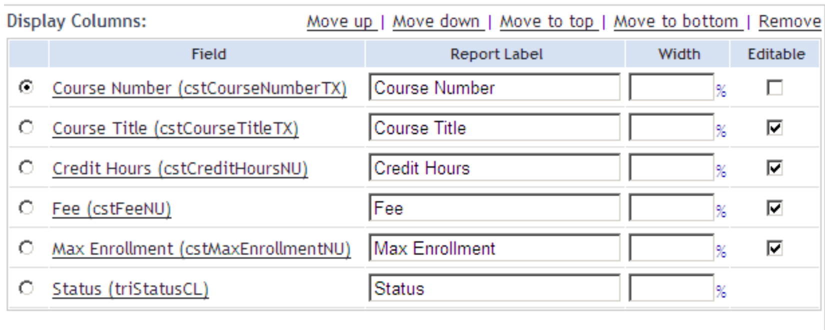


8. Click the **Columns** tab.

   The same six column options that you selected earlier are listed here. Five of the six column options provide **Editable** check boxes.

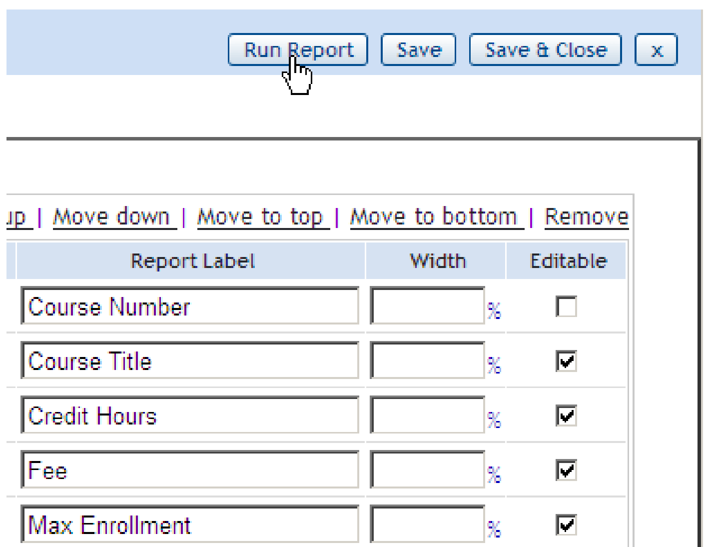
9. Select the **Editable** check box for the following four Report Label column names:
   - **Course Title**
   - **Credit Hours**

- **Fee**
- **Max Enrollment**



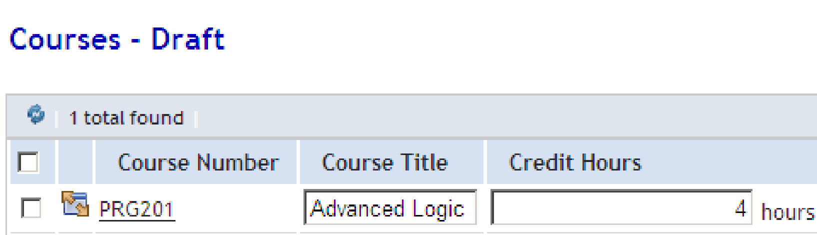
e. In the upper-right corner, click **Save**.

10. Click the **Filters** tab.
11. Remove the System filter.
12. Click **Run Report**.

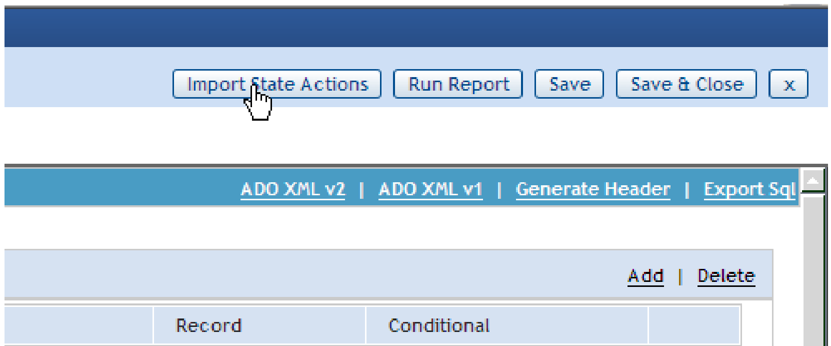


If data are available, the report shows the new Header (Title) fields and the editable four of six displayed Report Label names.

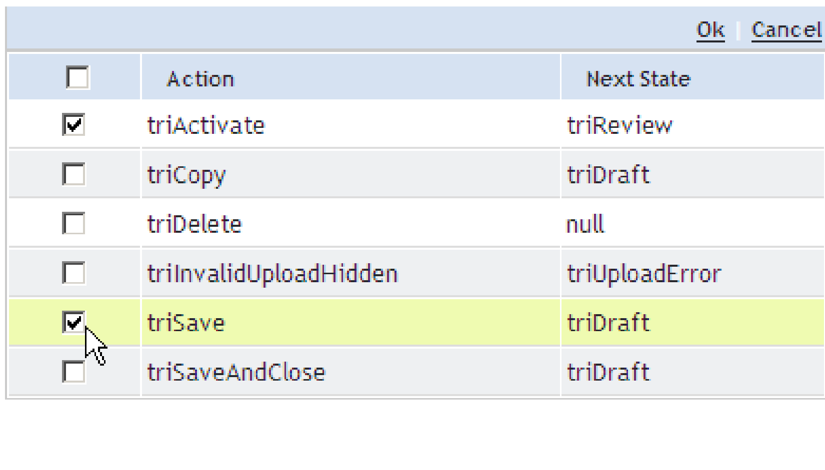
13. Close the Report window.
14. Click the **Advanced** tab.



15. In the upper-right corner, click **Import State Actions**.



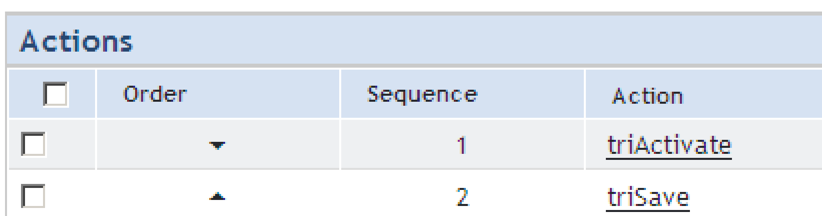
16. In the window, select the **triActivate** and **triSave** check boxes, and click **OK**.



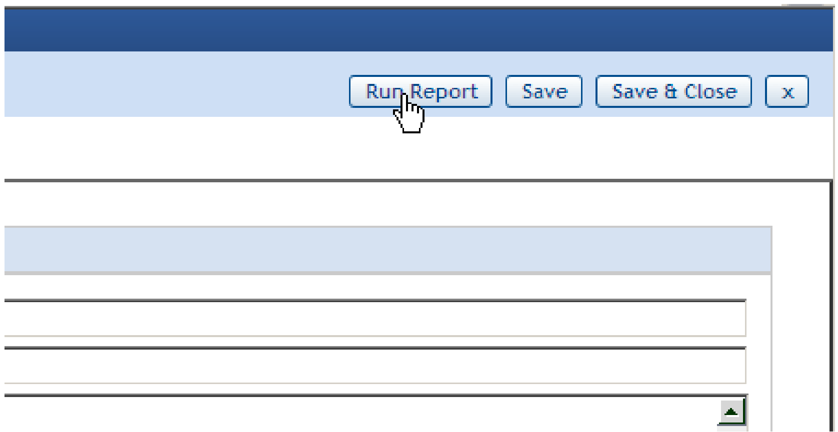
On the **Advanced** tab, the two selected items are in the Actions section.

17. In the Order column, click the Up arrow for **triSave** to move it up the list.

18. In the upper-right corner, click **Save**.

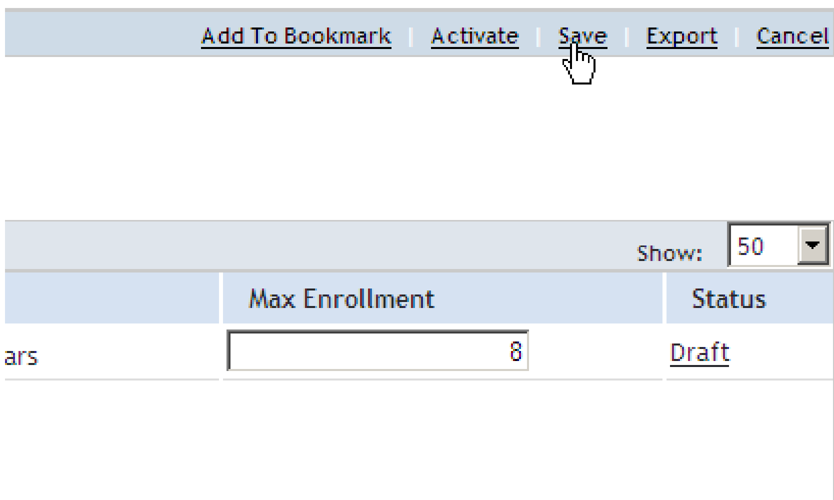


19. Click **Run Report**.



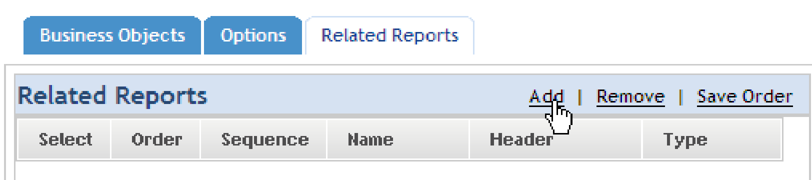
The report shows the two new actions: **Activate** and **Save**.

f. Close this window.



20. Click the **General** tab.

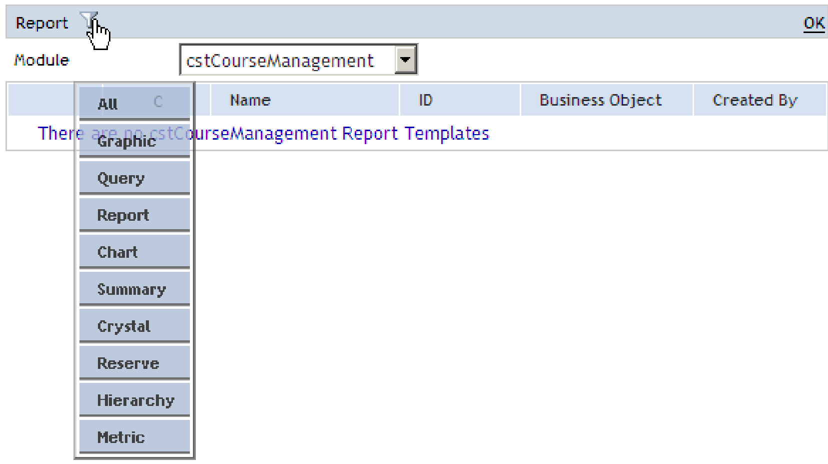
21. Click the **Related Reports** subtab, and click **Add**.



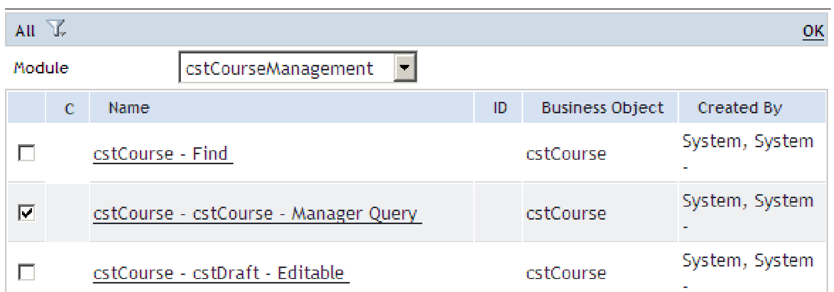
22. In the window that opens, from the **Module** list, select **cstCourseManagement**.

23. Click the **Report** type filter icon.

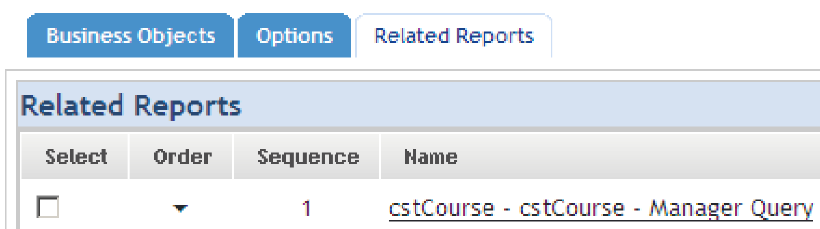
24. To see the available queries, click **Report > Query**.



25. Select the **cstCourse – cstCourse - Manager Query** check box, and click **OK**.



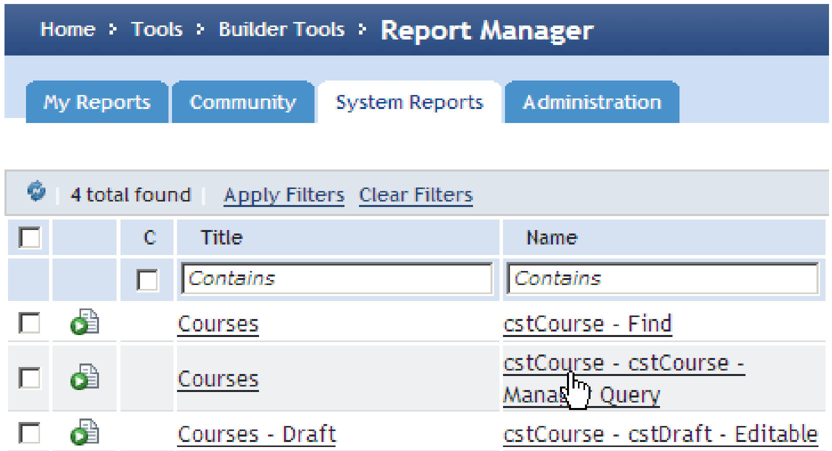
The **Related Reports** subtab lists the **cstCourse – cstCourse - Manager Query**.



26. In the upper-right corner, click **Save & Close**.

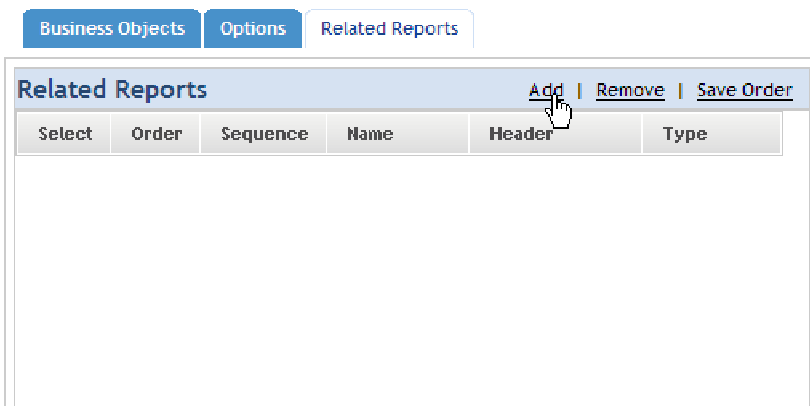
27. In the Report Manager, click the **System Reports** tab.

28. Click **cstCourse – cstCourse**.



29. On the **General** tab, click the **Related Reports** subtab.

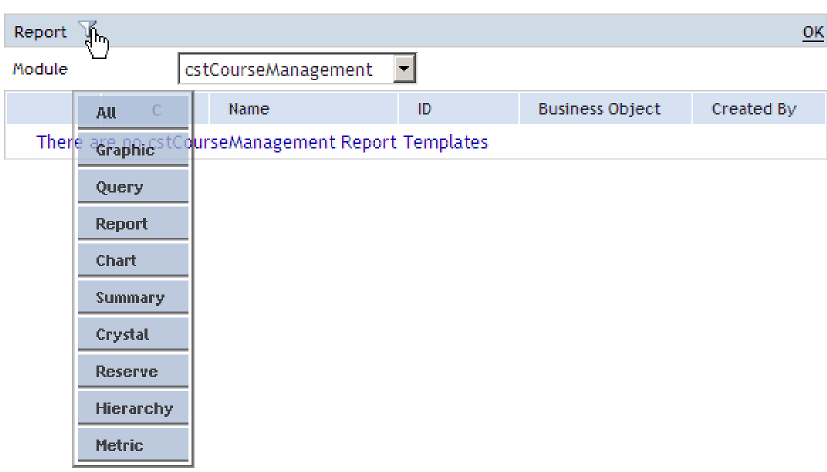
30. Click **Add**.



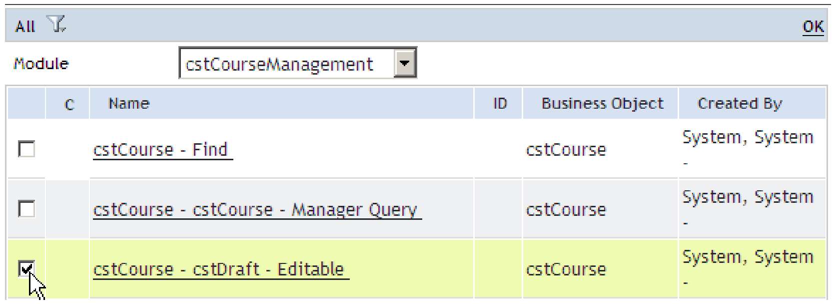
31. In the window that opens, from the **Module** list, select **cstCourseManagement**.

32. Click the **Report** type filter icon.

33. To verify that all items are displayed, click **Report > All**.



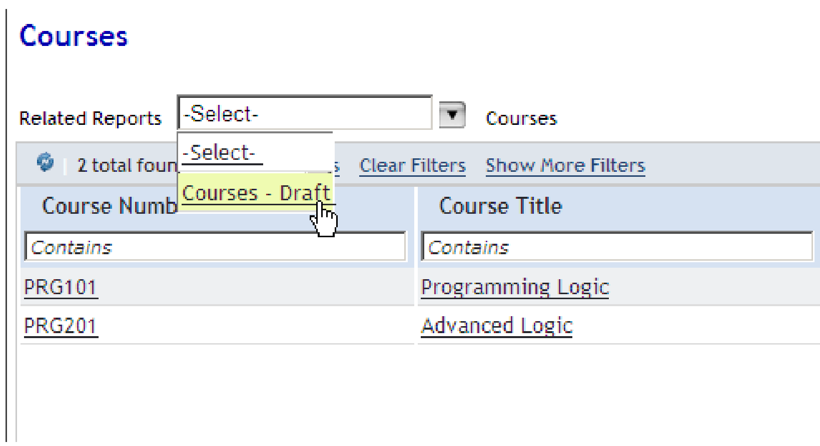
34. Select the **cstCourse – cstDraft – Editable** check box, and click **OK**.



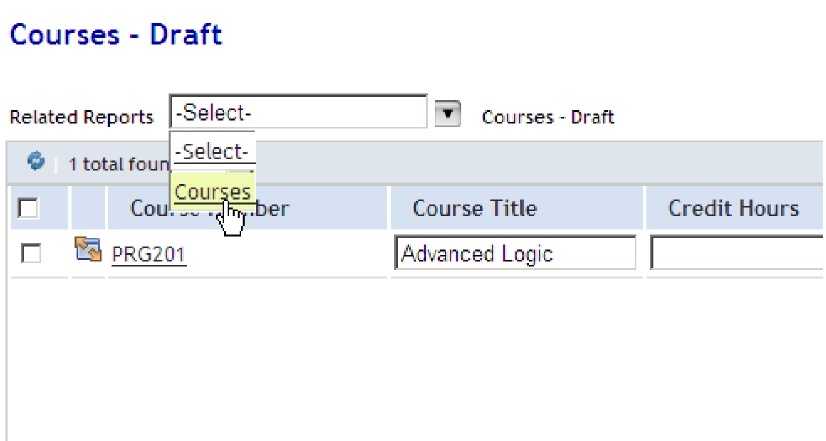
The **Related Reports** subtab lists **cstCourse – cstDraft – Editable now**.

35. In the upper-right corner, click **Save & Close**.

When you test the courses query, you can see the following related report: **Courses – Draft**.



Similarly, when you test the courses draft query, you can see the following related report: **Courses**.



Exercise 3. Creating an Enrollment Editable query

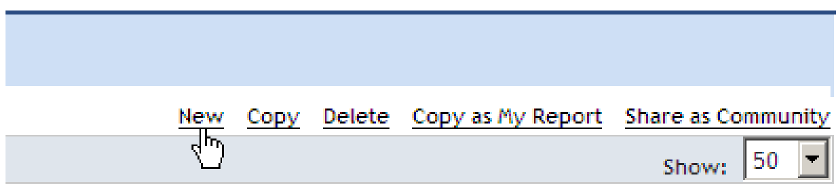
In this exercise, you create an Editable query that displays Enrollment records in the cstEnrolled state. Then, you add the query to the Course Section form as a Query section. The query uses an association filter to select the enrollment records that are associated to the Course Section record that is displayed in the Course Section form.

To create an enrollment editable query, perform the following steps:

1. On the **Tools** tab, select **Builder Tools > Report Manager**.

   The Report Manager window opens.

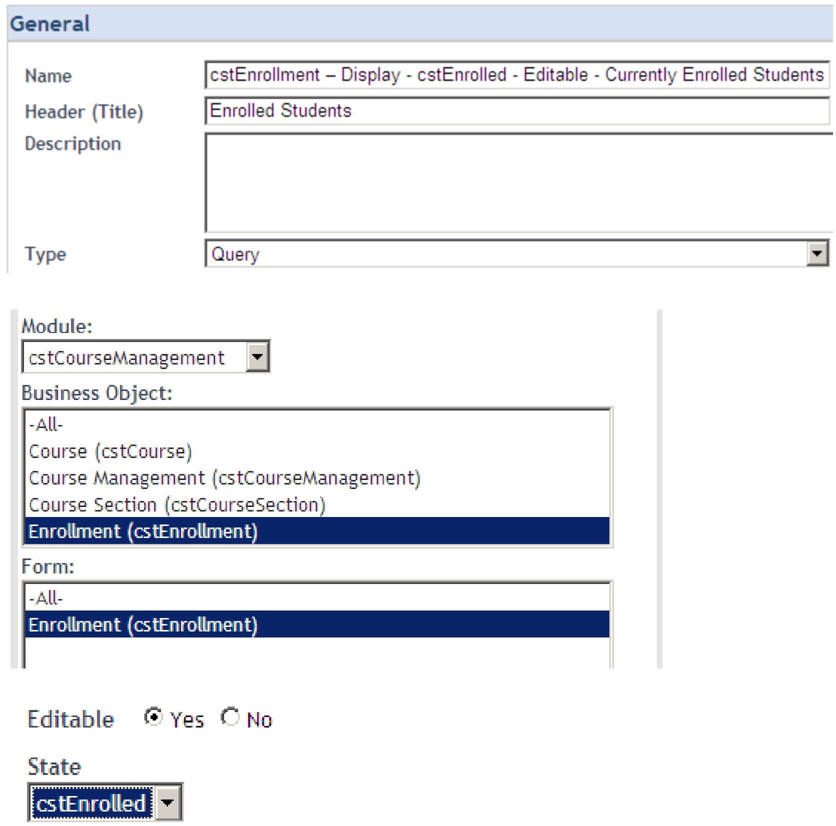
2. Click **New** to create a report.



   The Report window opens.

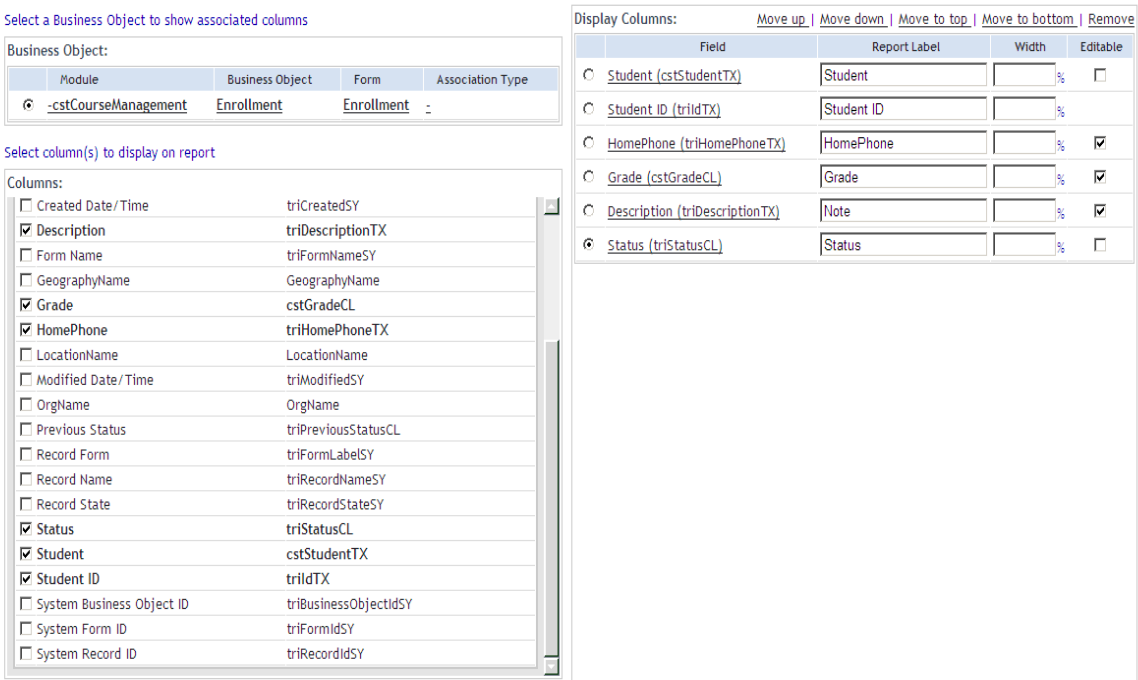
3. Set the **General** properties as follows:
   - Name: **cstEnrollment – Display – cstEnrolled – Editable – Currently Enrolled Students**
   - Header (Title): **Enrolled Students**
   - Type: **Query**
   - Module: **cstCourseManagement**
   - Business Object: **Enrollment (cstEnrollment)**
   - Forms: **Enrollment (cstEnrollment)**

- Editable: **Yes**
- State: **cstEnrolled**

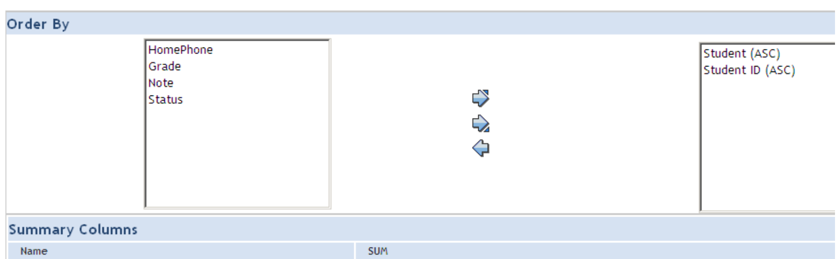


4. Add the following fields to the query in this order:
   - **Student**
   - **Student ID**
   - **Home Phone** (make editable)
   - **Grade** (make editable)

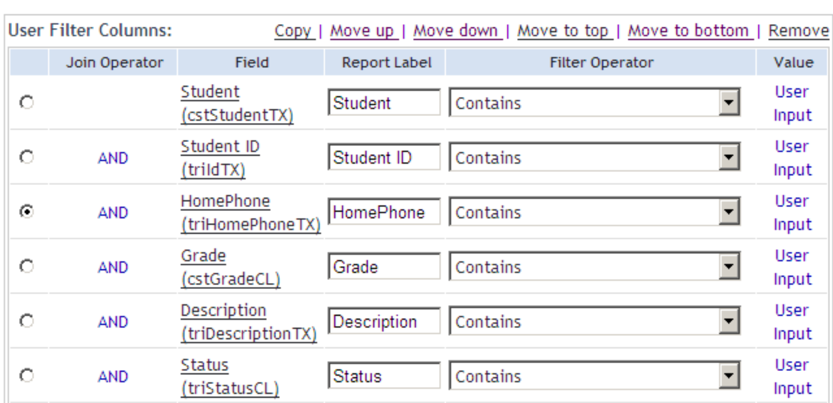
- **Description** (Relabel to Note and make editable)
- **Status**



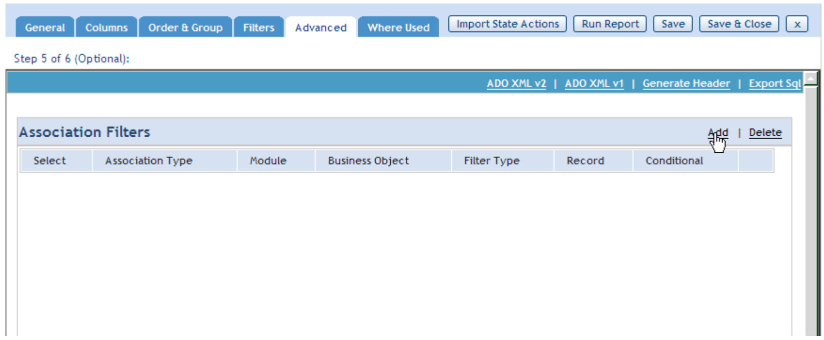
5. Add **Student** and **Student ID** to the **Order By** list.



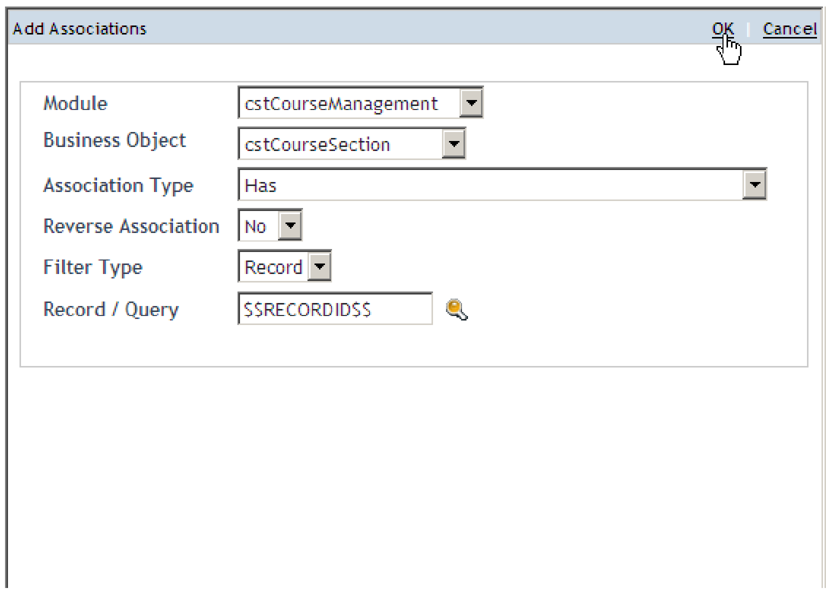
6. Add user filters for appropriate fields.



7. On the **Advanced** tab, click **Add** to add an association filter.

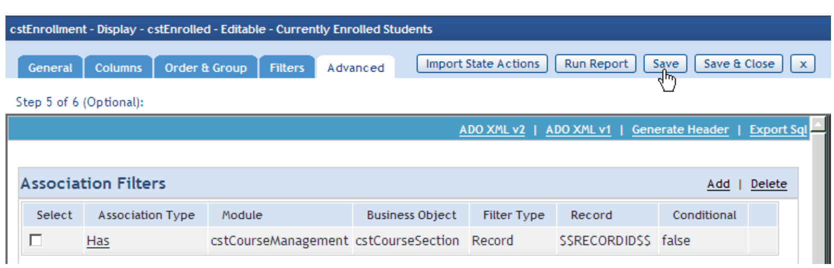


8. Set the properties based on the following image and click **OK**.

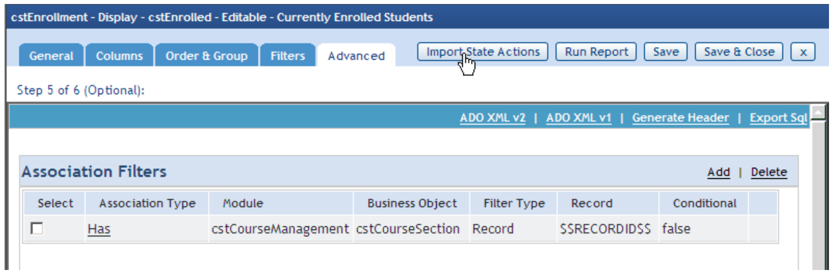


Note: The $$RECORDID$$ keyword connects the filter to the record that is open in the form. The query shows only those Enrollment records that have an association to that course section record. The association type is the association string from the perspective of the *filtering* record. In this case, it is the course section.

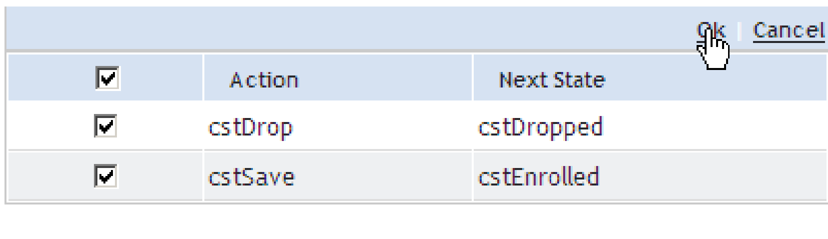
9. Click **Save** to save the query.



10. On the **Advanced** tab, click **Import State Actions**.

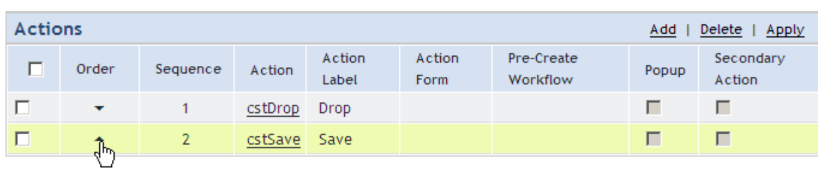


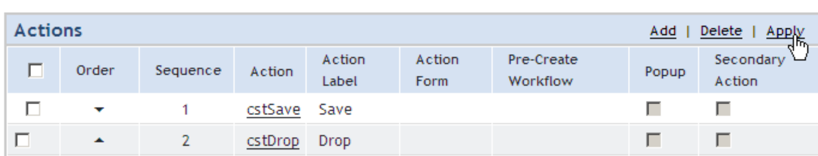
11. Select the **cstDrop** and **cstSave** check boxes, and click **OK**.



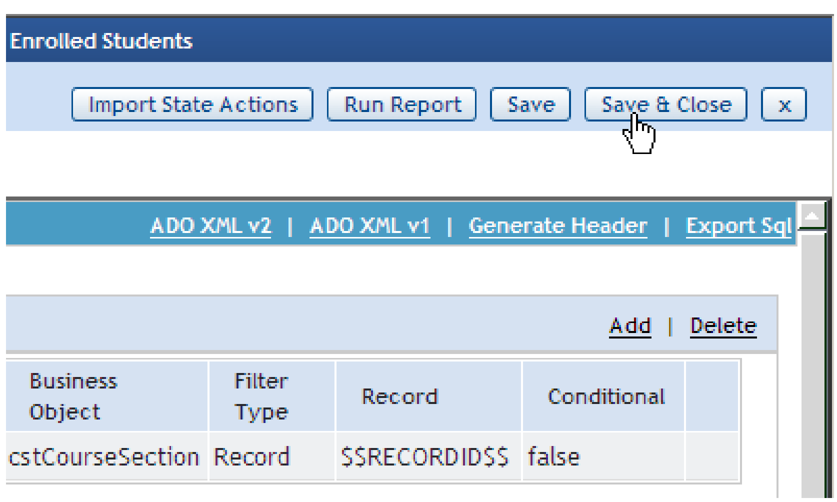
12. Click the **Up** and **Down** arrows for changing the order of the actions so that the Save action occurs first.

13. Click **Apply** to save the order.





14. In the upper-right corner, click **Save & Close**.

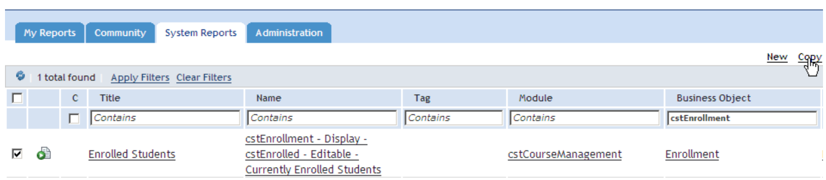


Exercise 4. Creating a Dropped Editable query

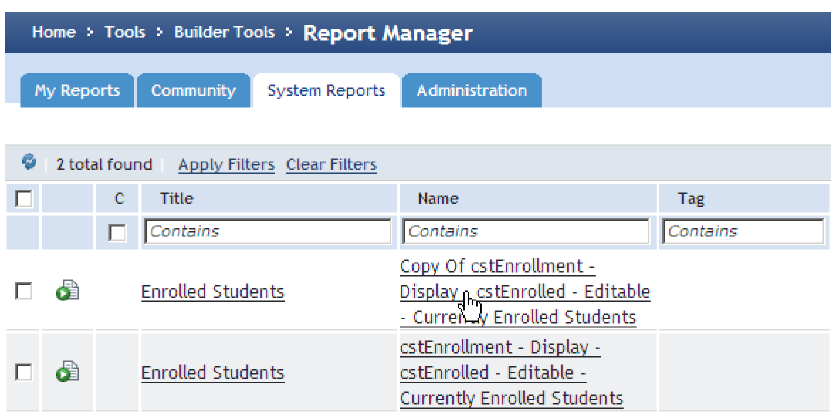
This query is a Related report to the Enrolled editable query.

1. On the **System Reports** tab of the Report Manager, in the **Business Object** column filter field, enter **cstEnrollment** to display the query that you created.

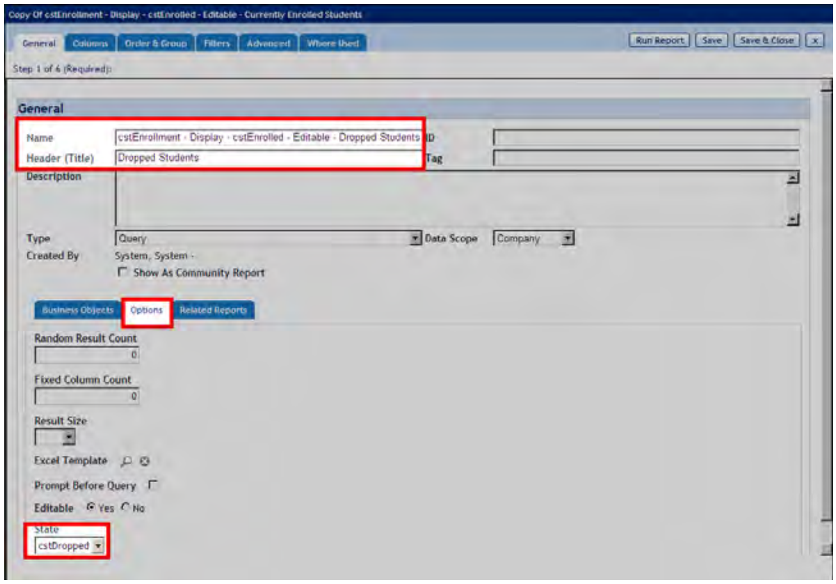
2. Select the check box next to the query, and click **Copy**.



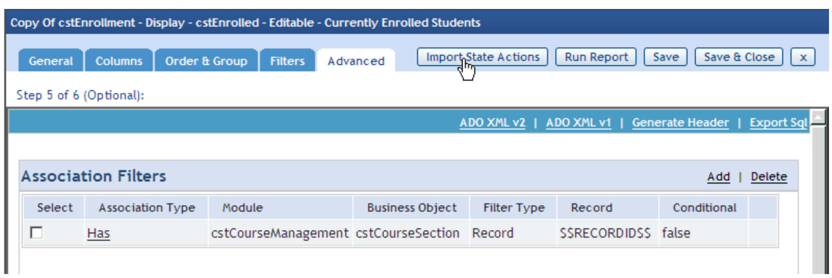
3. Click the name of the new query to open it.



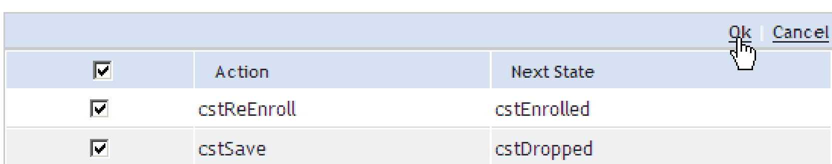
4. Change the **Name** and **State** properties to reflect the cstDropped state that this query displays records for.



5. Because the query now shows only dropped records, click the **Advanced** tab to clear the existing actions and import the state actions for the dropped state.

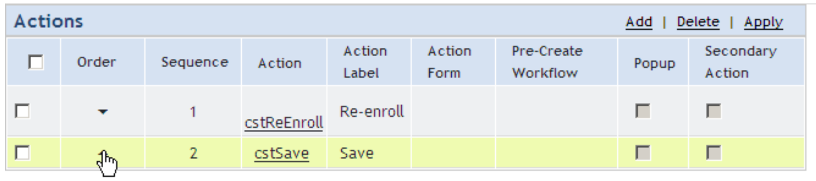


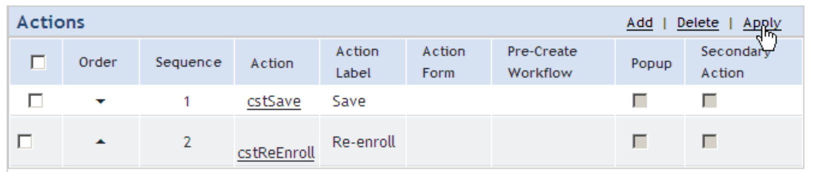
6. Select the **cstReenroll** and **cstSave** check boxes, and click **OK**.



7. Click the **Up** and **Down** arrows for changing the order of the actions so that the save action occurs first.

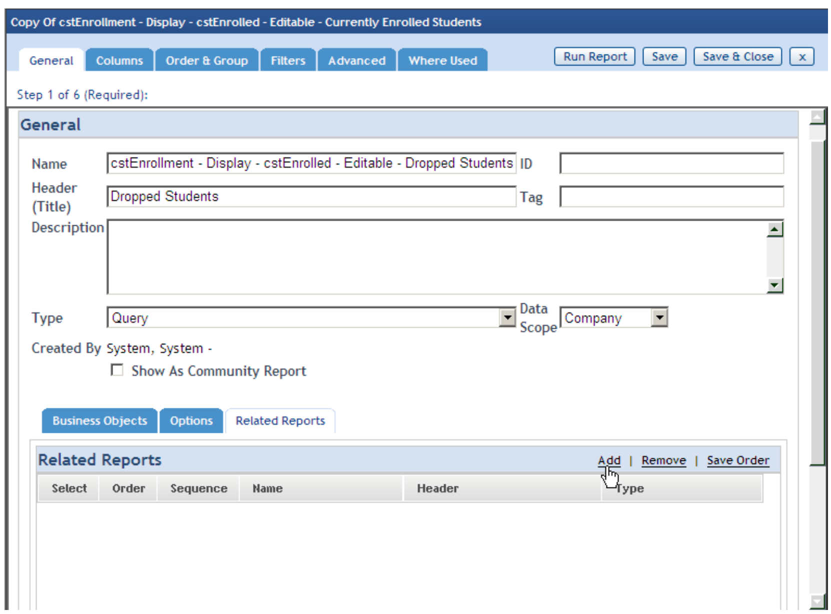
8. Click **Apply** to save the order.





9. On the **General** tab, click the **Related Reports** subtab.

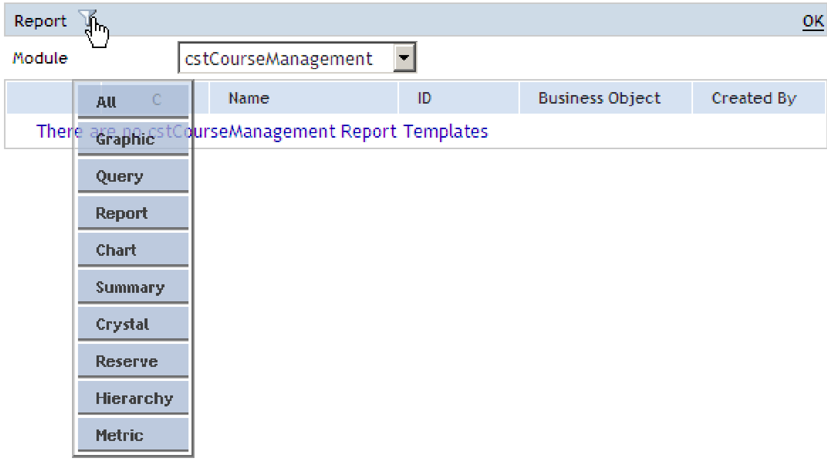
10. Click **Add** to add the **Enrolled Students** editable query as a related report of the **Dropped Students** query.



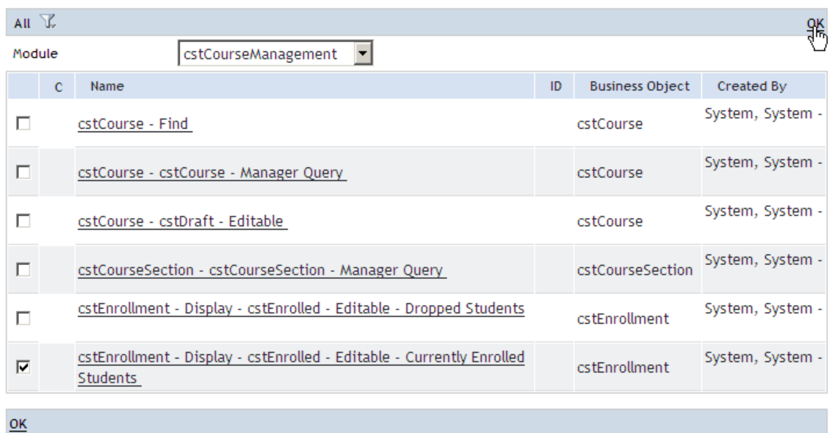
11. In the window that opens, from the **Module** list, select **cstCourseManagement**.

12. Click the **Report** type filter icon.

13. To verify that all items are displayed, click **Report > All**.

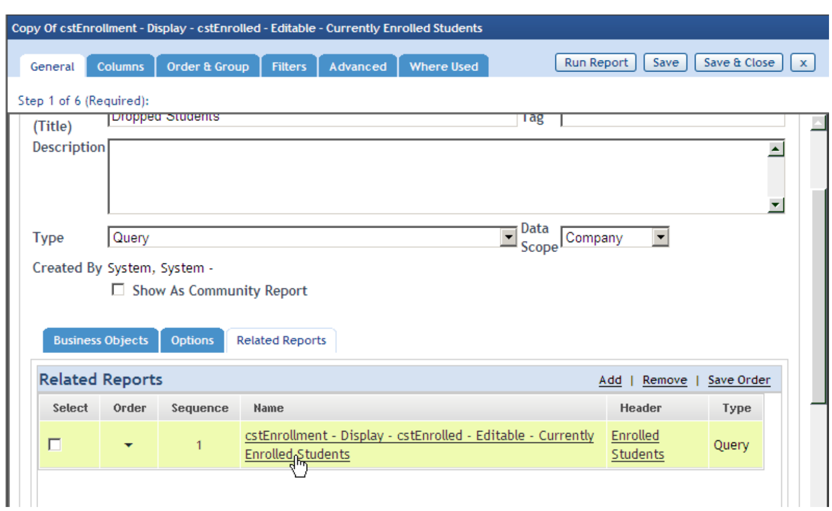


14. Select the **Currently Enrolled Students** query check box, and click **OK**.



The **Related Reports** subtab lists the Currently Enrolled Students query.

15. In the upper-right corner, click **Save & Close**.



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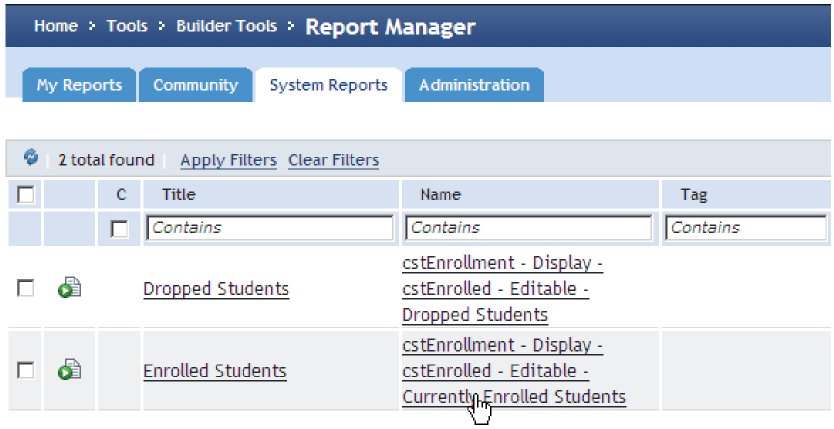
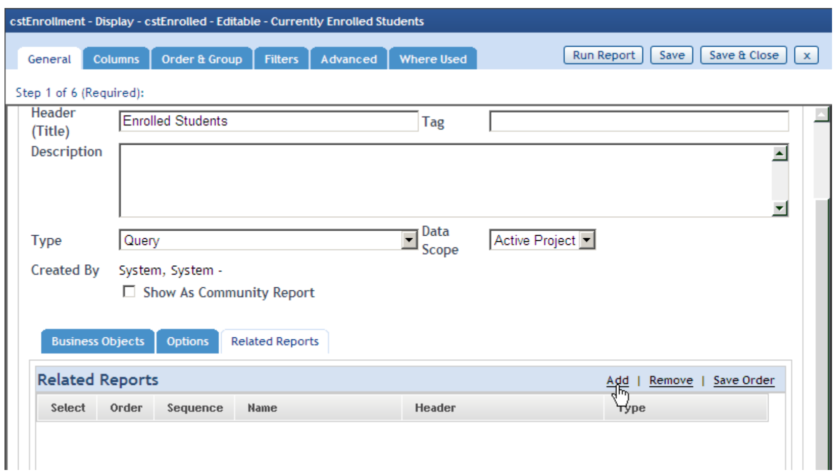
16. Open the **Currently Enrolled Students** query by clicking its name.



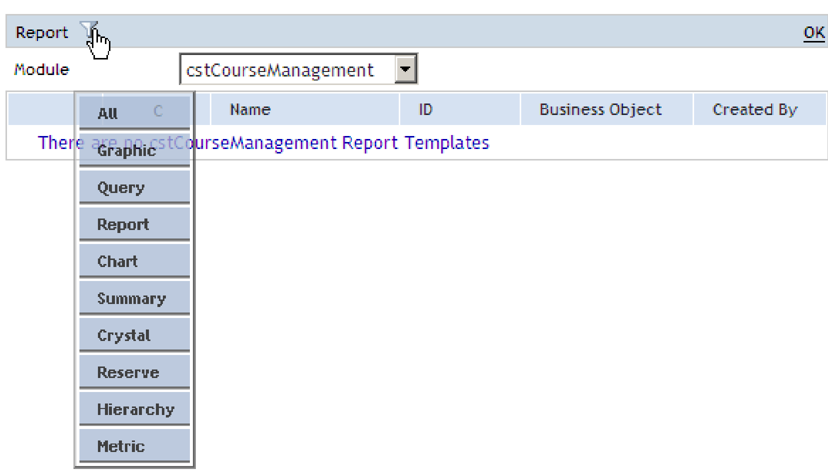
17. Click **Add** in the **Related Reports** subtab of the **General** tab to add the **Dropped Students** query as a related report.



18. In the window that opens, from the **Module** list, select **cstCourseManagement**.

19. Click the **Report** type filter icon.

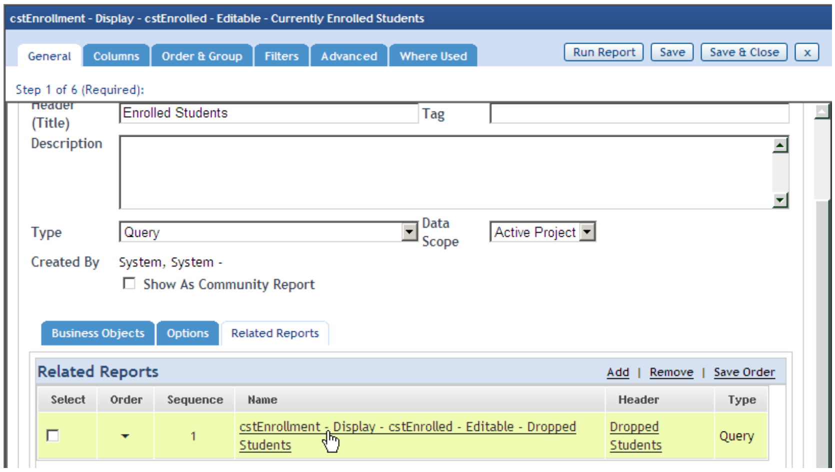
20. To verify that all items are displayed, click **Report > All**.



21. Select the **Dropped Students** query check box, and click **OK**.

    The **Related Reports** subtab lists the Dropped Students query.

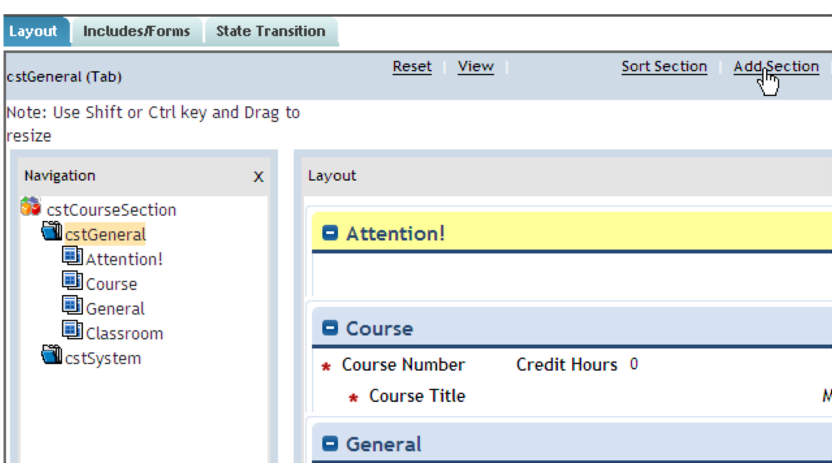
22. In the upper-right corner, click **Save & Close**.



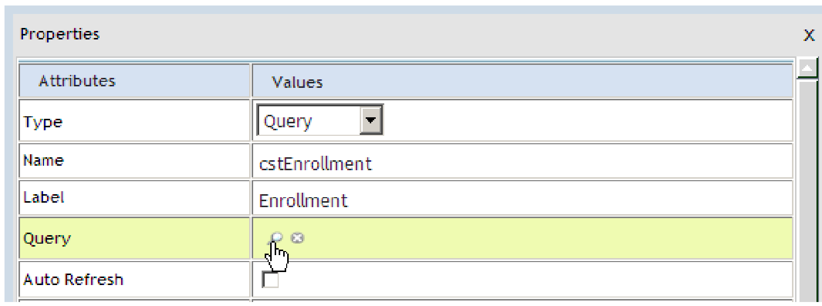
Exercise 5. Adding the Enrollment query to the Course Section form

Add the Enrollment query section on the course section form by using the Currently Enrolled Students query that you created.

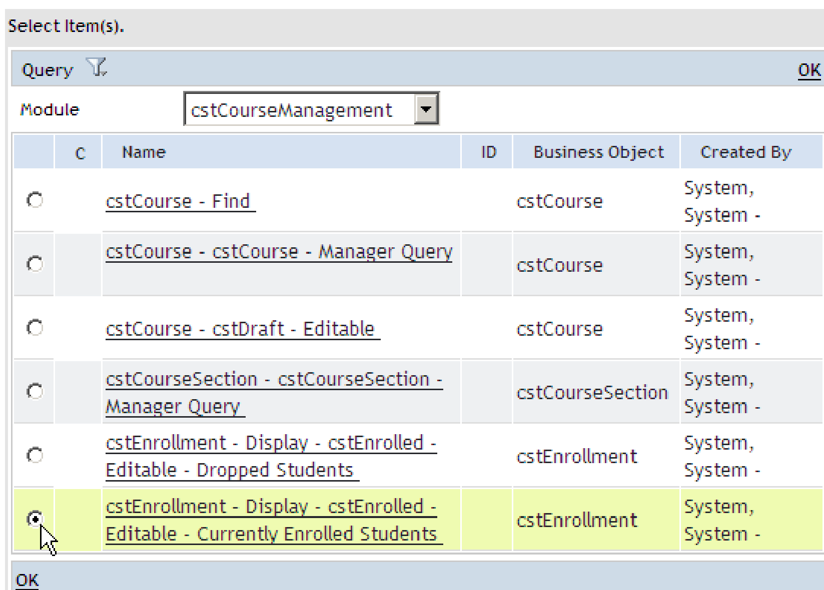
1. Return to the Course Section Form wizard. (You might need to reopen it from the Form Builder if it is not still open.)
2. Ensure that the **cstGeneral** tab is selected.
3. Click **Add Section**.



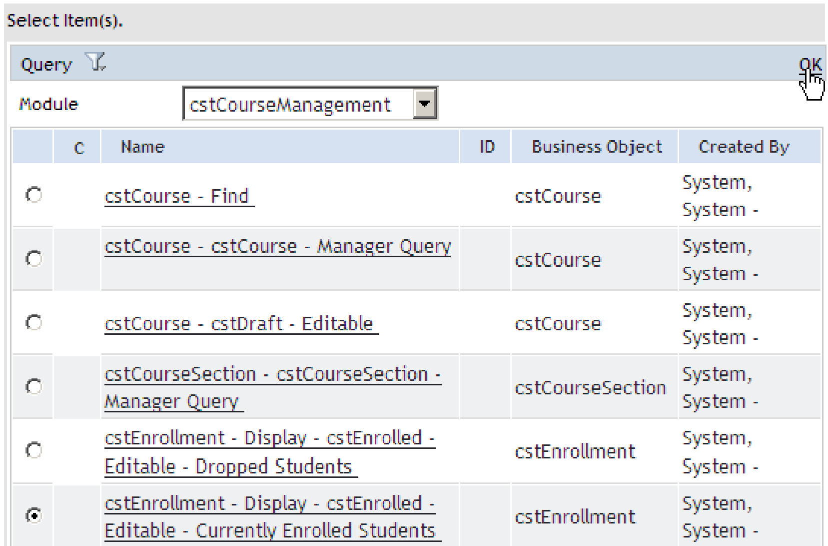
4. In the Properties section, set the following properties:
    - Type: **Query**
    - Name: **cstEnrollment**
    - Label: **Enrollment**
5. Click the Query picker icon.



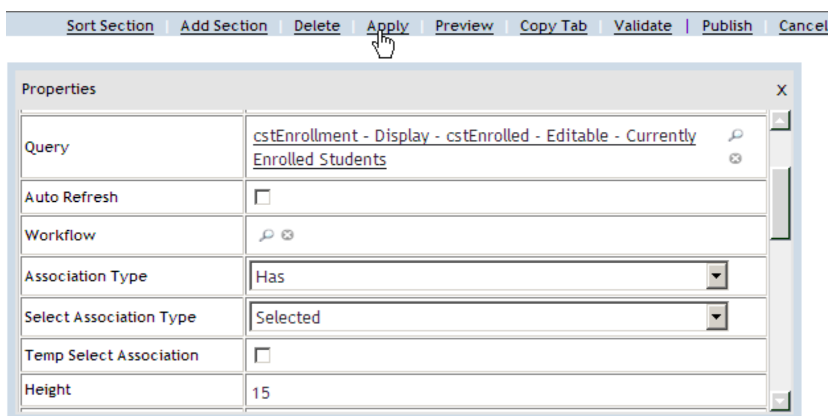
6. In the window that opens, from the **Module** list, select **cstCourseManagement**.
7. Select **cstEnrollment – Display – cstEnrolled – Editable – Currently Enrolled Students**.



8. Click **OK**.



9. Edit the following query section properties:
   a. From the **Association Type** list, select **Has**.
   b. From the **Select Association Type** list, select **Selected**.
   c. In the **Height** field, enter **15**.
10. Click **Apply** to save the query section.



11. Scroll down in the Properties window to the Actions section.

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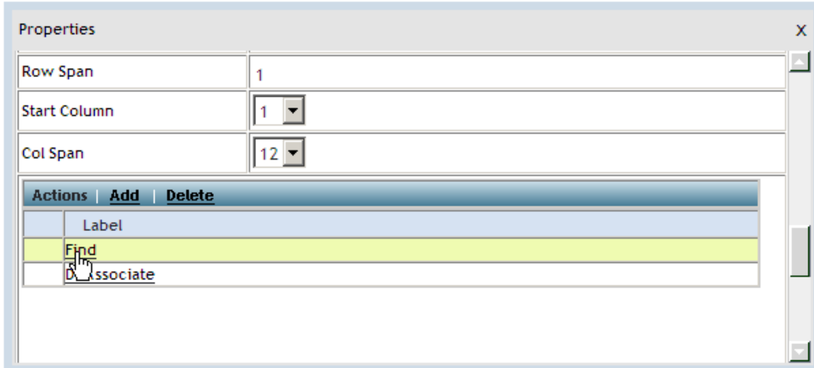
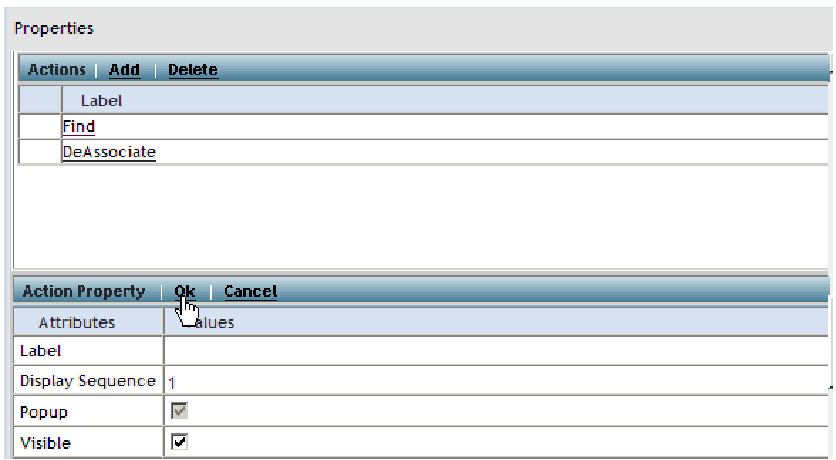
12. In the **Action** properties section, click **Find**.



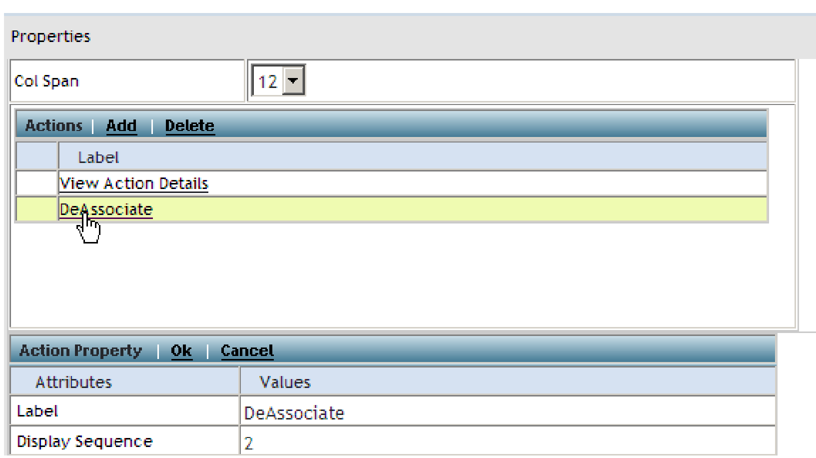
13. Delete the text in the **Label** field and leave it blank.

14. Click **OK**.



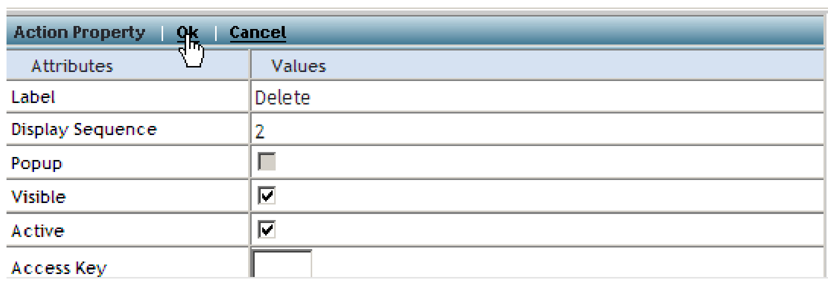
Note: Clearing the label of the **Find** action removes the **Find** action from the query section. It also removes the reference to the **Find** action for the section in the security groups.

15. Click the **DeAssociate** action to open its properties.



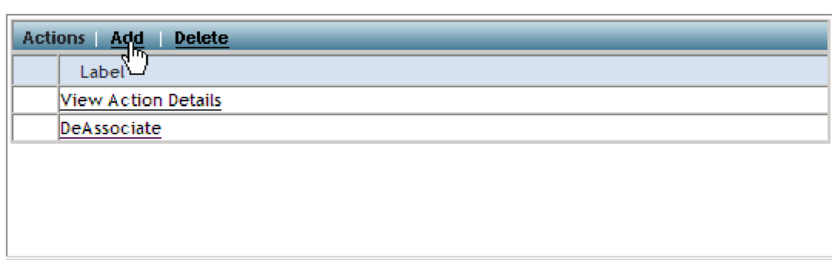
Note: Clicking the **DeAssociate** action de-associates enrollment records that are displayed in the query section from the course section record that is open in the form.

16. Change the **Label** from **DeAssociate** to **Delete**. Click **OK**.



Note: Although you changed the label to **Delete**, clicking the action does not delete the selected enrollment records, but disassociates them from the course section. However, the disassociated enrollment records are no longer displayed in the query section. To the user, they are deleted. To actually delete the records, a workflow must be triggered by the disassociation.

17. In the Actions section of the Enrollment Query Section Properties panel, click **Add** to add a custom action.

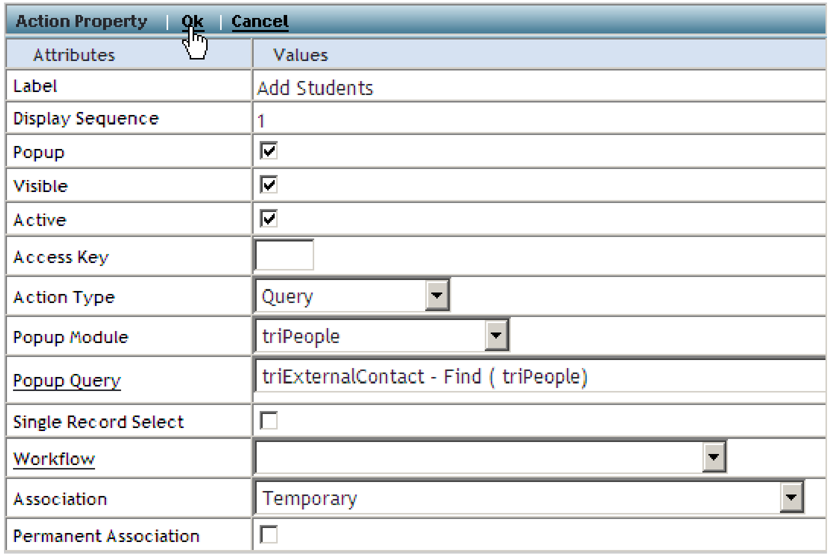


18. Set the following properties.
    a. In the **Label** field, enter **Add Students**.
    b. Select the **Popup** check box.
    c. From the **Action Type** list, select **Query**.
    d. From the **Popup Module** list, select **triPeople**.

e. In the **Pop-up Query** field, enter **triExternalContact – Find (triPeople)**.

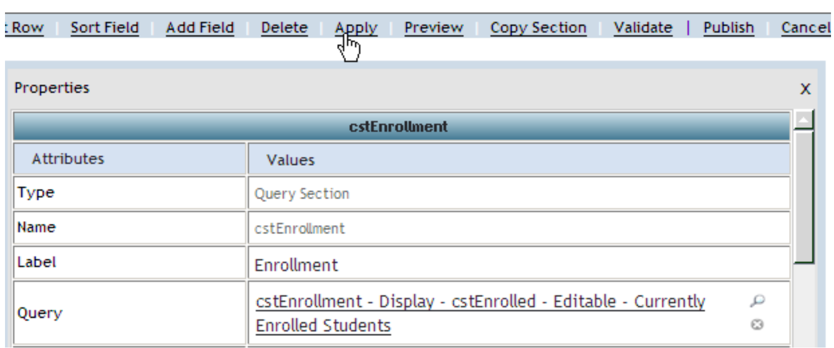
f. From the **Association** list, select **Temporary**.

19. Click **OK**.



Note: Upon clicking this action, a query showing a list of external contacts (that is, students) opens. When a person is selected, a temporary association of type **Temporary** is created from the course section record to the selected record.

20. Click **Apply** to save the query section.

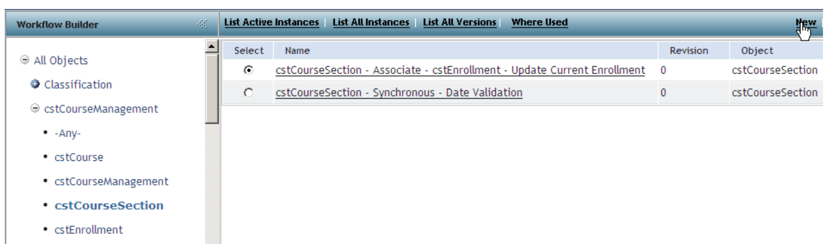


Exercise 6. Creating a workflow to add enrollments

When the Add Students action is used, you must create an Enrollment record to connect the Student and the Course Section records. In this exercise, you develop a workflow to accomplish this task. It creates an Enrollment record for each selected person and sets the Locator fields to point to the person record and the Course Section record.

Follow these steps to create a workflow to create the Enrollment records:

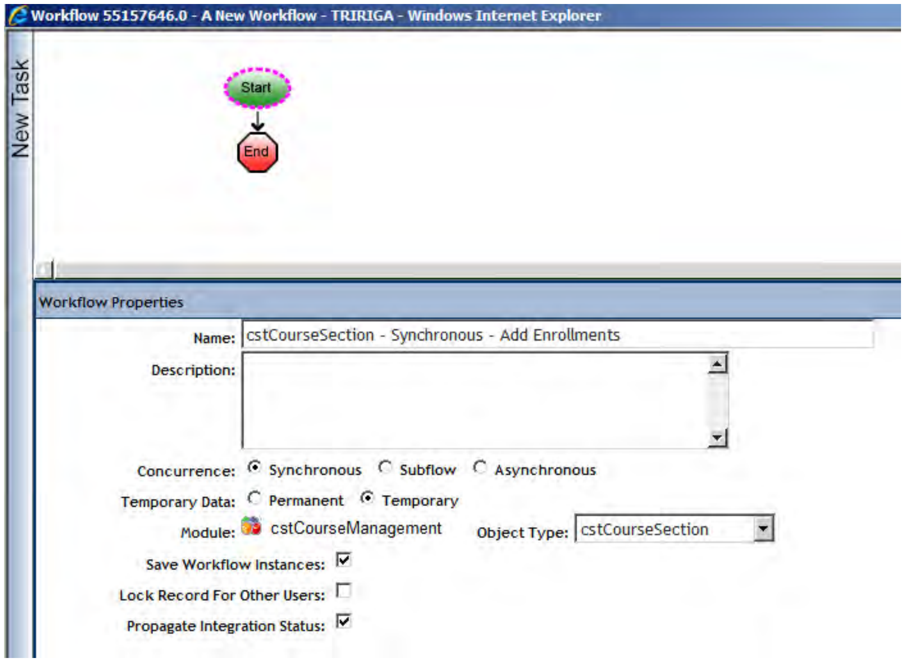
1. On the **Tools** tab, select **Builder Tools > Workflow Builder**.
2. Expand the **cstCourseManagement** module, and select **cstCourseSection**.
3. Click **New** to create a workflow.



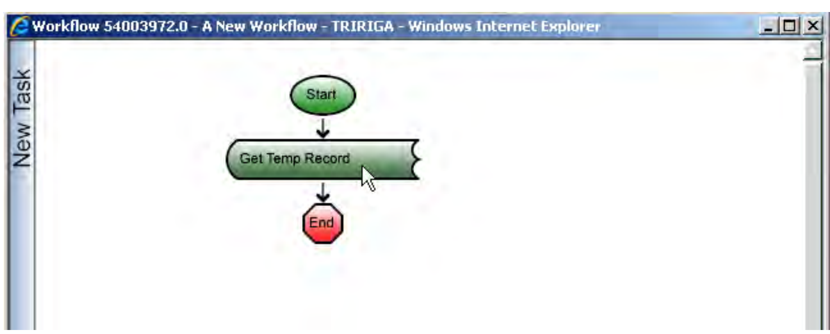
4. Set the following properties.
   a. In the **Name** field, enter **cstCourseSection – Synchronous – Add Enrollments**.
   b. For **Concurrence**, click **Synchronous**.

c. For **Temporary Data**, click **Temporary**.

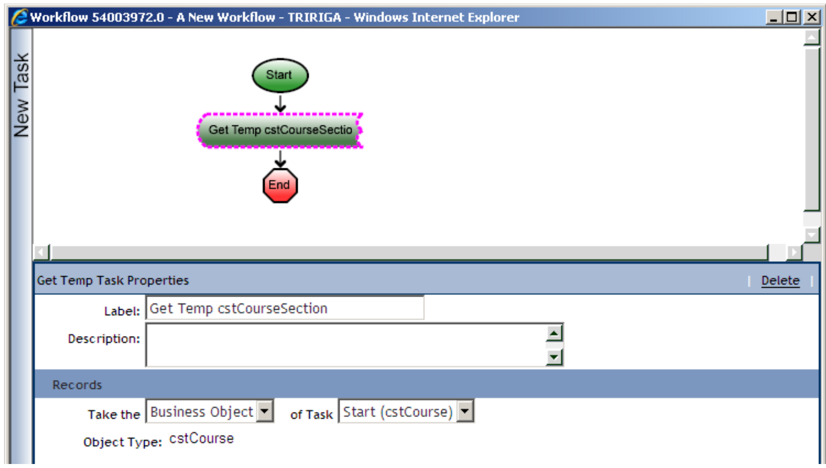
d. From the **Object Type** list, select **cstCourseSection**.



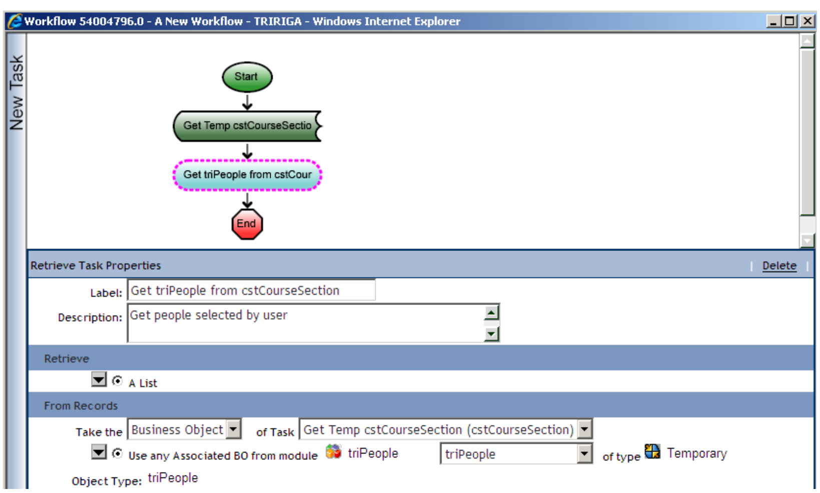
5. Place your cursor over the New Task panel on the left side of the window to open the workflow task list.
6. Select the **Get Temp Record** task.
7. Move it below the **Start** task.



8. In the **Label** field, relabel the task to **Get Temp cstCourseSection**.



9. From the New Task panel, add a Retrieve Records task, and move it below the **Get Temp** task.
10. Set Retrieve Task properties as follows:
    a. In the **Label** field, enter **Get triPeople from cstCourseSection**.
    b. In the **Description** field, enter **Get people selected by user**.
    c. From the **of Task** list, select **Get Temp cstCourseSection(cstCourseSection)**.
    d. Click **Use any Associated BO from module triPeople**.
    e. From the list, select **triPeople**.
    f. For association string type, select **Temporary**.



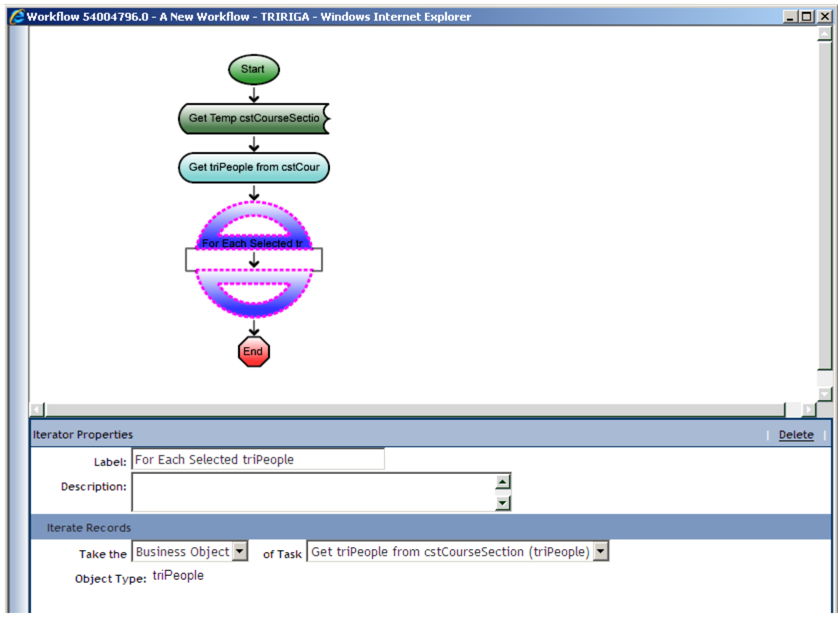
Note: The association string type must match the Association property of the Add Students custom section action on the Enrollment query section that you selected previously. With matching the string type and the section action, the Retrieve Records task returns each of the people (that is, Students) that is selected after you click the Add Students action in the query section.

11. Add an Iterator task below the Retrieve Records task.

12. Set Iterator properties as follows:

    a. In the **Label** field, enter **For Each Selected triPeople**.

    b. From the **of Task** list, select **Get triPeople from cstCourseSection**. (This selection is the Retrieve Records task that you previously created.)



Note: With this action, the Iterator task loops through each of the people (that is, Students) that is returned by the Retrieve Records task.

13. Add a Create Record task from the **New Task** list.

14. Set the Create Record Task properties as follows:

    a. In the **Label** field, enter **Create cstEnrollment from triPeople**.

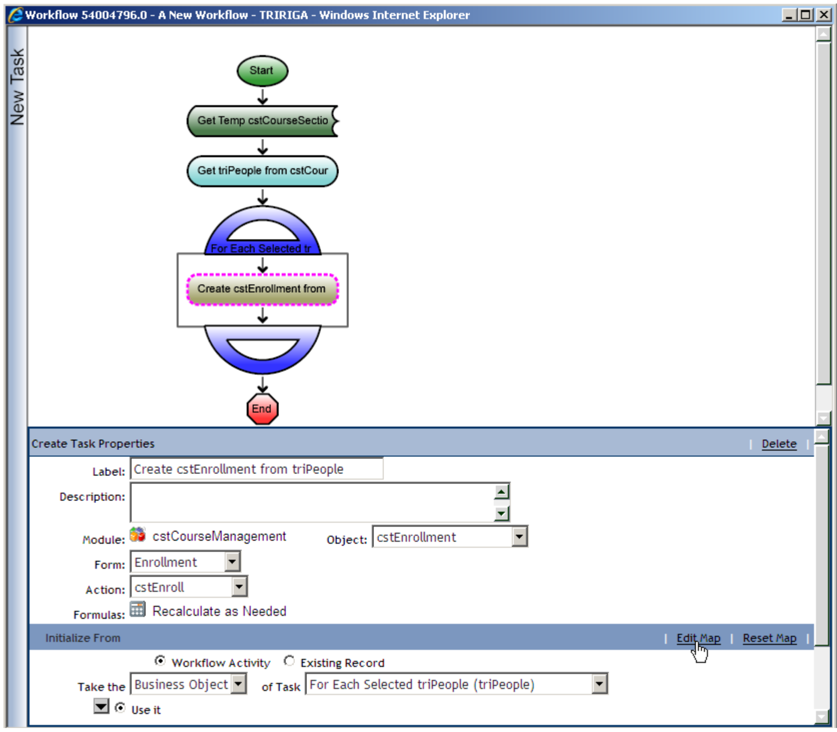
    b. From the **Object** list, select **cstEnrollment**.

    c. From the **Form** list, select **Enrollment**.

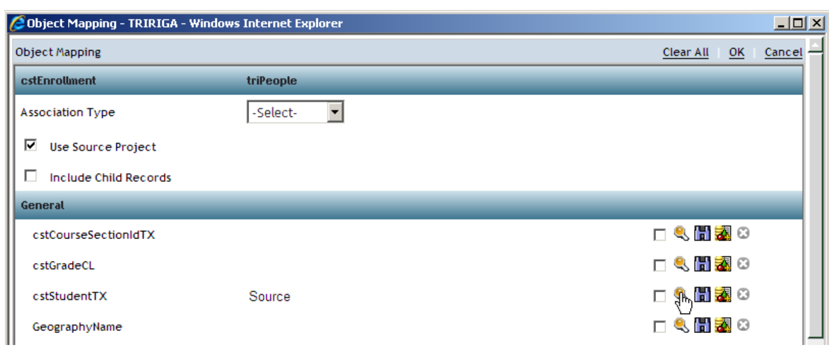
    d. From the **Action** list, select **cstEnroll**.

    e. From the **of Task** list, select **For Each Selected triPeople** (**triPeople**).

15. On the **Initialize From** section heading, click **Edit Map**.

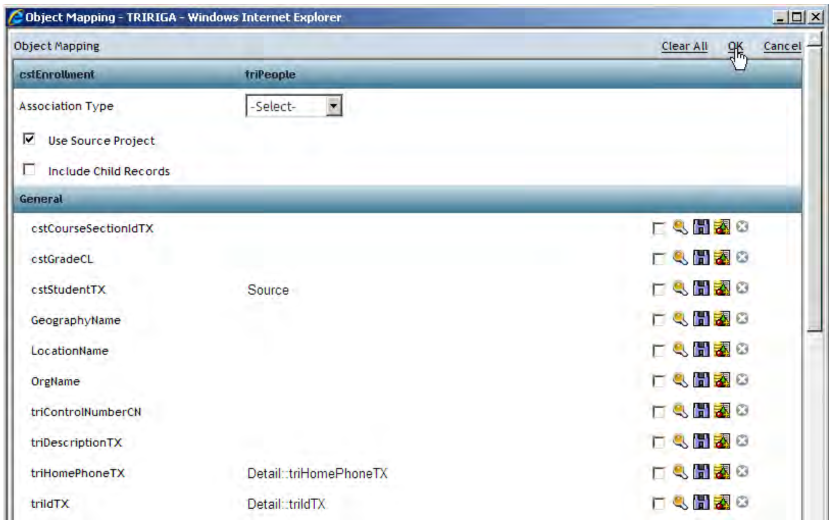


16. In the Object Mapping section, perform the following steps:
    a. Click **Clear All**.
    b. Click the Attribute Picker icon that is next to the **cstStudentTX** field.
    c. Select **Source**.

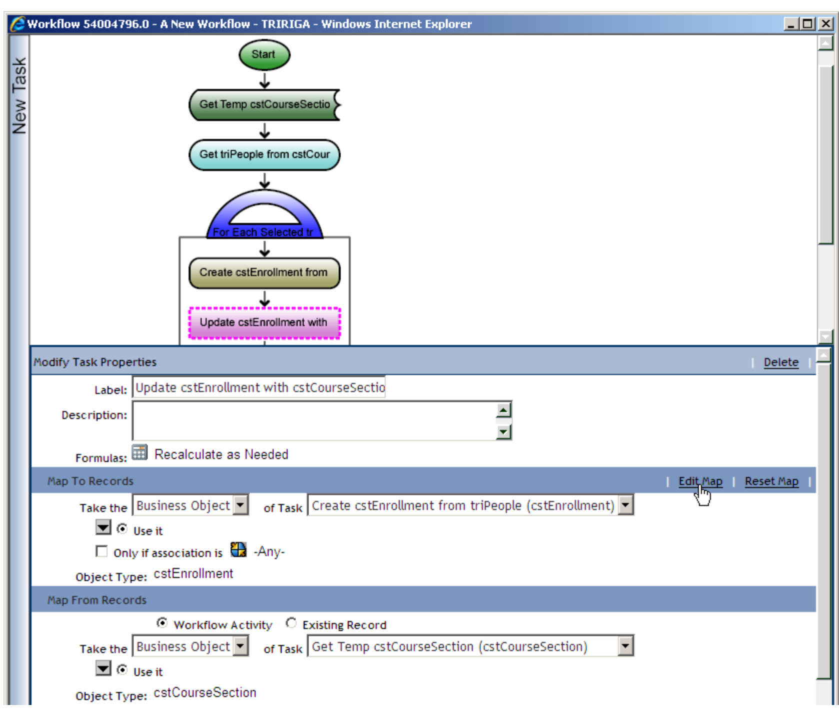


    d. Click the **Attribute Picker** icon that is next to the **triHomePhoneTX** field.
    e. Select **triHomePhoneTX** from the **Detail** section.
    f. Click the **Attribute Picker** icon that is next to the **triIdTX** field.
    g. Select **triIdTX** in the **Detail** section.

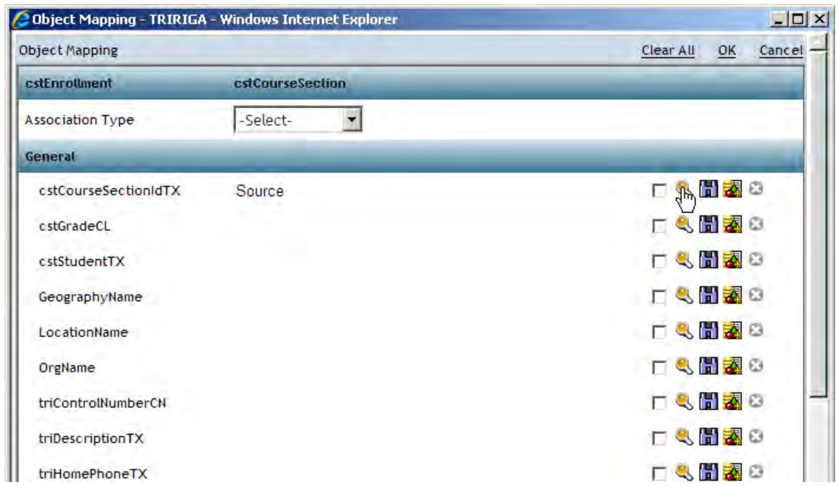
17. Click **OK**.



18. Add a Modify Records task below the Create Records task.
19. Set Modify Records Task properties as follows:
    a. In the **Label** field, enter **Update cstEnrollment with cstCourseSection**.
    b. In the Map To Records section, from the **of Task** list, select **Create cstEnrollment from triPeople** (**cstEnrollment**).
    c. In the Map From Records section, from the **of Task** list, select **Get Temp cstCourseSection** (**cstCourseSection**).
20. On the **Map To Records** section heading, click **Edit Map**.

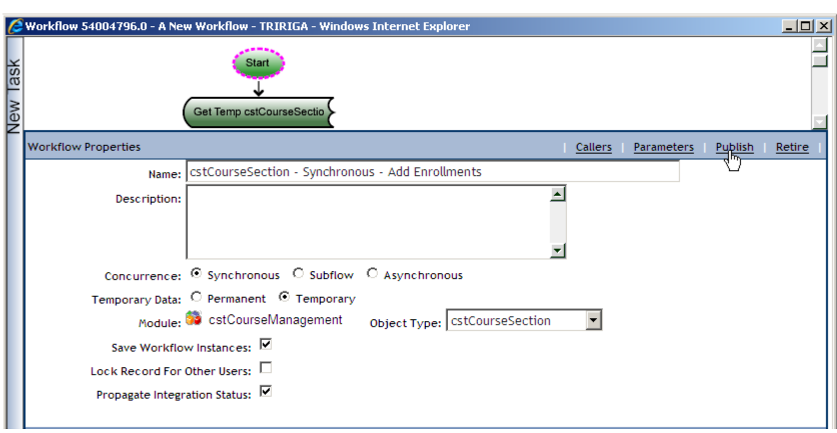


21. In the **Object Mapping** section, perform the following steps:
    a. Click **Clear All**.
    b. Click the Attribute Picker icon that is next to the **cstCourseSectionIdTX** field.
    c. Select **Source**.



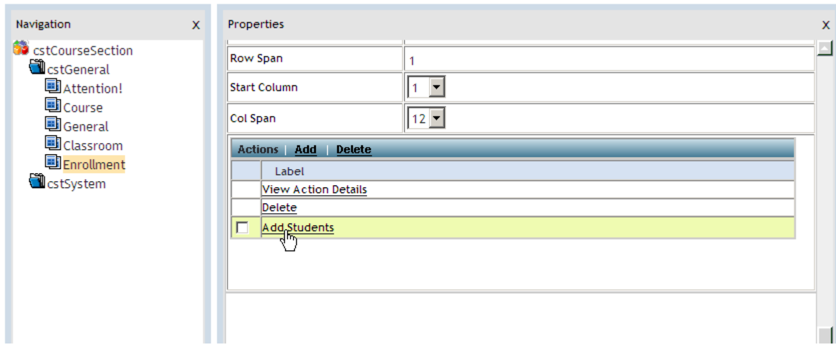
Note: This action populates the cstCourseSectionIdTX of the **Enrollment** locator field with the course section. It also creates an association between the enrollment record and the course section record. With this association, the enrollment record is displayed in the enrollment query section on the course section form.

22. Click **OK**.
23. Select the **Start** task.
24. Click **Publish**.

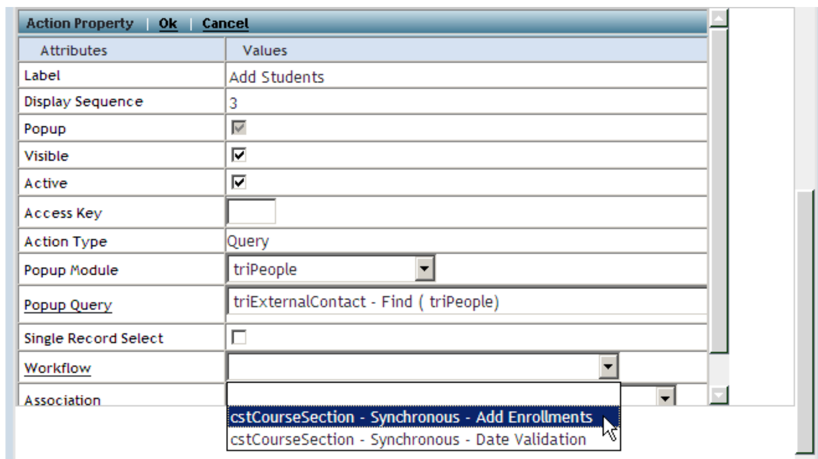


25. In the Course Section Form wizard, select **Enrollment**.

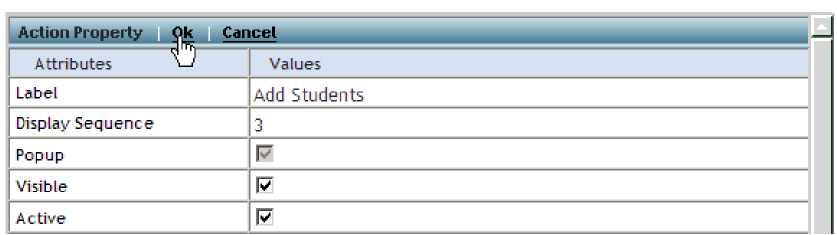
26. In the **Property** panel, in the **Actions** section, click the **Add Students** action.



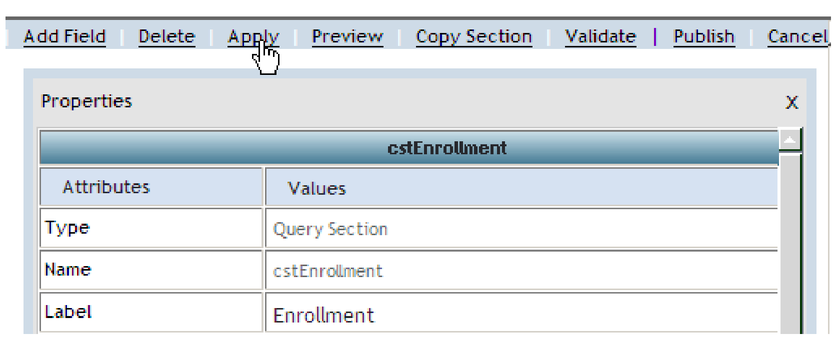
27. From the **Workflow** list, select **cstCourseSection - Synchronous - Add Enrollments**.



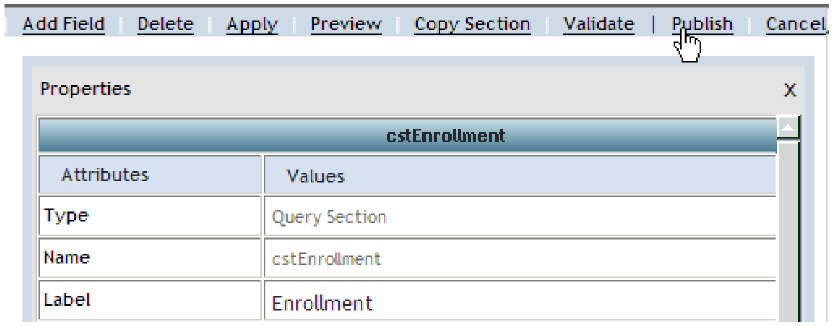
28. Click **OK** to save the action properties.



29. Click **Apply** to save the query section.

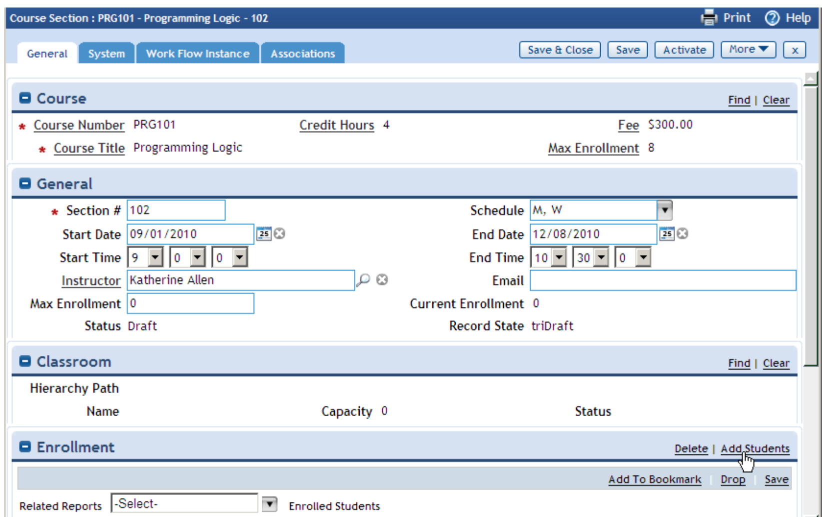


30. Click **Publish**.



31. Test the application by creating or opening a course section record. Perform the following steps:

   a. Click **Add Students** on the Enrollment query section.

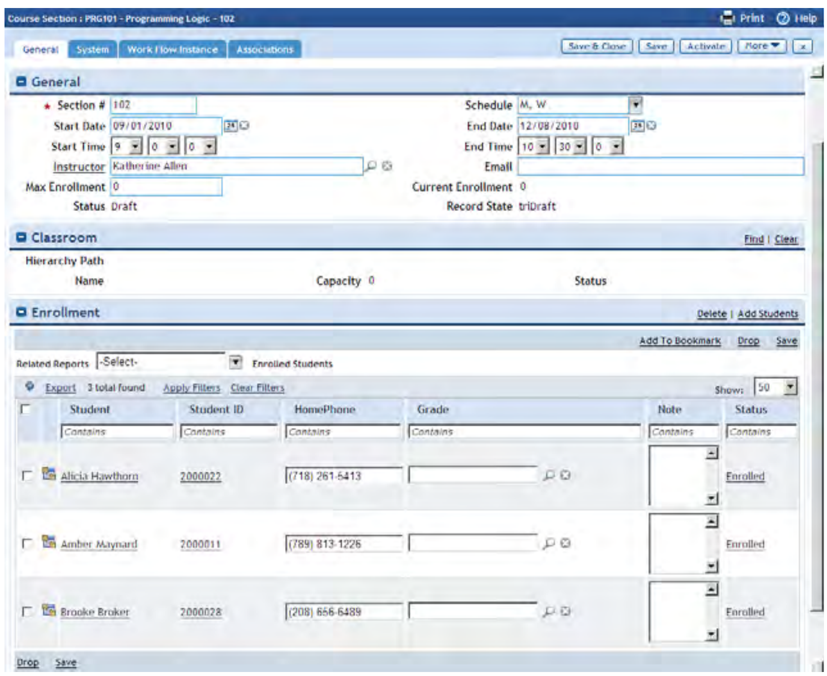


Note: The record is not to be in the *null* state when you add enrollments. If you create a record, click **Create Draft** before you add enrollment records.

   b. Select some people from the query window by selecting check boxes beside their names.

c. Click **OK**.

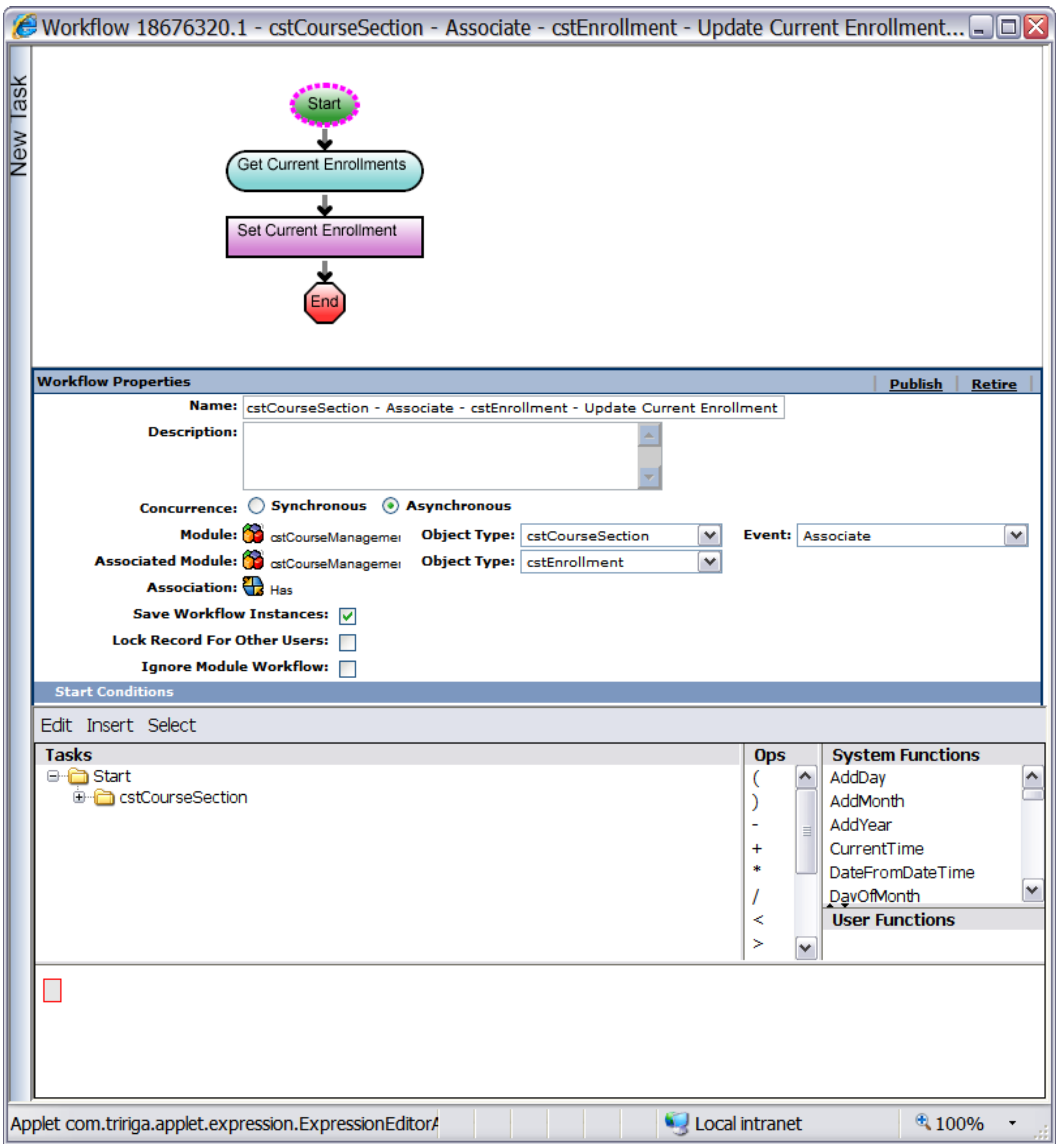
Enrollment records exist for each person that you selected.



Exercise 7. Updating the current enrollment workflow (optional)

In this exercise, you create a workflow to automatically recalculate the Current Enrollment value in the Course Section record whenever an Enrollment record is associated with the Course Section record.

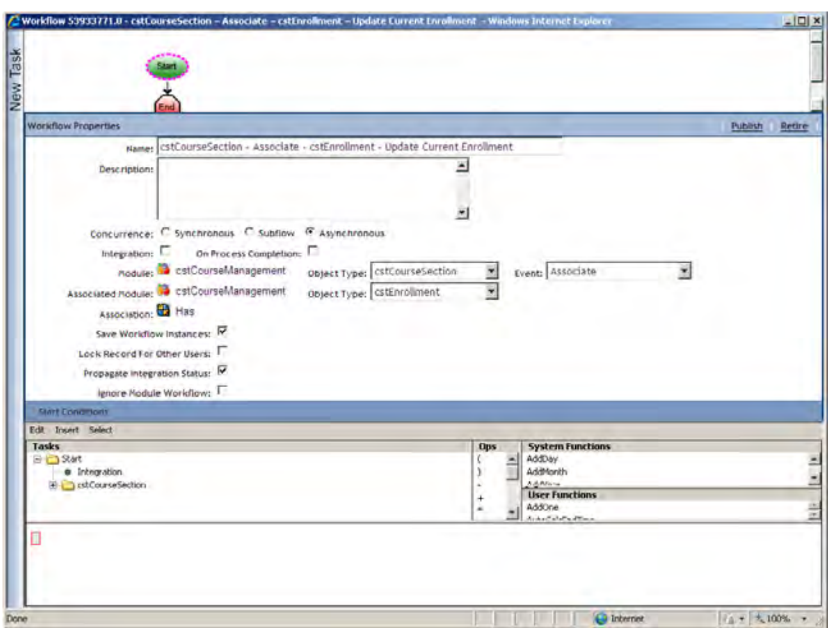
The following image illustrates the start of building the workflow.



To update the current enrollment workflow, perform the following steps.

1. On the **Tools** tab, click **Builder Tools > Workflow Builder** to open it.
2. On the left side, expand the **cstCourseManagement** module, and click the **cstCourseManagement** base business object.
3. Click **New** to create a workflow.

4. Set Workflow properties as follows for the updated enrollment:
   a. In the **Name** field, enter **cstCourseSection – Associate – cstEnrollment – Update Current Enrollment**.
   b. For **Concurrence**, click **Asynchronous**.
   c. For **Module**: **cstCourseManagement**, select **Object Type > cstCourseSection** and **Event > Associate**.
   d. For **Associated Module**: **cstCourseManagement,** select **Object Type > cstEnrollment**.
   e. For **Association**, select **Has**.
   f. Select the **Save Workflow Instances** check box.
   g. Select the **Propagate Integration Status** check box.

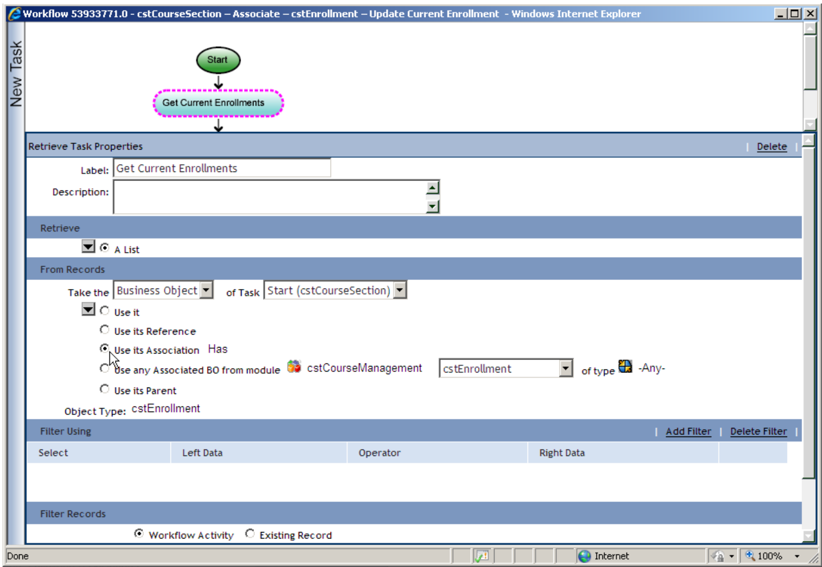


5. Add a Retrieve Records task.

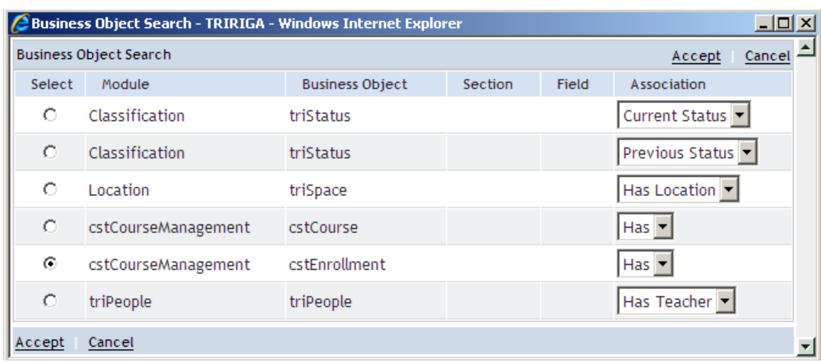
6. Set Retrieve Task properties as follows:

   a. In the **Label** field, enter **Get Current Enrollments**.

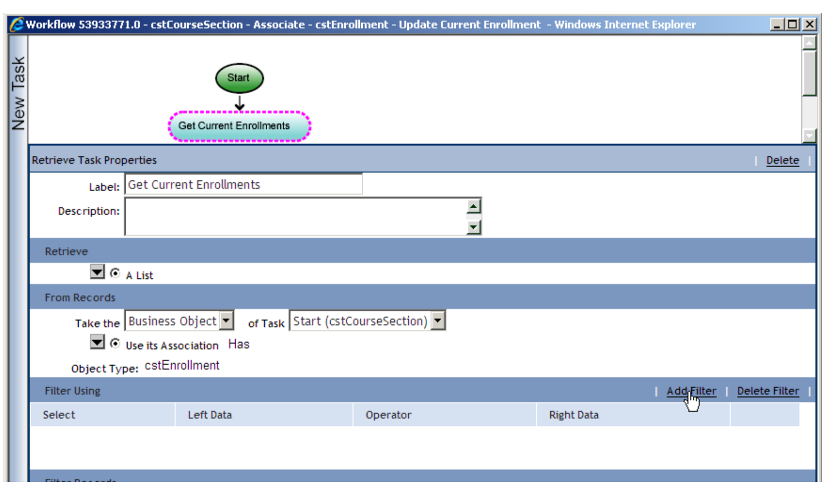
   b. In the **From Records** section, click **Use its Association**.



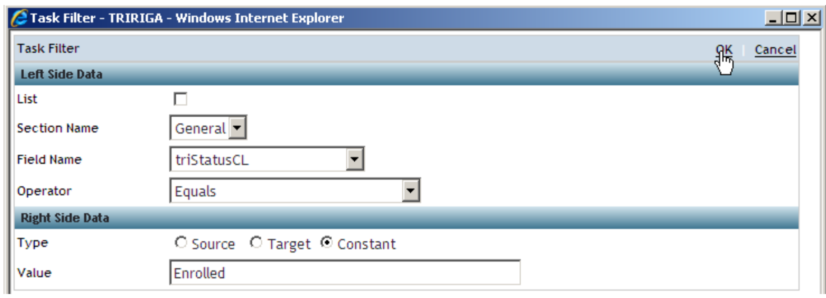
   c. In the window that opens, click the selection with **cstEnrollment** in the **Business Object** column. Select **Has** in the **Association** column, and click **Accept**.



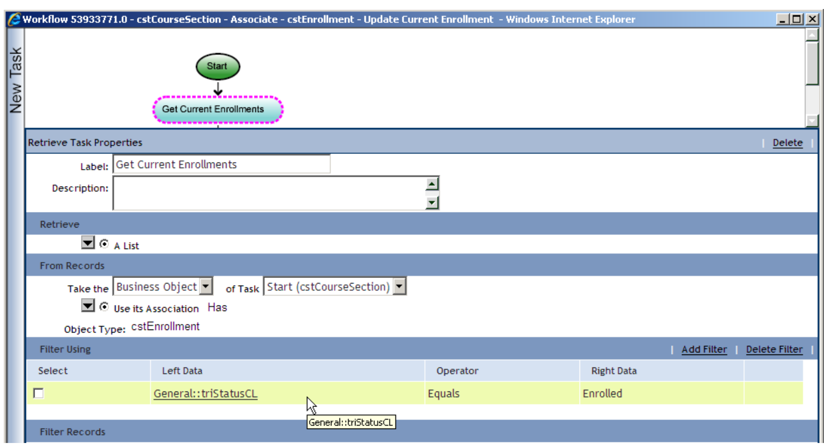
   d. Click **Add Filter**.



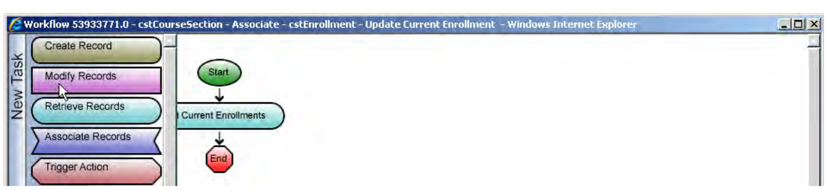
7. Set Task Filter as follows:
    a. From the **Section Name** list, select **General**.
    b. From the **Field Name** list, select **triStatusCL**.
    c. From the **Operator** list, select **Equals**.
    d. For **Type**, click **Constant**.
    e. In the **Value** field, enter **Enrolled**.
    f. Click **OK**.



The new filter is in the properties.

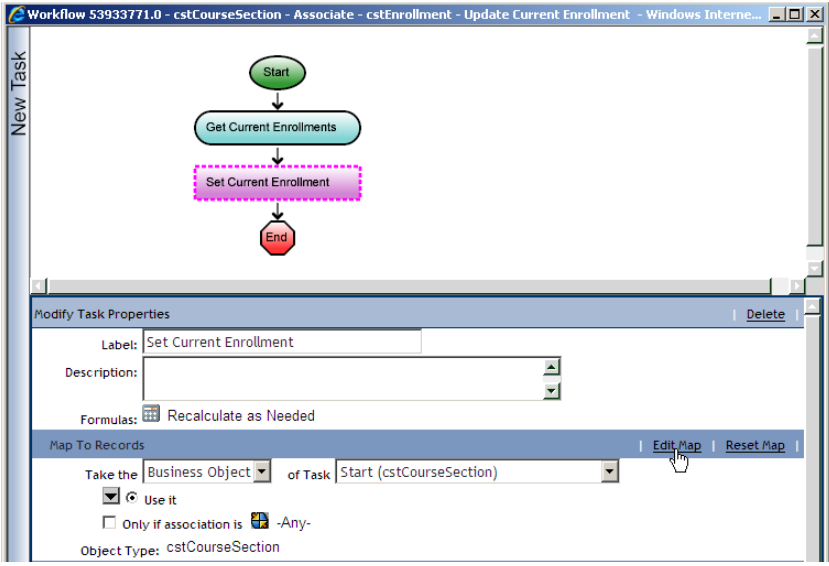


8. Insert a Modify Records task.

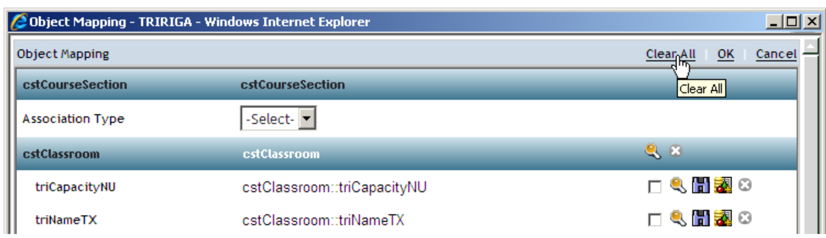


9. Set Modify Task properties as follows:
    a. In the **Label** field, enter **Set Current Enrollment**.
    b. In the Map to Records section, ensure that the **of Task** list is set to **Start (cstCourseSection)**.

c. On the Map to Records section heading, click **Edit Map**.

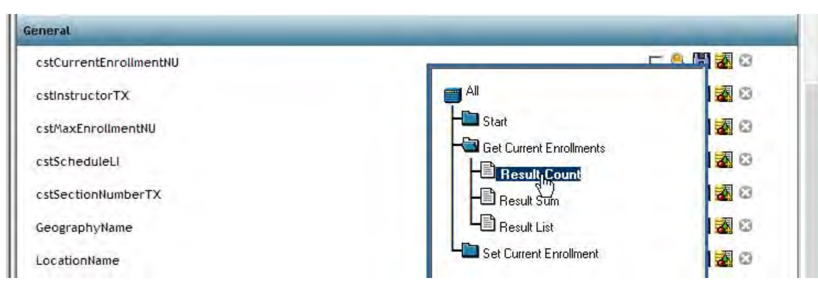


d. Click **Clear All** to clear default mappings.

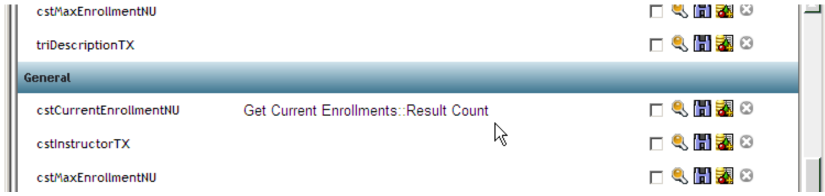


e. Click the **Task Data** picker icon for **cstCurrentEnrollmentNU**.

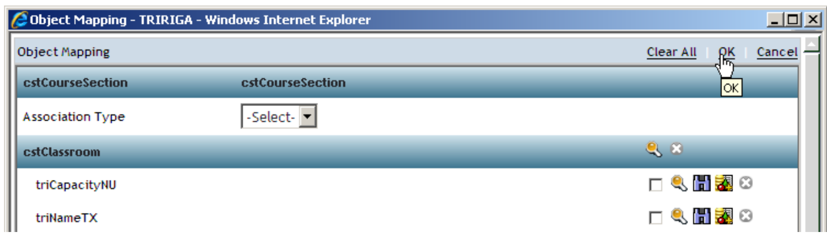
f. Select **Result Count**.



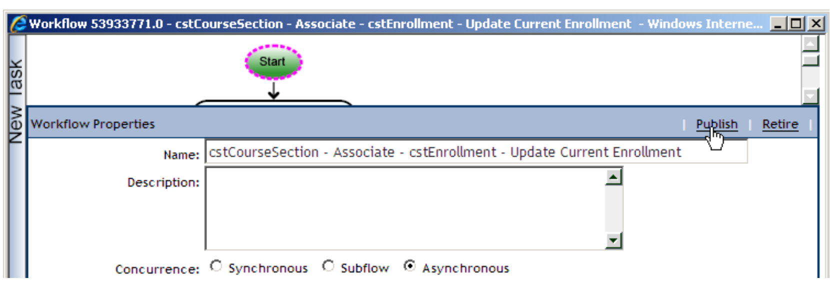
The Get Current Enrollments::Result Count message opens, indicating an assignment is made for that field.



g. Click **OK**.



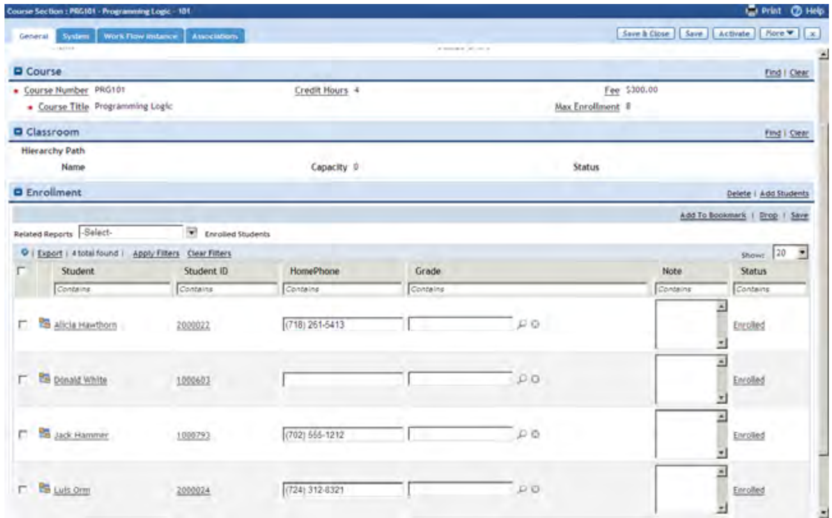
10. Click the **Start** task.
11. Click **Publish** to save your changes.



12. In the application, create some Enrollment records.
    a. Verify that the Current Enrollment value is being updated.

       The workflow runs asynchronously. The value does not immediately update when the enrollment is created.

b. Save the record or click the **General** tab to see the value update.



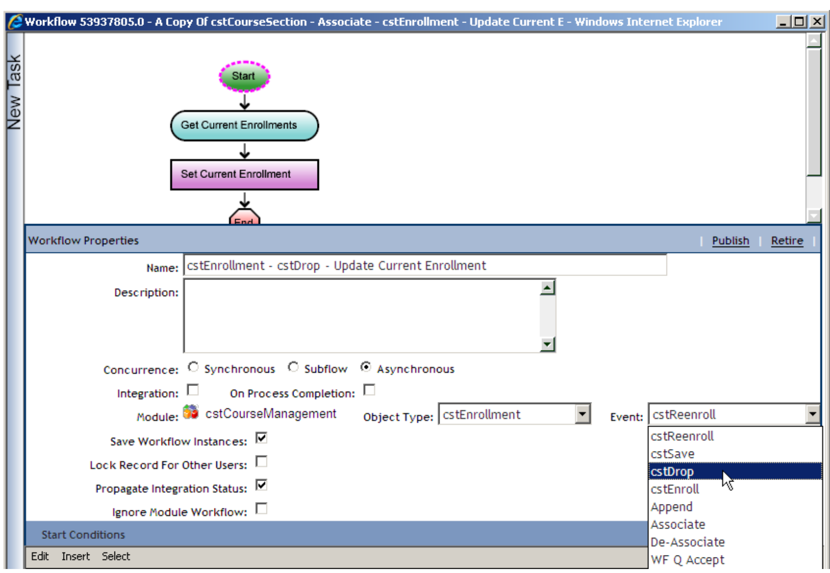
13. Navigate to the Workflow Builder tool. Select the **cstCourseManagement** module.

14. Make a copy of the **cstCourseSection - Associate - cstEnrollment - Update Current Enrollment** workflow.

15. Open the copy and modify **Workflow Properties** as follows:

a. In the **Name** field, change the **name to cstEnrollment – cstDrop – Update Current Enrollment**.

b. For the module, **cstCourseManagement**, change **Object Type** to **cstEnrollment**, and change **Event** to **cstDrop**.



16. Between the Start task and Get cstEnrollments task, insert a Retrieve Records task.

17. Open the Retrieve Records task.

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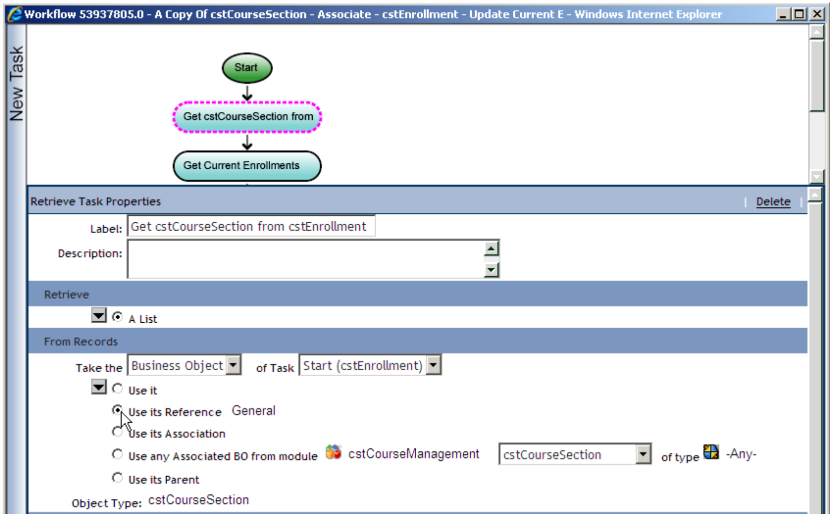
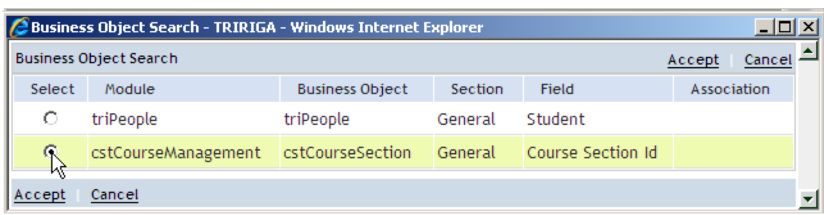
18. Set Retrieve Records task properties as follows:

    a. In the **Label** field, relabel the task to **Get cstCourseSection**.

    b. In the From Records section, click **Use its Reference**.



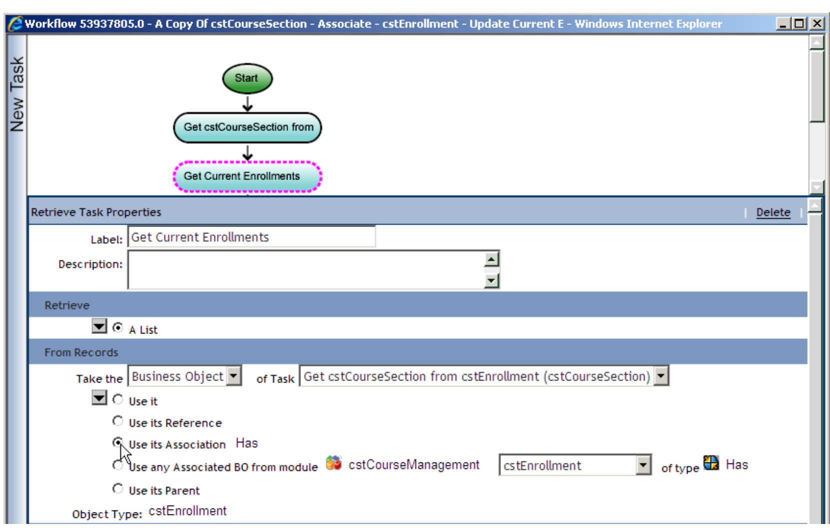
19. In the window that opens, select **cstCourseManagement**, and click **Accept**.



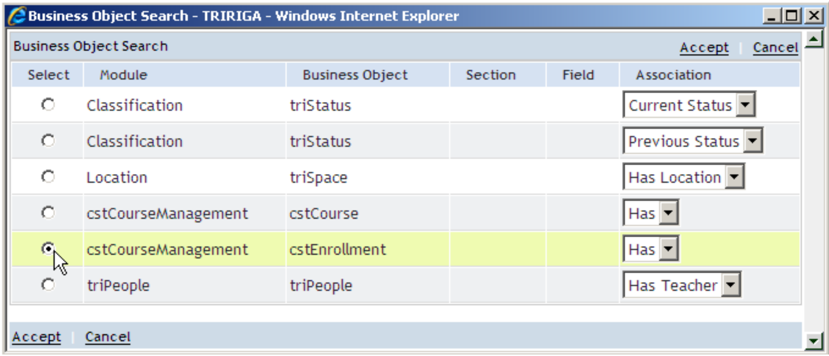
20. Modify the Get Current Enrollments task as follows:

    a. In the **From Records** section, from the **Task** list, select **Get cstCourseSection from cstEnrollment (cstCourseSection)**.

    b. In the From Records section, select **Use its Association**.



c. In the window that opens, select the **cstEnrollment** business object with the **Has** association, and click **Accept**.

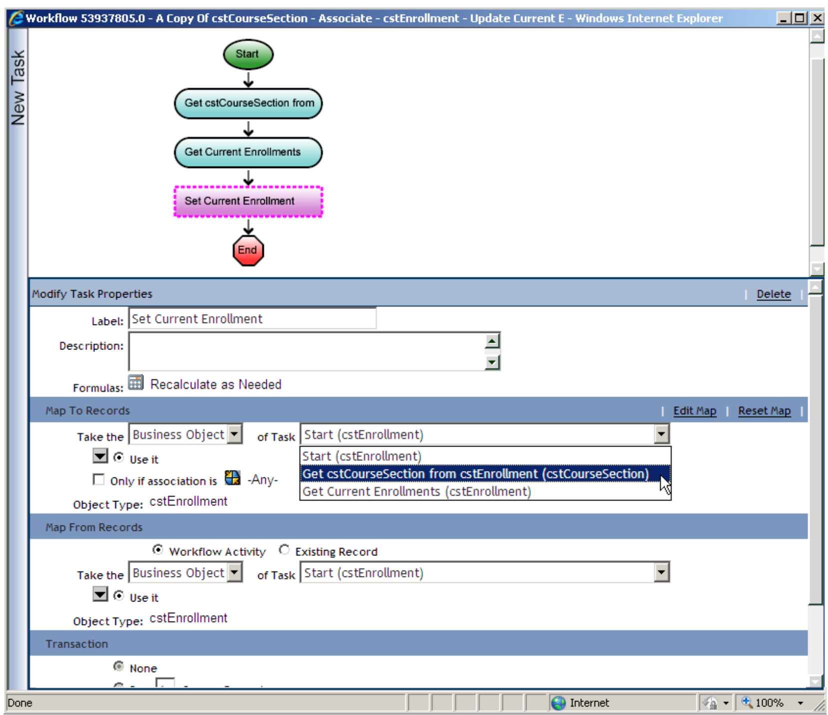


21. Select the Set Current Enrollment task, and make the following changes:

   a. In the Map To Records section, from the **of Task** list, select **Get cstCourseSection (cstCourseSection)**.

   b. In the Map From Records section, from the **of Task** list, select **Get Current Enrollment (cstEnrollment)**.

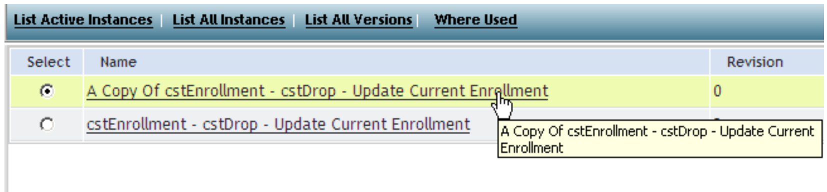
22. Publish the workflow.



23. Return to the Workflow Builder, and click **Copy** to copy the **cstEnrollment – cstDrop – Update Current Enrollment** workflow.

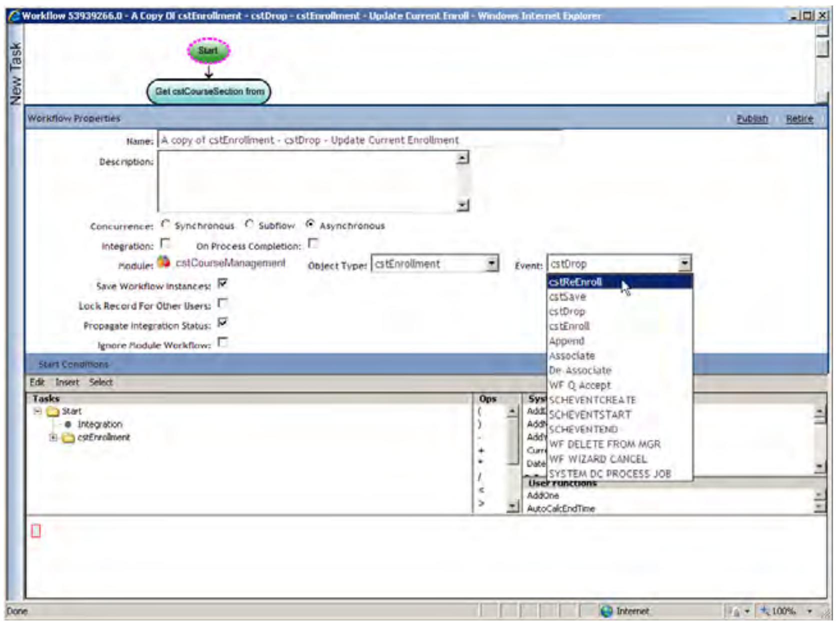
The copy is in the list.

24. Click the link to open the workflow.



25. Edit the Workflow Properties section by performing the following steps:

    a. From the **Event** list, select **cstReEnroll**.



    b. In the **Name** field, change the name to reflect the cstReEnroll event that starts the workflow.

26. Publish the workflow.

27. Test your changes by dropping and re-enrolling some students.

    Again, these workflows are starting asynchronously. You might not see the results immediately.

Solution 17 Object migration: Export exercise solutions

Object migration is the process of moving your work from one IBM TRIRIGA Application Platform environment to another one.

In this exercise you export a copy of the work that you did in class during the week.

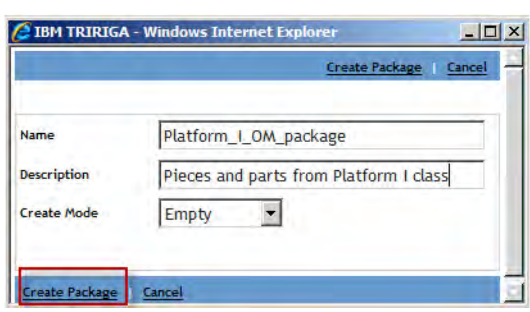
Exercise 1. Creating an Object Migration export package

In this exercise, you create an Object Migration package that contains the various objects that you created during this class.

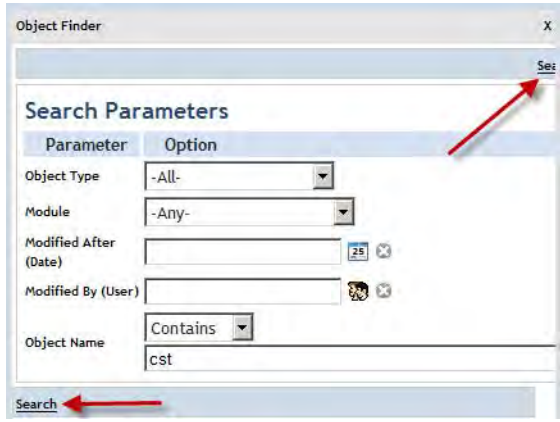
The following steps guide you through the creation of an Object Migration package:

1. On the **Tools** tab, click **Administration** and select **Object Migration** to open the Object Migration tool.
2. Click the **New Export Package** link.

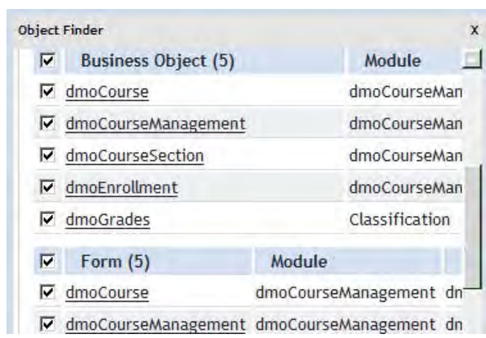
3. In the window that opens, enter a **Name** and **Description**, and click **Create Package**.



4. Enter search criteria in the Object Finder window by performing the following steps:
   a. In the **Object Name** field, enter **cst**.



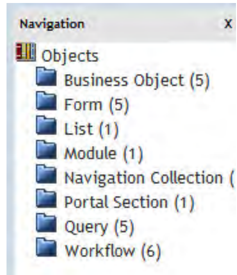
   b. At the top or bottom of the window, click **Search**.
5. Select the check box next to individual objects to select them, or select the check box in a section heading to select all objects in that section.



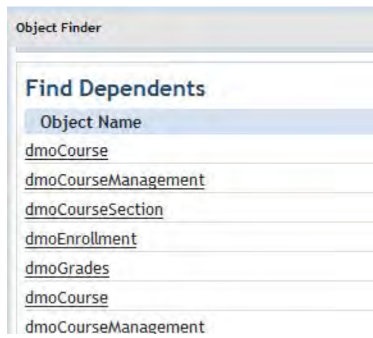
Note: Some images were created from a demonstration package. It has a prefix of **dmo** instead of the **cst** prefix that is used in class.

6. Scroll to the top or bottom of the Object Finder window, and click **Add Selected Objects**.

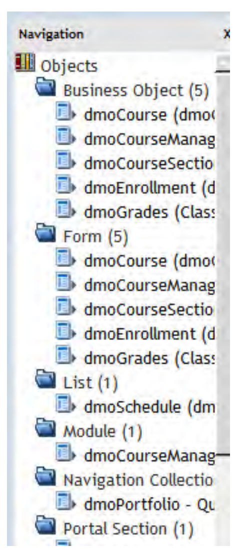
The selected objects are listed in the Navigation window.



Dependents of the selected objects are listed in the Object Finder window.

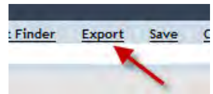


7. Select any additional objects that are not listed in the first search, and click **Add Selected Objects**.
8. Expand all folders in the Navigation window to review the individual objects and verify that all of the objects that you want are listed.



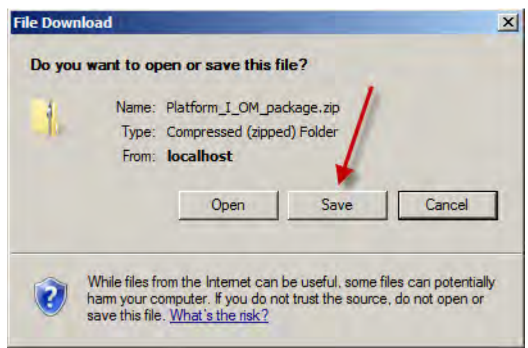
9. Click **Save** to save the export package.

10. Click **Export** at the top of the window to begin the Export process.



11. When prompted, select the **Wait** option.

12. After the export file is created, click **Save** to save it to disk.



13. Enter the directory information that is required for the file.

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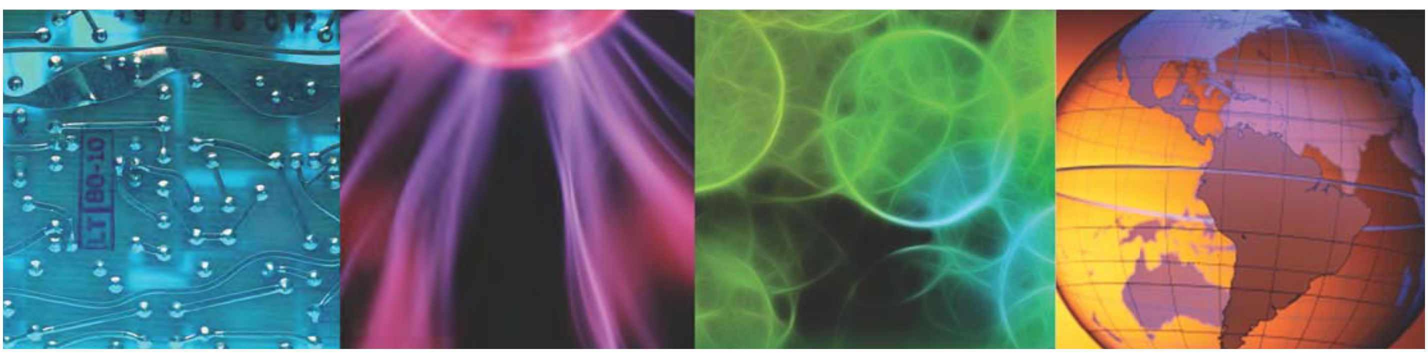

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