Document Management with CreateData

Brainy Software Team

Document Management with CreateData
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First Edition: August 2015

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ISBN: 9781771970242

Book and Cover Designer: Brainy Software Team

Technical Reviewer: Budi Kurniawan
Indexer: Chris Mayle

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Introduction

CreateData is a powerful document management system from Brainy Software (http://brainysoftware.com). It allows you to upload and index documents and share them with others. In addition, you can publish any of the documents so that they are available on the Internet or the intranet. CreateData is free for the first five users, so small businesses with up to five employees can use it for free.

This book has two parts. The first part, which comprises six chapters, is a user guide. The second part, which consists of two chapters, is an administrator guide. Ordinary users should read all the six chapters in Part 1 and administrators should read Part 1 and Part 2.

The following provides an overview of each chapter.

Part 1

Chapter 1, "Getting Started" explains how you can create a CreateData user account to get started. It also teaches you how to retrieve your password.

Chapter 2, "Working with Documents" teaches how you can manage files with CreateData, including how to upload files, search for certain files, and so on.

Chapter 3, "Working with Groups" talks about collaborating with colleagues and managing shared documents.

Chapter 4, "Publishing Documents" discusses how to easily publish documents with CreateData.

Chapter 5, "Working with HTML" explains how to work with the HTML editor in CreateData to create and edit HTML documents.

Chapter 6, "Managing Your Profile" covers user profile management.

Part 2

Chapter 7, "Installing CreateData" is a chapter for the administrator. It explains the hardware and software requirements and how to install CreateData.

Chapter 8, "Administration" teaches the would-be administrator to configure CreateData as well as manage users and groups.

Appendix A, "Apache Tomcat" explains how to use the popular servlet/JSP container.

Chapter 1
Getting Started

This chapter explains how you can get started with CreateData. To do that, you need the URL to the CreateData server that you will be using. Normally, your manager or the system administrator of your organization can help you with that.

This chapter discusses how you can create an account and log in to the system. In addition, it teaches you how to retrieve your password in the event you have forgotten it.

Creating A CreateData Account

There are two ways a CreateData account can be created. The administrator can create one for you or you can create one yourself. If the administrator has created one for you, ask him or her for your CreateData user name and password. Use these to log in and change your password immediately after login.

If you have to create an account yourself, you have to go through a two-step process. First, you need to register by entering your email, name, and other information as well as choose a user name and password. Second, you have to click a link that is sent to your email. This process is to prove that you are the owner of the email address you entered during registration.

Let's create an account. Open your browser and type in the URL to the CreateData server. Figure 1.1 shows the main page.

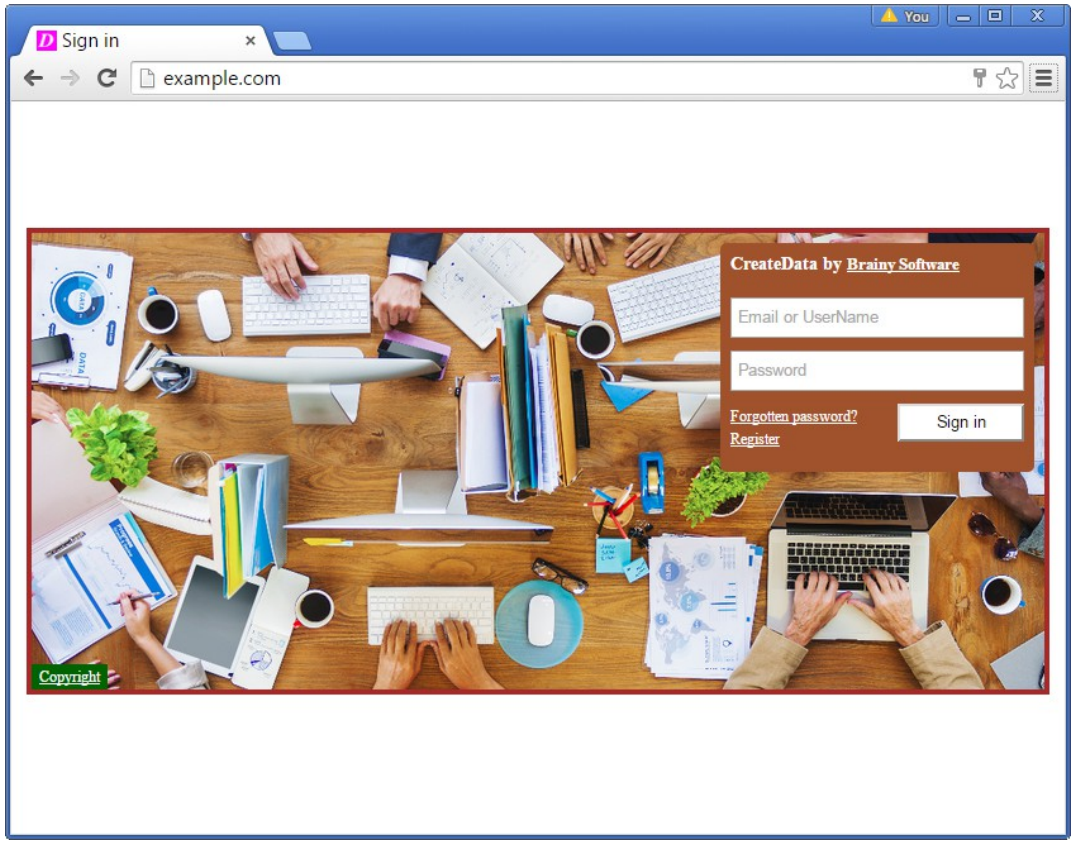

Figure 1.1: The CreateData main page

Notice the form at the top right corner of the page? To the left of the **Sign in** button, there is a **Register** link that will direct you to the Registration page. Click this link and you will see a page similar to the one in Figure 1.2. This is the Registration page.

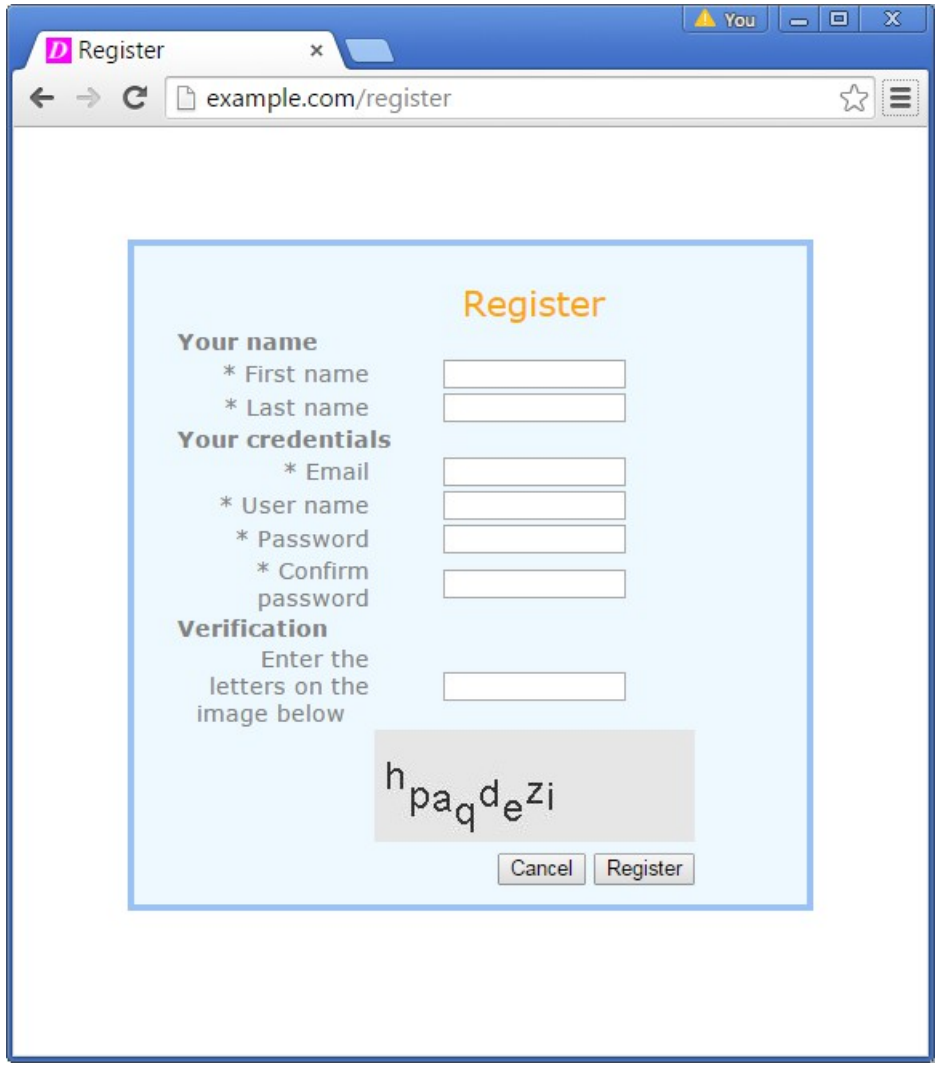

Figure 1.2: The Registration page

Type in your first name, last name and email. Then choose and confirm a password. Next, enter the letters shown in the CAPTCHA image.

For the user name, you can use any digit and letter as well as periods and hyphens. For example, the following are valid user names:

- greenlantern2000
- jane.example
- john-average

Next, click **Register**. If your user name has not been used and you confirmed your password, an email will be sent to the email address you entered. Now open your email and click the link in the email.

If you have waited for more than five minutes and still do not receive an email,

contact your administrator. There may be a problem with your email system.

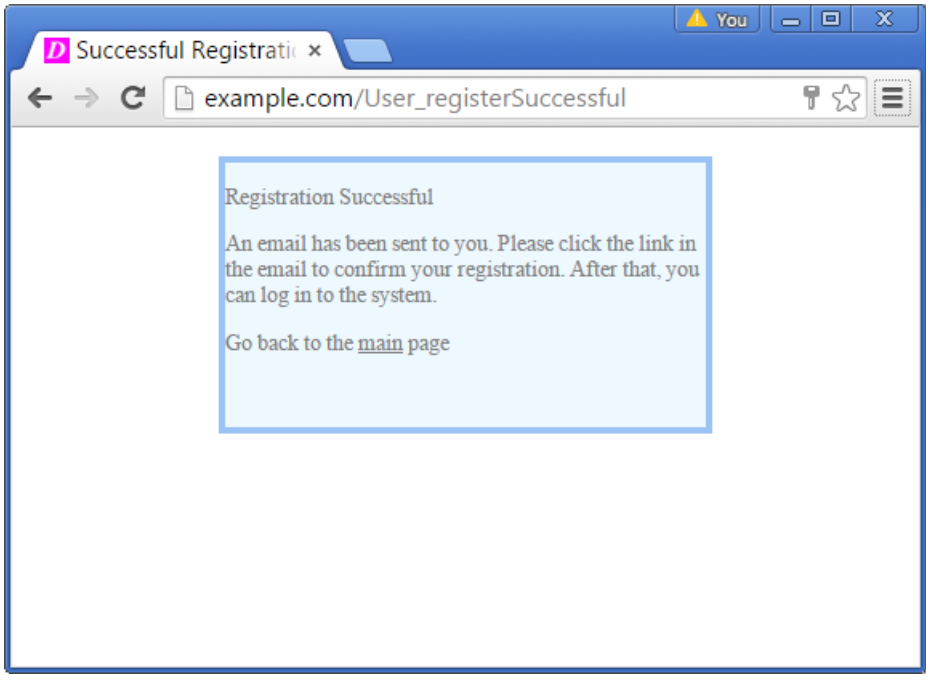

Figure 1.3: A message after a successful registration

Logging in

Go to the main page and enter your email and password. Alternatively, you can log in with your user name and password. Upon successful login, you will see the Documents page like the one shown in Figure 1.4.

Note that CreateData will lock your account after three failed login attempts. If you get locked out, simply wait 15 minutes before trying again. Alternatively, contact the administrator.

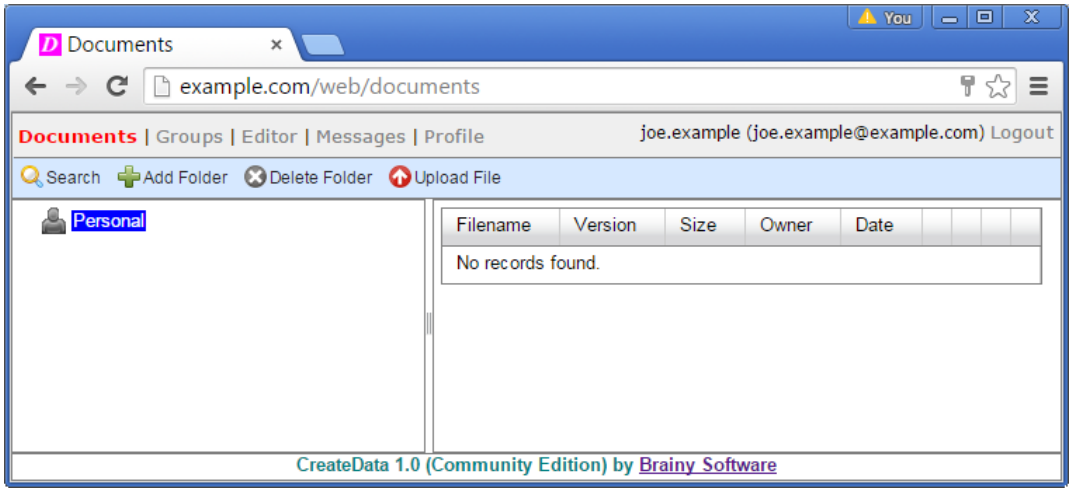

Figure 1.4: The Documents page

The first time you log in, you will see an empty Personal repository. The Personal repository is for you to store documents for your own use. You cannot share or publish documents in the Personal repository.

You learn how to work with documents in Chapter 2, "Working with Documents."

Retrieving Your Password

If you have forgotten your password, go to the main page and click the **Forgotten password?** link. You will see the **Retrieve Password** page as shown in Figure 1.5.

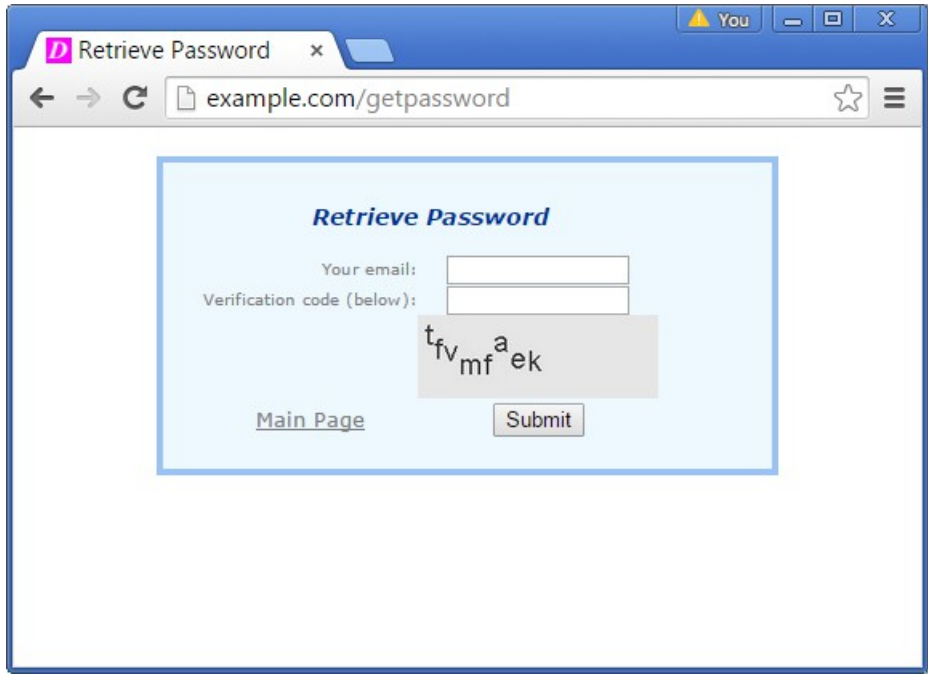

Figure 1.5: Retrieving your password

Type in your email and the CAPTCHA image to have your password emailed to you.

Chapter 2
Working with Documents

CreateData is excellent in organizing documents. It also indexes documents that you upload so you can search for them later. Not all documents can be indexed. For example, image and sound files cannot be indexed. However, CreateData can index many other file types, including Microsoft Office documents, PDFs, text files as well as XML and HTML documents.

This chapter explains how you can organize documents with folders as well as upload documents.

Organizing Documents with Folders

You can upload all your documents into your Personal repository. However, there is a better way of organizing your documents. You should create folders and upload relevant documents to the individual folders. A folder can contain documents and other folders.

Creating A Folder

To create a folder, follow these steps.

1. Select a folder or a repository in which the folder will be created.
2. Click the **Add Folder** button on the tab under Documents. A small dialog will be shown (See Figure 2.1.)

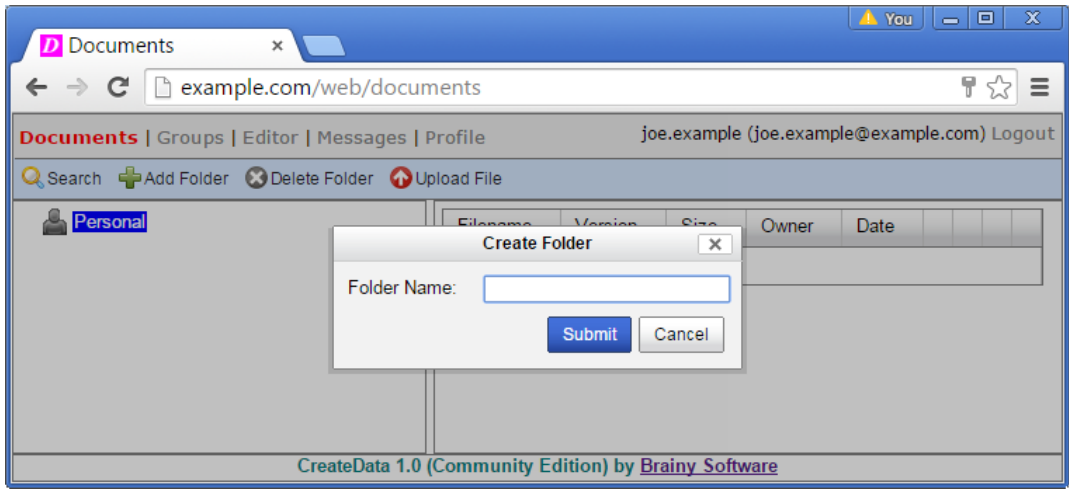

Figure 2.1: Entering a folder name

3. Type a name for the new folder.
4. Click the **Submit** button.

The new folder will be displayed under the parent folder or repository. For example, Figure 2.2 shows a folder named **research** under the **Personal** repository.

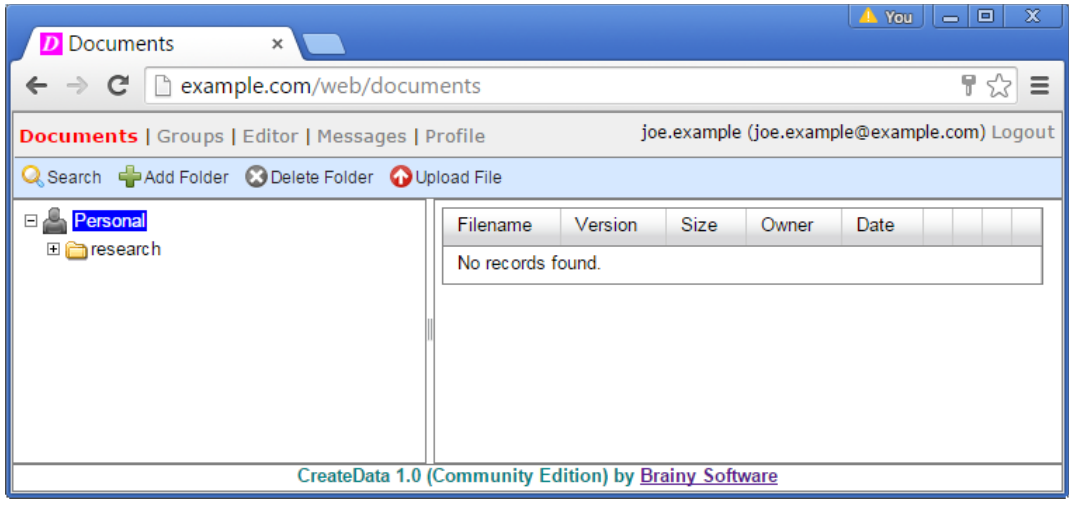

Figure 2.2: A folder named research

Deleting A Folder

If you have an empty folder that you no longer use, you can delete it by following these steps.

1. Select the folder you want to delete.
2. Click the **Delete Folder** button on the tab.
3. On the confirm dialog that appears, click **OK** to confirm the deletion.

Note that you can only delete an empty folder. If a folder is not empty, you must first delete all the files and folders in it before you can delete the folder.

Uploading Documents

Now that you know how to create folders to organize your documents, you can start uploading documents into your Personal repository or one of your folders. You can upload a single document or multiple documents.

To upload a document or multiple documents, follow these steps.

1. Select the folder or repository to which your uploaded documents will be stored.
2. Click the **Upload File** button on the tab. The File Upload dialog like that in Figure 2.3 will appear.

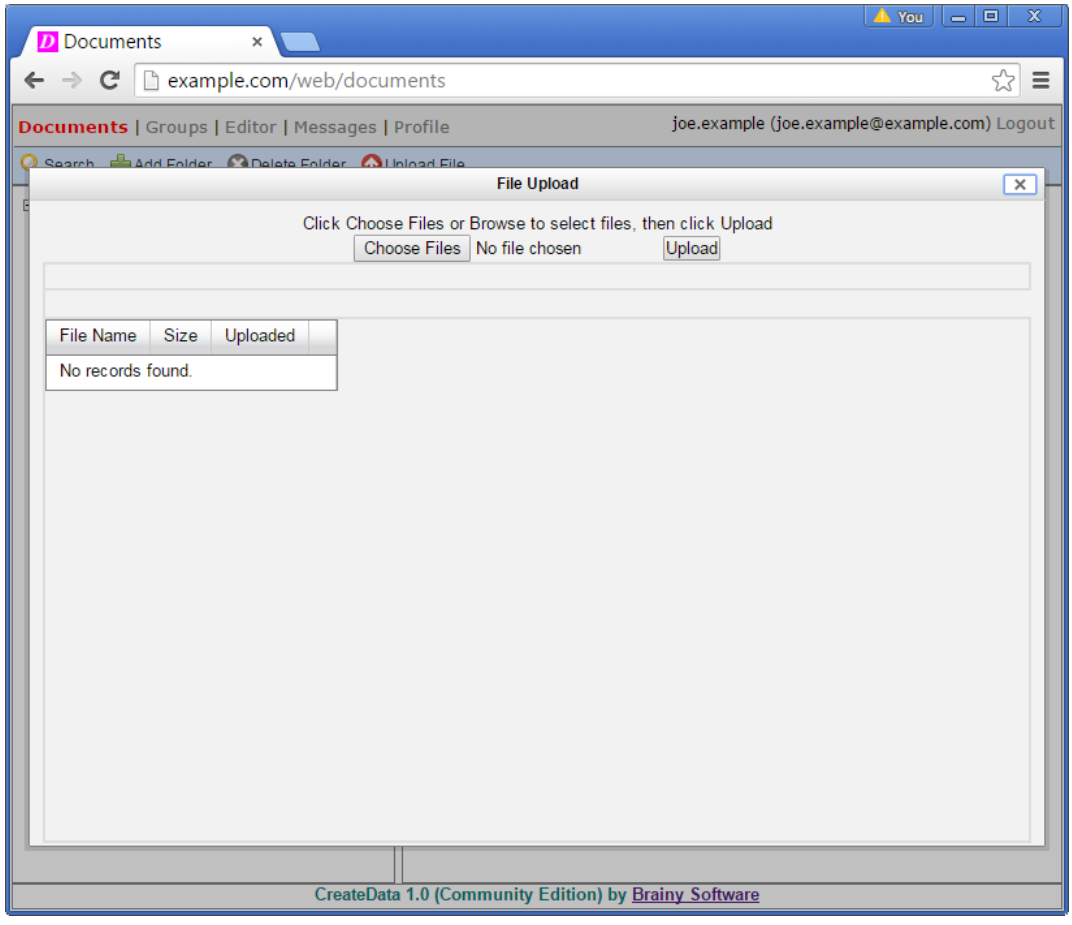

Figure 2.3: The File Upload dialog

3. Click the **Choose Files** button and navigate to the file(s) you wish to upload. When you have selected the files, each of the files and its size will be listed, as

demonstrated in Figure 2.4. You can remove a file from the list by clicking the X button.

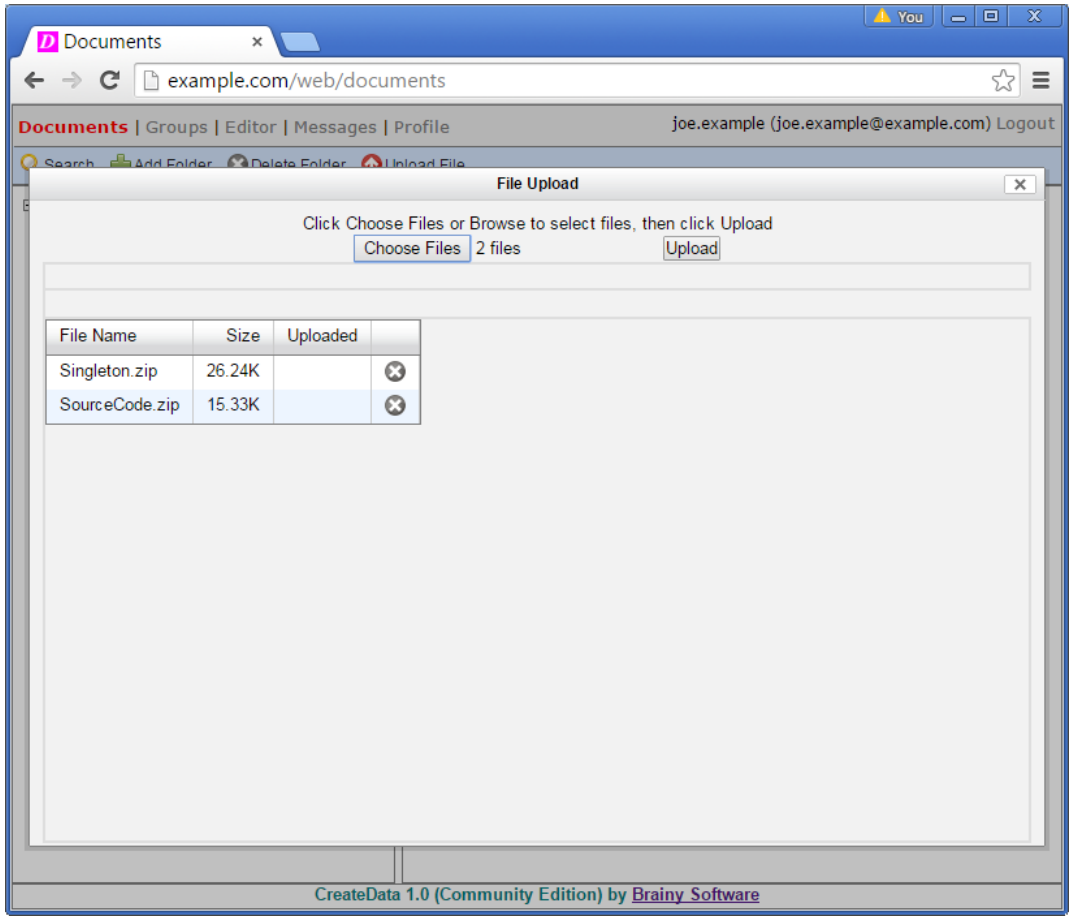

Figure 2.4: Files to be uploaded

4. Click the **Upload** button to start uploading. A progress bar will appear to show the upload progress. When all files have been uploaded, each file on the list will be marked as shown in Figure 2.5.

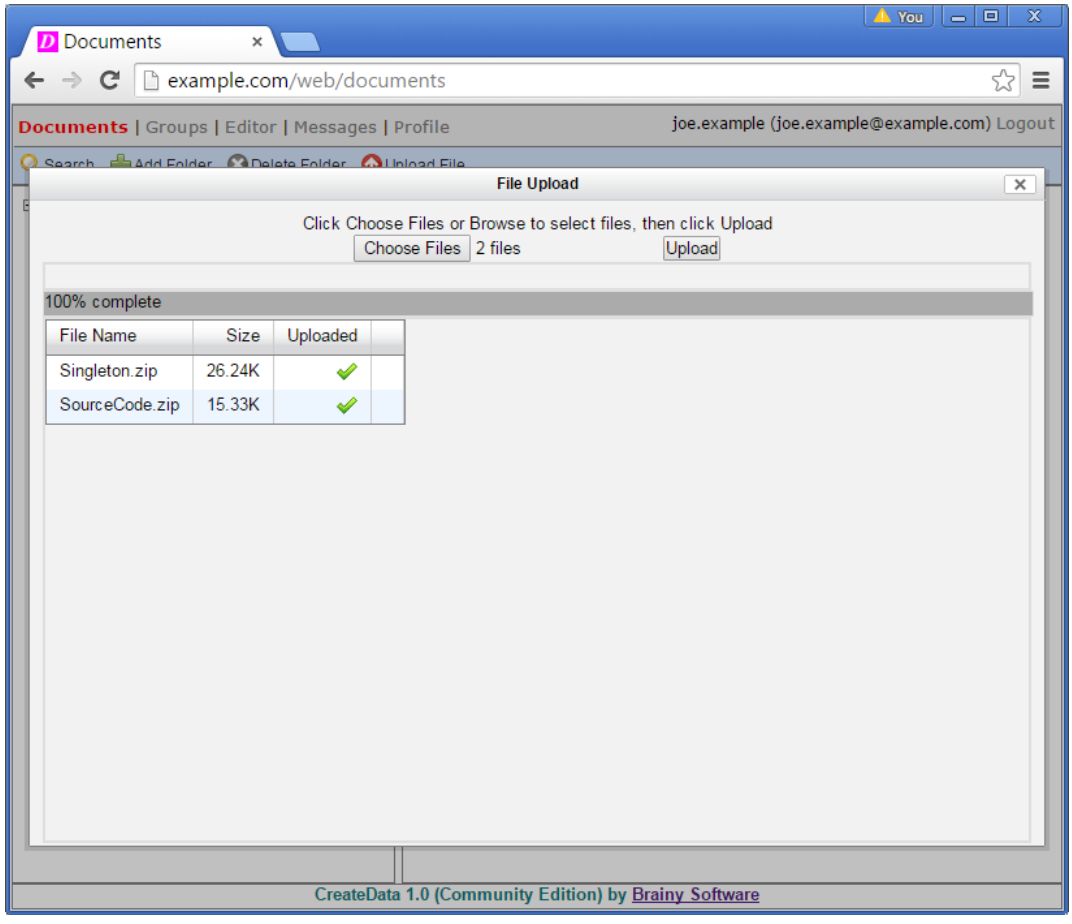

Figure 2.5: Icons to indicate files that have been successfully uploaded

5. If you have more documents to upload, click the **Choose Files** button again to select more files. Otherwise, close the **File Upload** dialog by clicking the X button at the top right corner. All recently uploaded files and any existing files will be shown in the Documents page. (See Figure 2.6.)

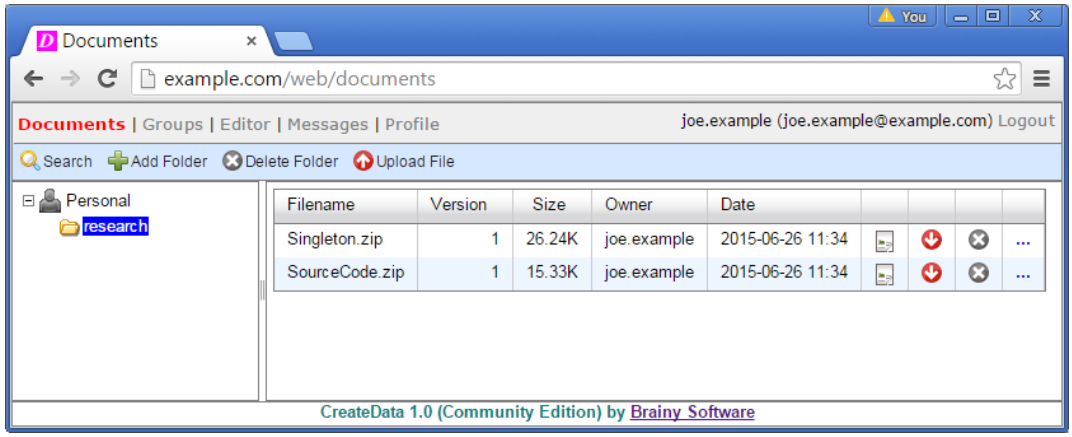

Figure 2.6: The uploaded files

Viewing A Document

Every time you select a folder or a repository, the documents in that folder or repository will be shown in a table on the right pane. For each document, the filename, version, size, owner and uploaded date/time are shown. In addition, there are three buttons (View, Download and Delete) and a hidden menu associated with each document.

To view a document, click the View button. The View button is shown in Figure 2.7.

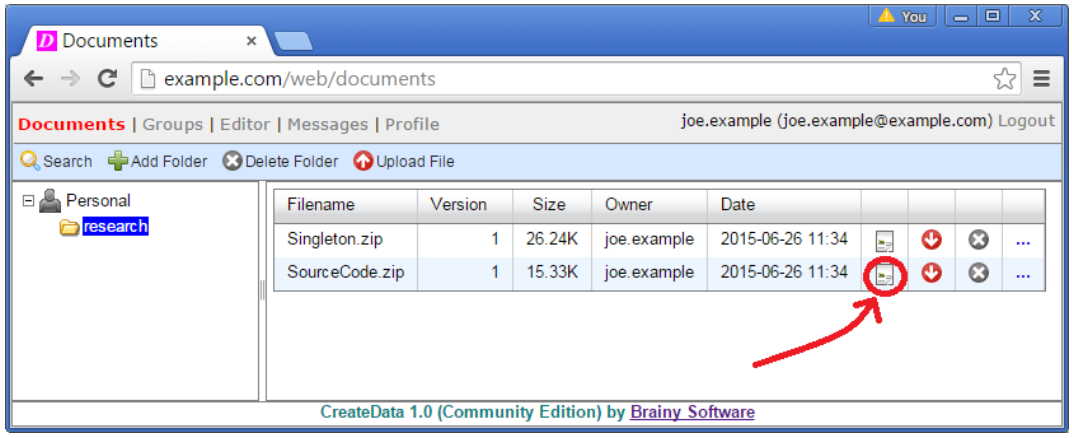

Figure 2.7: Viewing a document

Whether or not you can view a document in your browser depends on whether or not the file type is supported by the computer system running the browser. If you are trying to view a PDF file and there is a PDF reader installed on the computer, then the document will be opened in the browser. If the document type is not supported, the document will be offered for download instead.

Downloading A Document

To download a document, click the **Download** button. This button is shown in Figure 2.8.

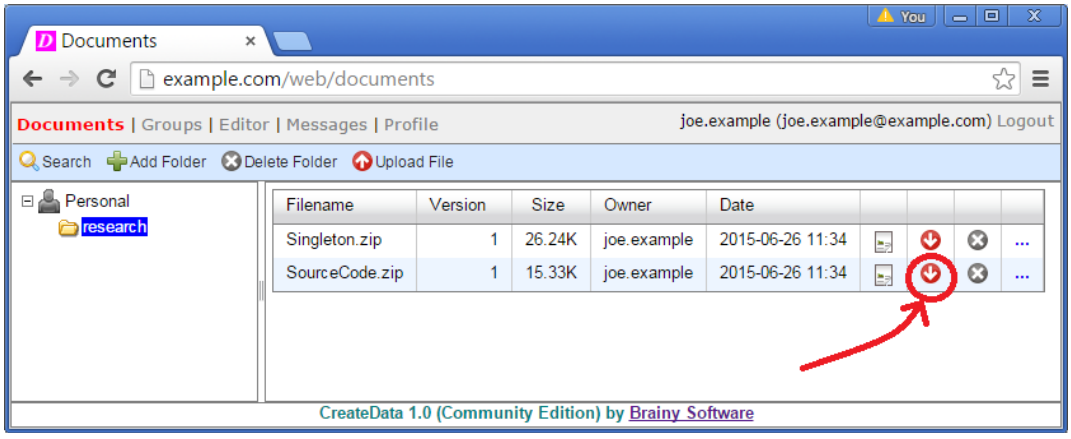

Figure 2.8: Downloading a document

A dialog will open to ask you where to save the document in your computer.

Deleting A Document

You can delete a document by clicking the **Delete** button for the document. This button is shown in Figure 2.9.

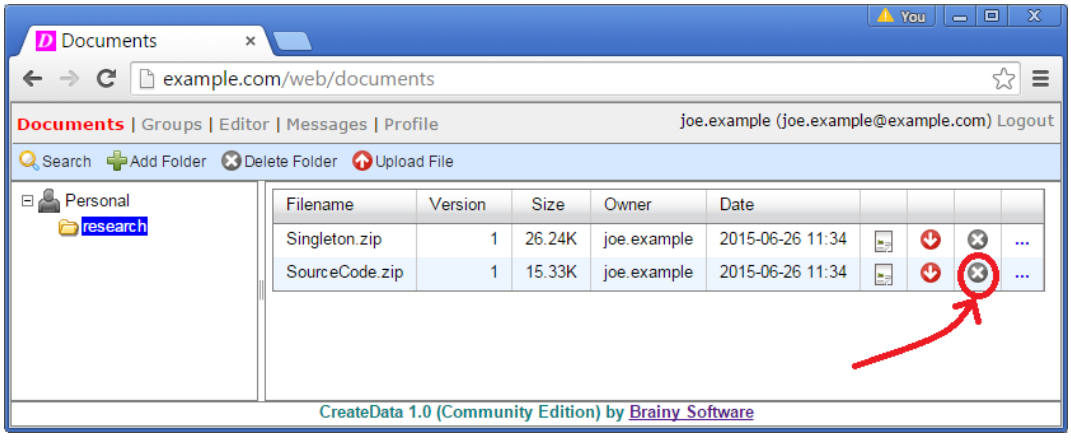

Figure 2.9: Deleting a document

Note that a deleted document cannot be undeleted. Older versions of the document, if any, will also be deleted. Therefore, after you click the **Delete** button, you will be asked to confirm that you really intend to delete the document.

Searching for Documents

You should know by now how to upload documents. When a document is uploaded, it is also indexed if the file type is supported. CreateData is smart enough to index all documents in a zip file when the zip file is uploaded.

To search for a document or documents, follow these steps.

1. Click the **Search** button on the tab under Documents. The web page will change to show a Search form and the search results, as shown in Figure 2.10.

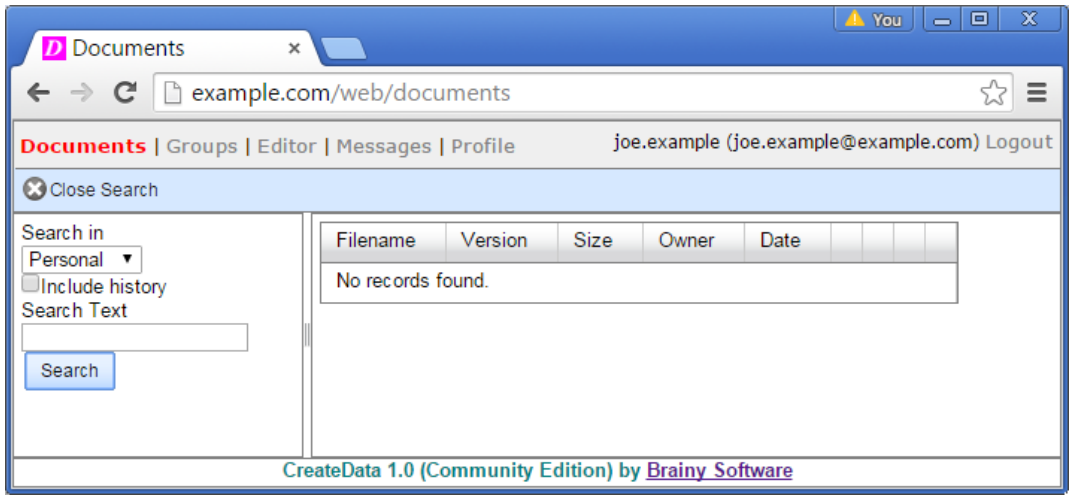

Figure 2.10: Searching for files

2. Select a repository where the search is to be conducted.
3. Type in a search key.
4. Click the **Search** button. Any search results will be displayed on the right pane, as shown in Figure 2.11.
5. Click the **Close Search** button when you are done.

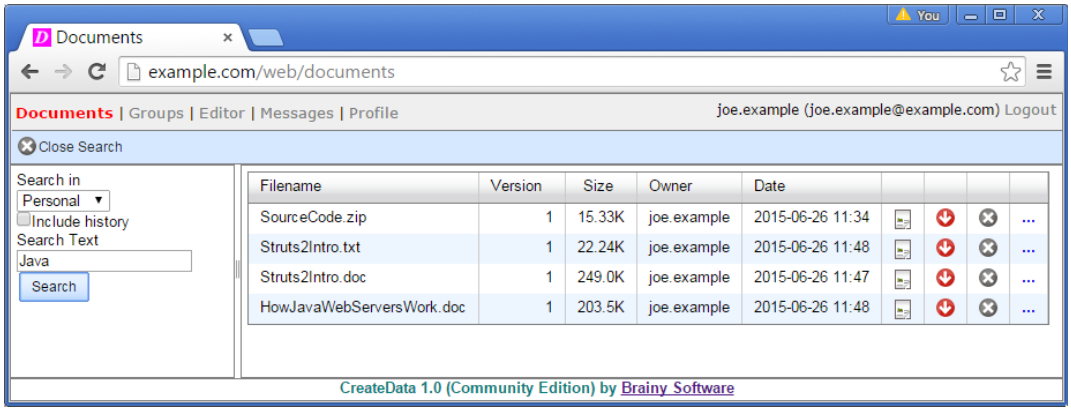

Figure 2.11: Search results

Document History

If you upload a file that has the same name as a file in a folder or the root, the existing file will be archived. You can view a document's history by clicking the version number for that document.

Figure 2.12 shows a sample document history. In this case the file has three versions, the current version and two older versions. The latter are shown in Figure 2.12.

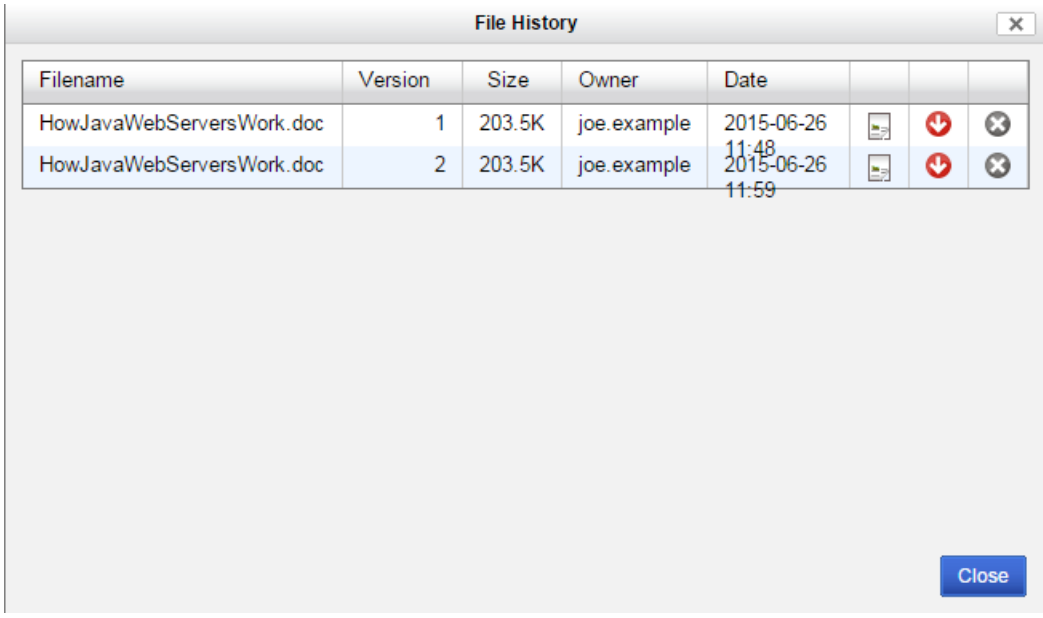

Figure 2.12: The document history

You can view, download or delete an old version just as you would a current document.

Emaling A Document

You can email a document to a colleague or to yourself. Here are the steps you need to follow to email a document.

1. Click the hidden menu of the document you would like to email and click **Email**. Figure 2.13 shows this hidden menu.

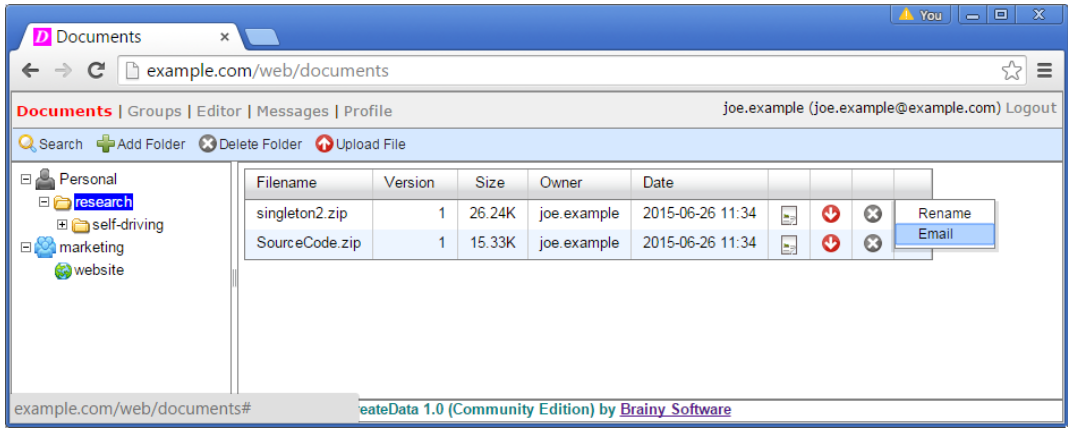

Figure 2.13: Select a document to email

2. A dialog that resembles the one in Figure 2.14 will appear.

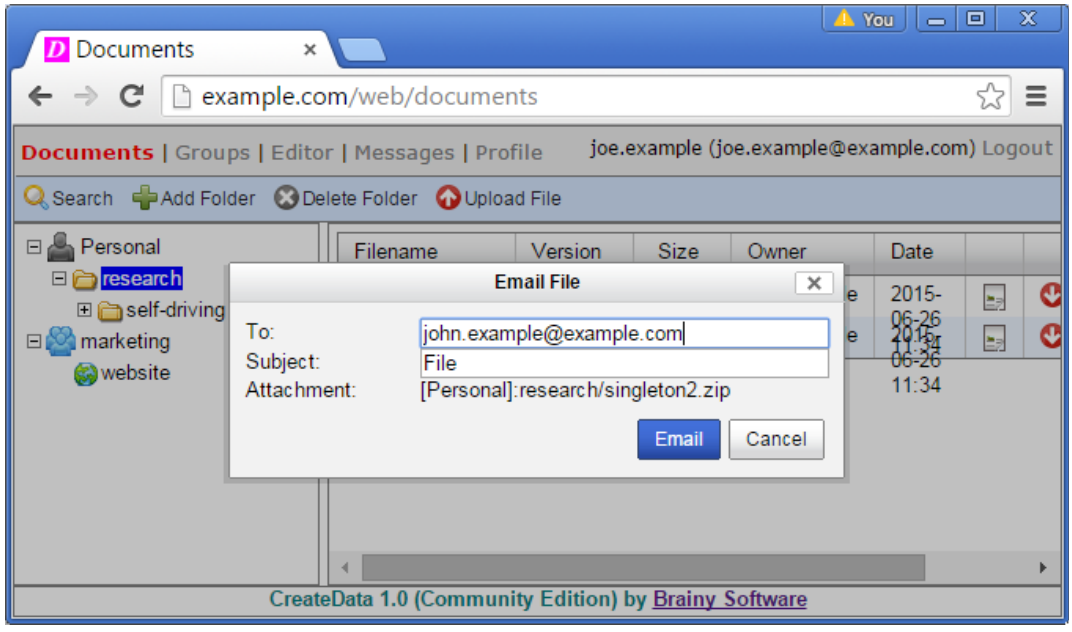

Figure 2.14: Emailing a document

3. Type in the email address of the recipient and edit the subject if necessary.

4. Click the **Email** button.

Renaming A Document

You can easily rename a document by following these steps.

1. Click the hidden menu of the document you wish to rename. Figure 2.15 shows the hidden menu.

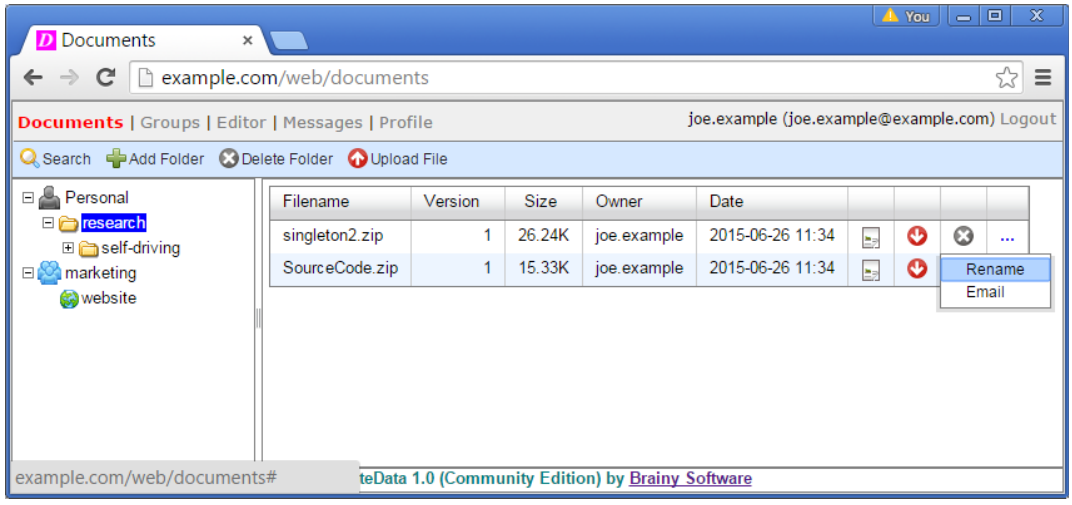

Figure 2.15: Selecting a document to rename

2. A dialog will appear, as shown in Figure 2.16. Type a new name for the document.

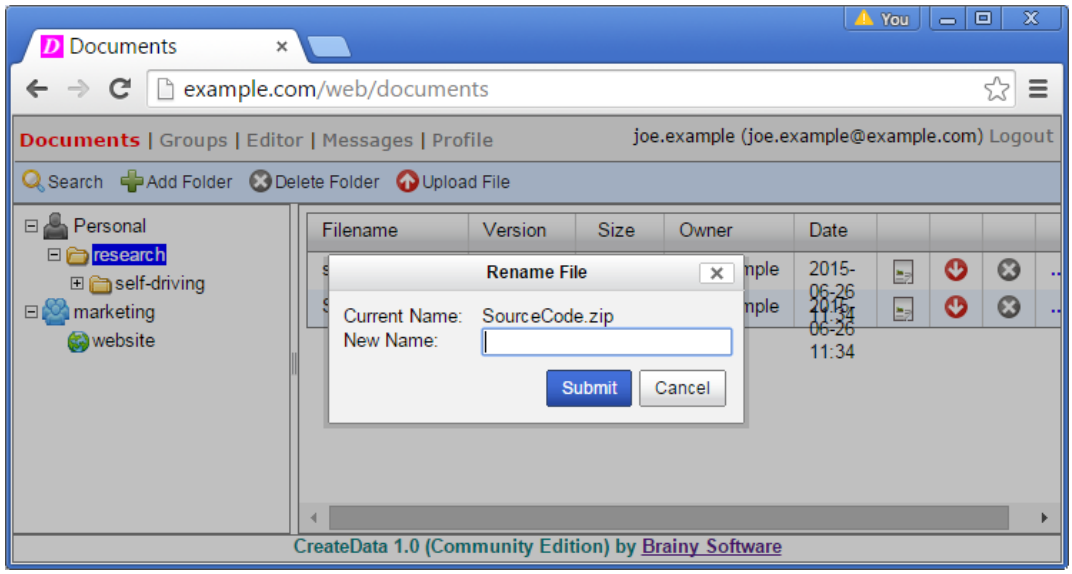

Figure 2.16: Renaming a document

3. Click the **Submit** button.

Chapter 3
Working with Groups

You can collaborate with colleagues or friends by creating groups. Technically, a group is a repository like Personal. However, unlike Personal, a group can be shared among users and allow documents uploaded there to be published.

This chapter explains all you need to know about groups.

Creating A Group

If you are still in the Documents page, click the Groups menu to the left of Documents. Figure 3.1 shows the Groups page.

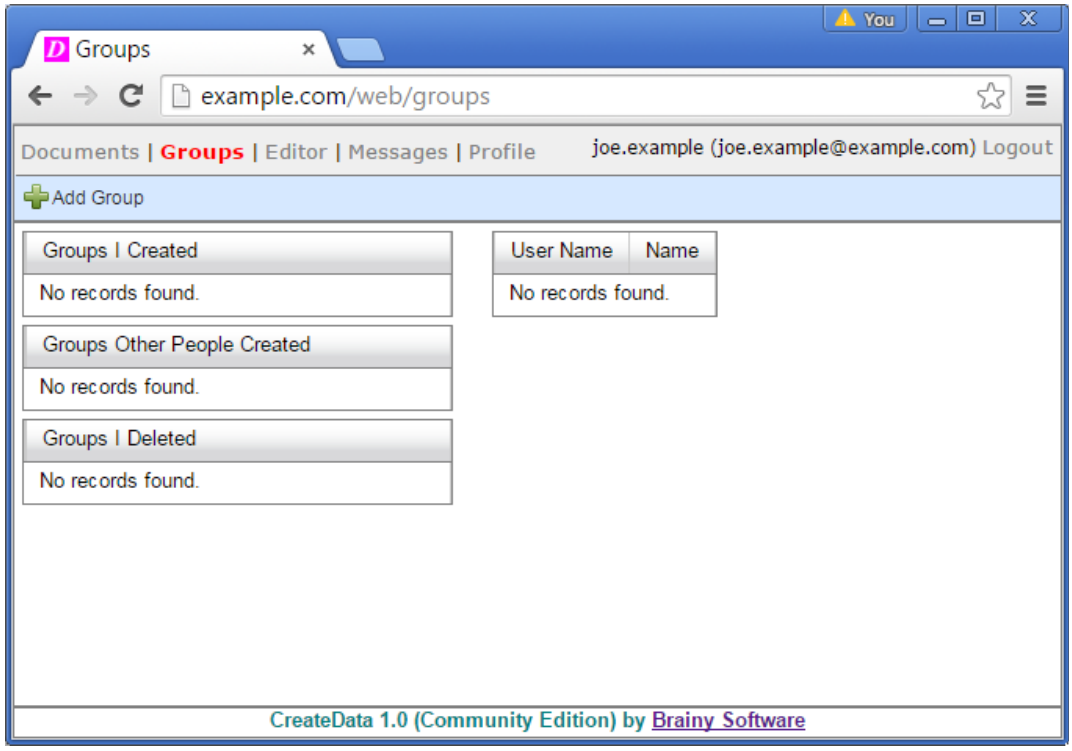

Figure 3.1: The Groups page

To create a group, follow the steps below.

1. Click the **Add Group** button on the tab. A dialog will appear as shown in Figure 3.2.

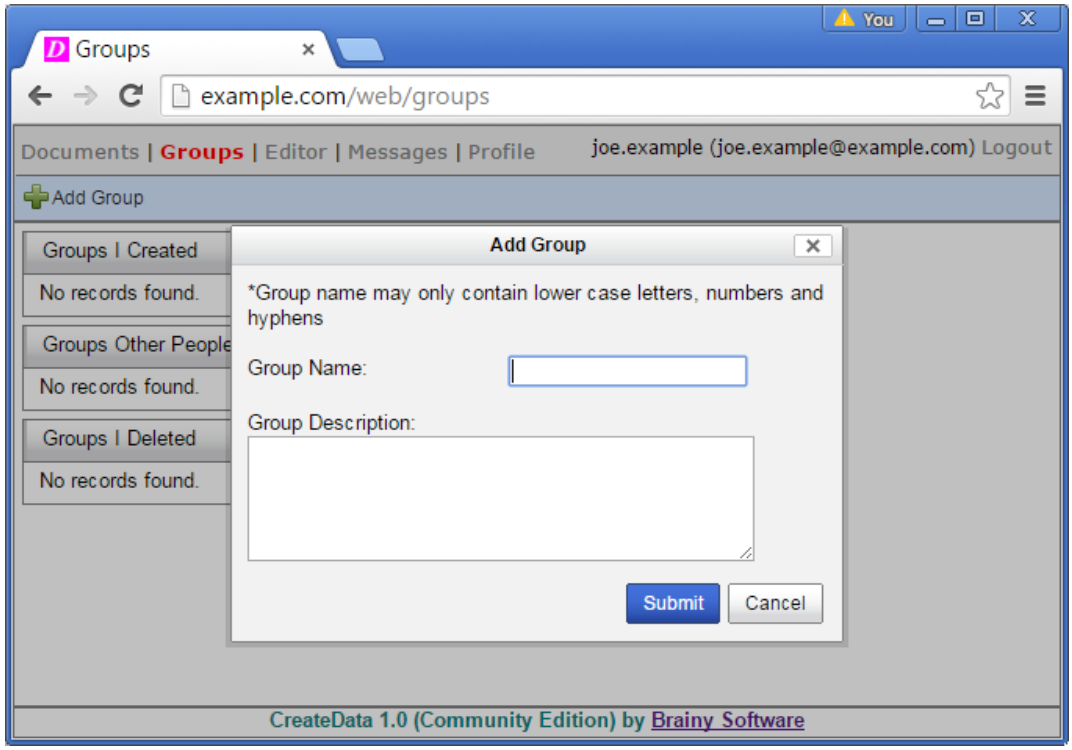

Figure 3.2: Creating a group

2. Enter the group name and description. The group description is optional but the group name is very important as it also determines the links to any published documents in the group.
3. Click the **Submit** button.

The dialog will close and the recently created group will be displayed in the Groups page along with other existing groups.

Inviting Potential Members

Now that you have a group, you can start adding members to your group. Unlike the administrator that can add members without their permissions, you have to invite would-be members to your group. Invitees may accept or reject your invitations.

To invite a member or members to your group, do the following steps.

1. Select a group by clicking on its name. Once a group is selected, the tab will contain more buttons. For example, Figure 3.3 shows the page when a group called **marketing** is selected.

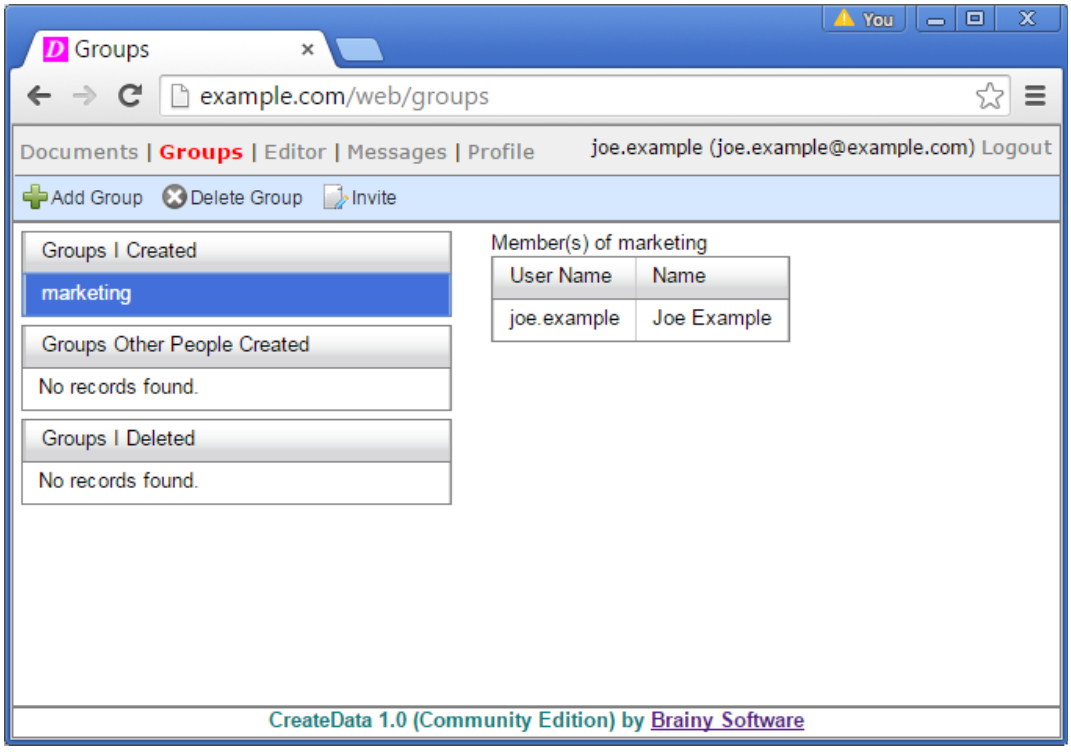

Figure 3.3: A selected group

2. One of the buttons that appear on the tab is the **Invite** button. Click this button to show the **Invite** dialog like the one in Figure 3.4.

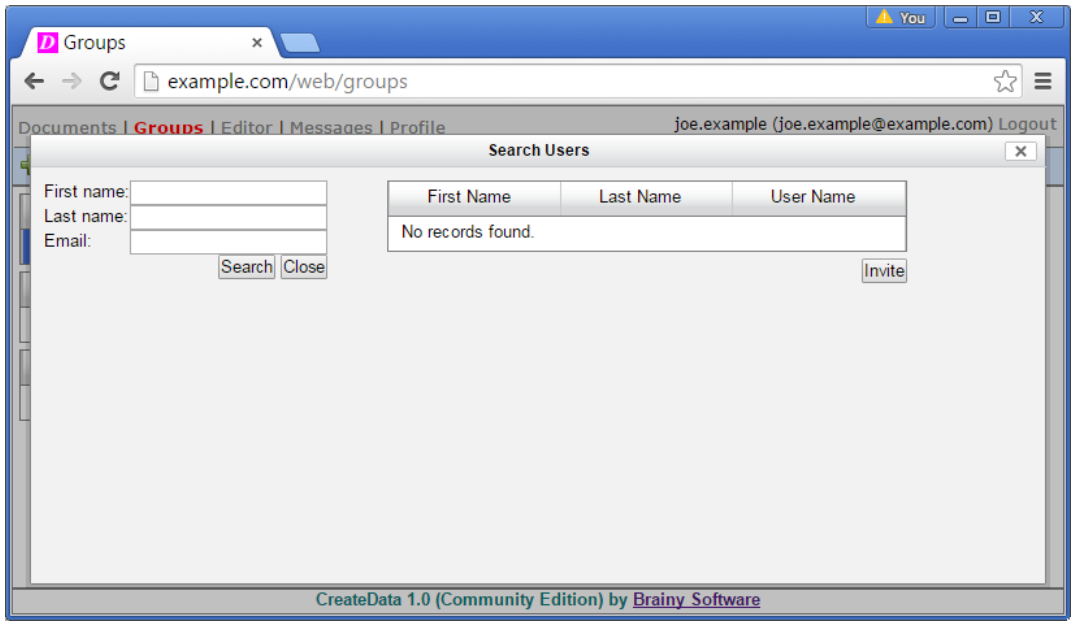

Figure 3.4: Searching for invitees

3. Enter a first name, a last name or an email or any combination of the fields.
4. Click the **Search** button. The search results will be shown on the right pane, as shown in Figure 3.5.

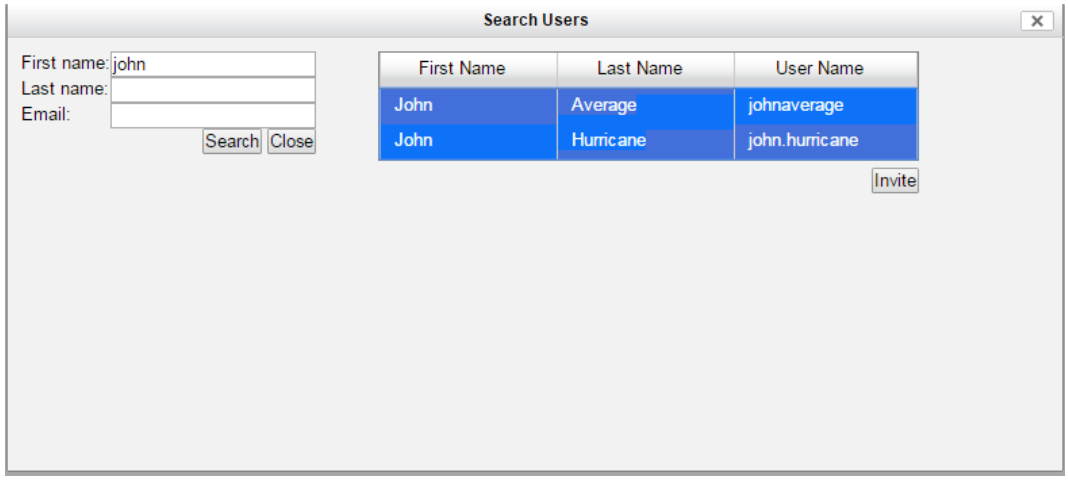

Figure 3.5: Inviting other users to your group

5. Select a user to invite by clicking on the name. To select multiple users, press the Ctrl key while clicking on the names.
6. Click the **Invite** button.

All invited users will receive a message in his or her Messages box. Any user who has accepted your invite will be shown as a member of the group when you select the group in

the Groups page.

Accepting or Rejecting An Invite

You can accept and reject an invite easily by following these steps.

1. Go to the Messages page by clicking the Messages menu. Figure 3.6 shows an example Messages page that contains an invite from user Joe Example.

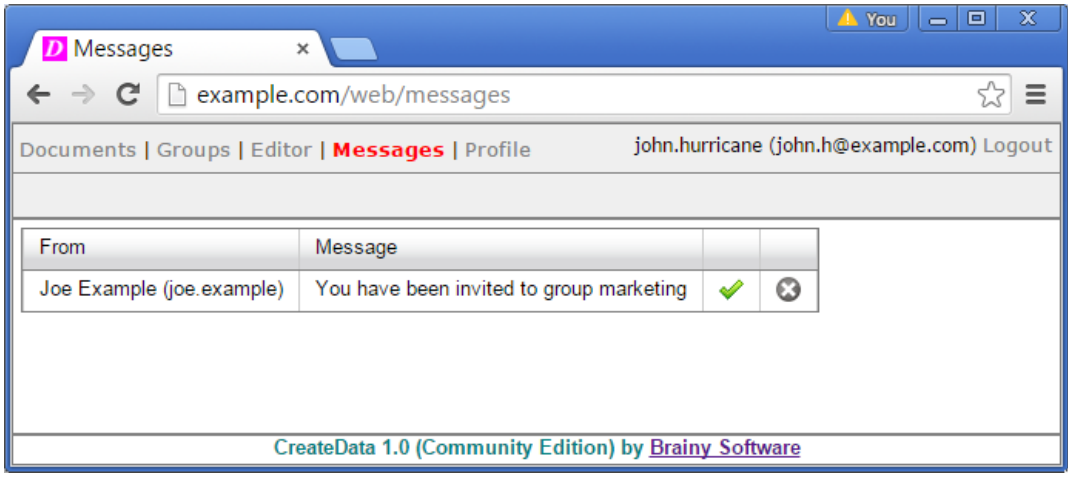

Figure 3.6: Accepting or rejecting an invite

2. Click the green icon to accept an invite or the X button to reject it.

Chapter 4
Publishing Documents

One of the benefits that CreateData offers is the ease of publishing a document on the Internet or an intranet. Due to the fact that it is ridiculously simple to publish a document in CreateData, this chapter is conspicuously short.

Overview

To publish a document, you must have a group and create a folder named **website** right under the group. Any document you upload to the website folder is automatically accessible to everyone on the Internet or intranet, not only members of the group.

The only thing to note is the URL of a published document. The URL has the following format.

`http://`*`domain`*`/`*`group`*`/`*`path`*

Figure 4.1 shows an example.

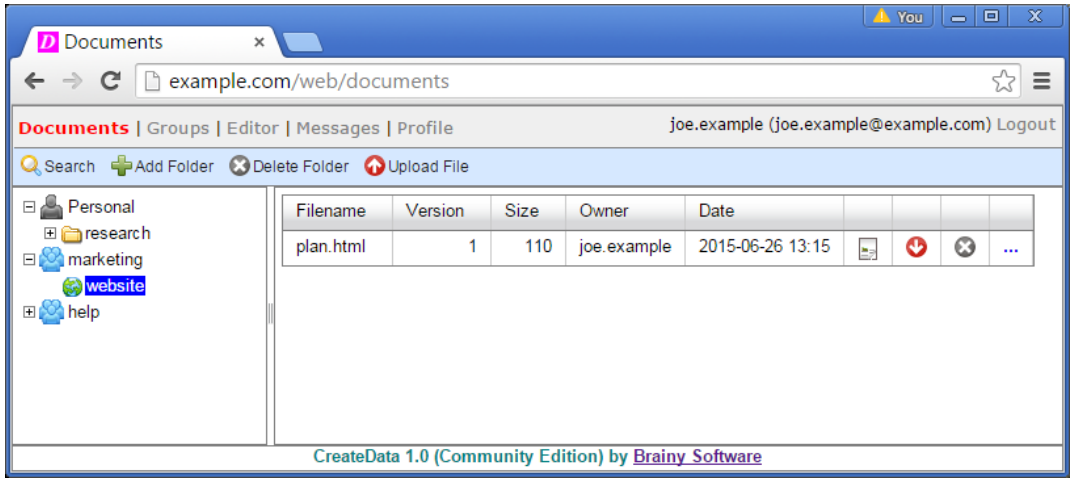

Figure 4.1: A document to be published

A document named **plan.html** has been uploaded to the **website** folder under the **marketing** group. The document is already published and can be accessed using this URL (assuming the domain name is example.com):

`http://example.com/marketing/plan.html`

As another example, Figure 4.2 shows an image file named **logo.jpg** that has been uploaded to the **website/image** folder under the **help** group.

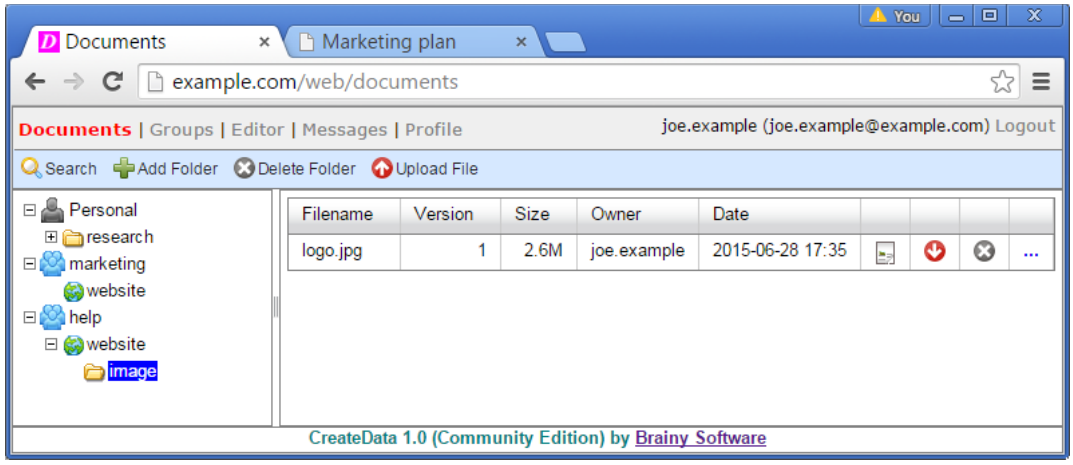

Figure 4.2: A published image

This image can be accessed using this URL:

```
http://example.com/help/image/logo.jpg
```

The Welcome Page

A published document can be used as the application welcome page. By default, when the main page for the application is the user login page. This is not always favorable. You or your company may want to use a different page, probably one featuring your company welcome page, as the default page. This can be done by the administrator and you should contact the administrator if you want a published document be used as the application welcome page.

Chapter 5
Working with HTML

In addition to uploading documents, you can also create HTML documents with CreateData. In fact, creating an HTML document is easy thanks to the HTML editor that comes with CreateData.

In this chapter you learn how to use the editor to create HTML documents.

Creating an HTML Document

To create an HTML document, do the following steps.

1. Click the Editor menu.
2. Click on the text area and start typing. Figure 5.1 shows an example HTML document.

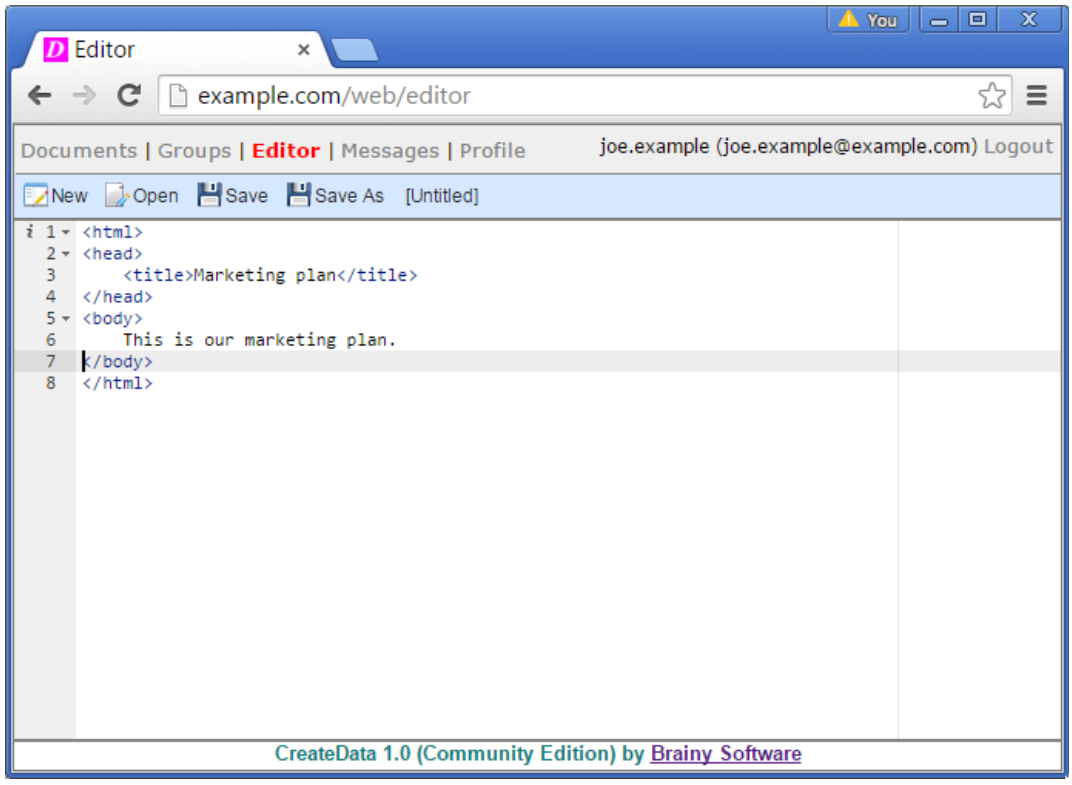

Figure 5.1: Creating a new HTML document

Saving A Document

When you are finished editing a document, click the **Save** button. You will see a dialog similar to the one in Figure 5.2.

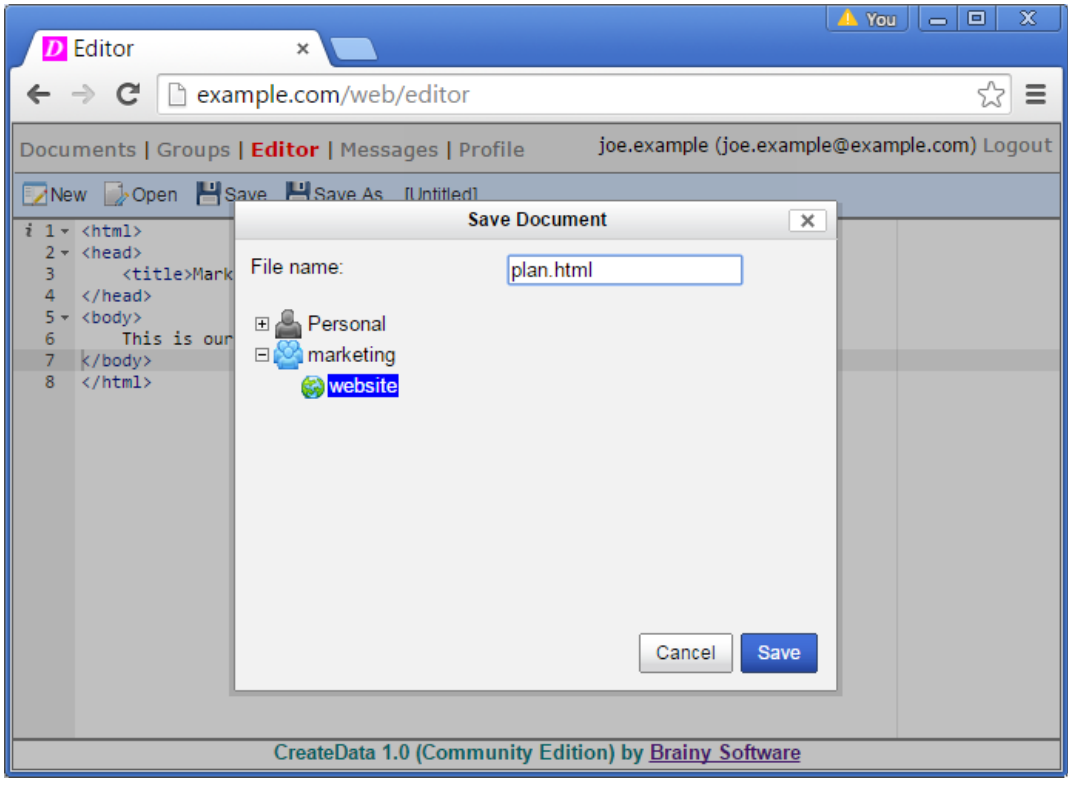

Figure 5.2: Saving a document

Browse to a location, which can be a folder or a repository, enter a file name (which must have **html** extension) and click the **Save** button. In the example in Figure 5.2, the document is saved as **plan.html** in the **website** folder of the **marketing** group.

When the dialog closes, the name of the saved file is displayed on the tab, as shown in Figure 5.3.

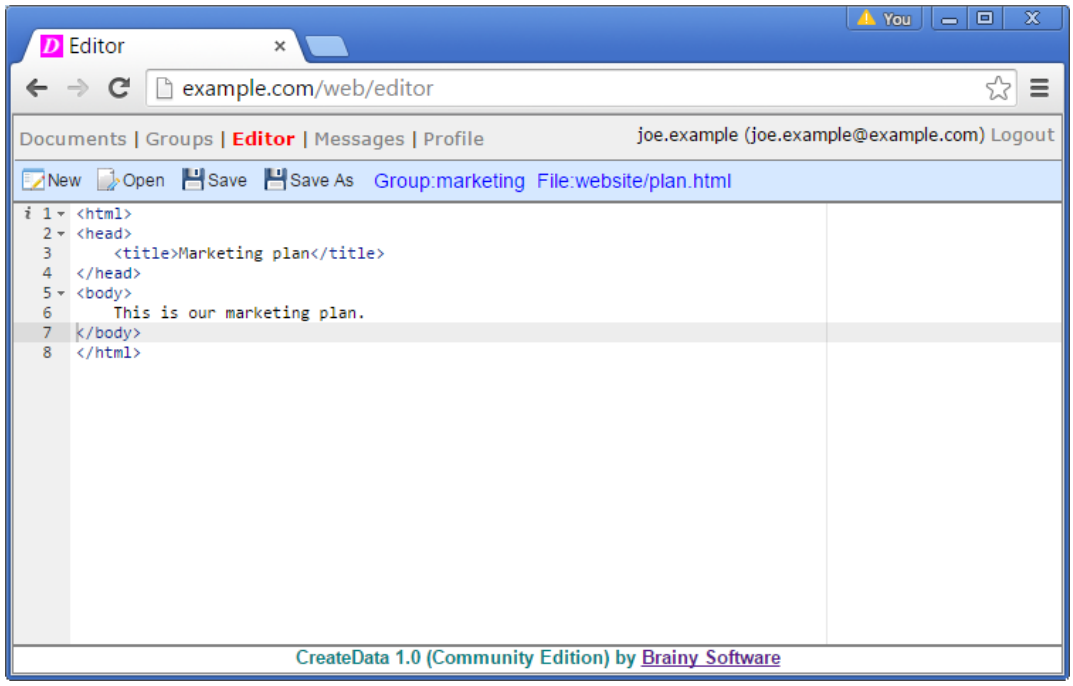

Figure 5.3: The name of the saved document is saved

Alternatively, you can press **Ctrl+S** to save a document.

To save as a different name, click the **Save As** button.

The name and path of a document that has been saved is shown on the Documents page when you navigate to it. Figure 5.4 shows a saved document in the Documents page.

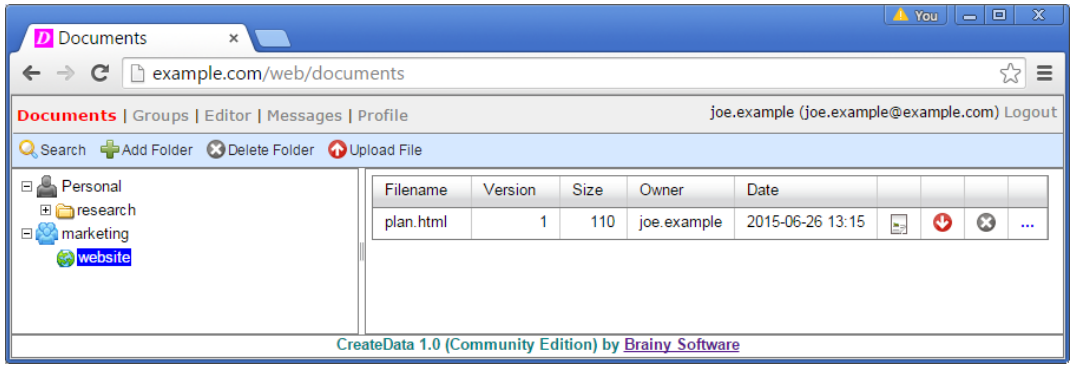

Figure 5.4: A saved document in the Documents tab

Opening A Document

You can open an HTML document in the Editor page. To open an HTML document, follow these steps.

1. Go to the Editor page
2. Click the **Open** button. The **Open Document** dialog will be displayed, as shown in Figure 5.5.

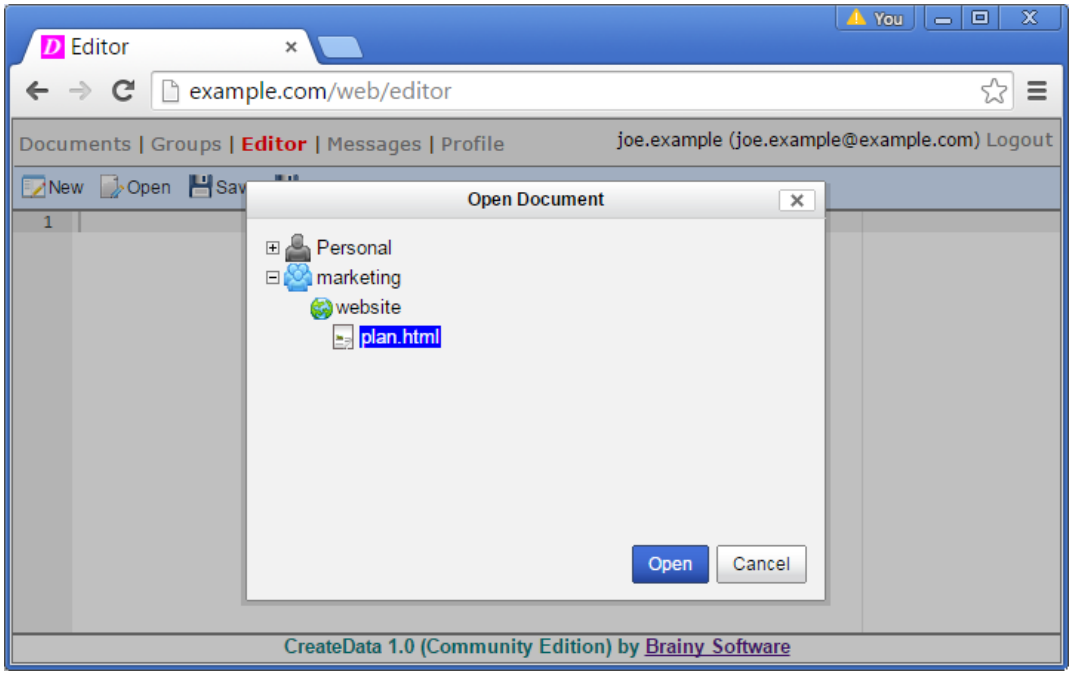

Figure 5.5: Opening a document

3. Browse to the location of the document that you would like to open.
4. Click the **Open** button.

There is also a shortcut in the Documents page. Click the hidden menu of an HTML document and click **Edit**. The hidden menu is shown in Figure 5.6.

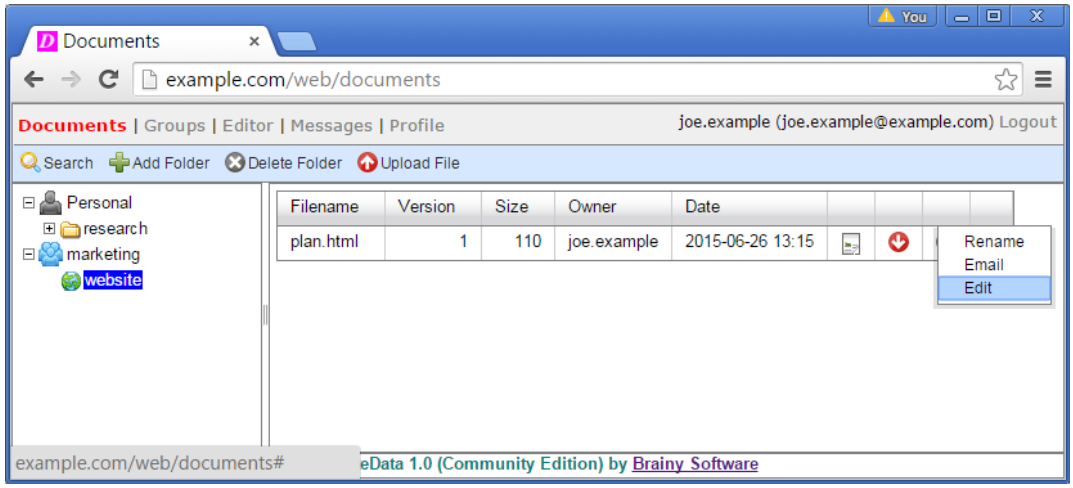

Figure 5.6: Shortcut to Editor

Voila. The document will open in the Editor page.

Chapter 6
Managing Your Profile

When you create a CreateData account, a profile is also created for you. This profile contains your name, email, user name and password. This chapter shows how to manage your profile.

The Profile Page

To go to the Profile page, just click **Profile** on the tab. The Profile page is shown in Figure 6.1. In addition to information about you, the Profile page also displays the numbers of documents and history documents CreateData has indexed.

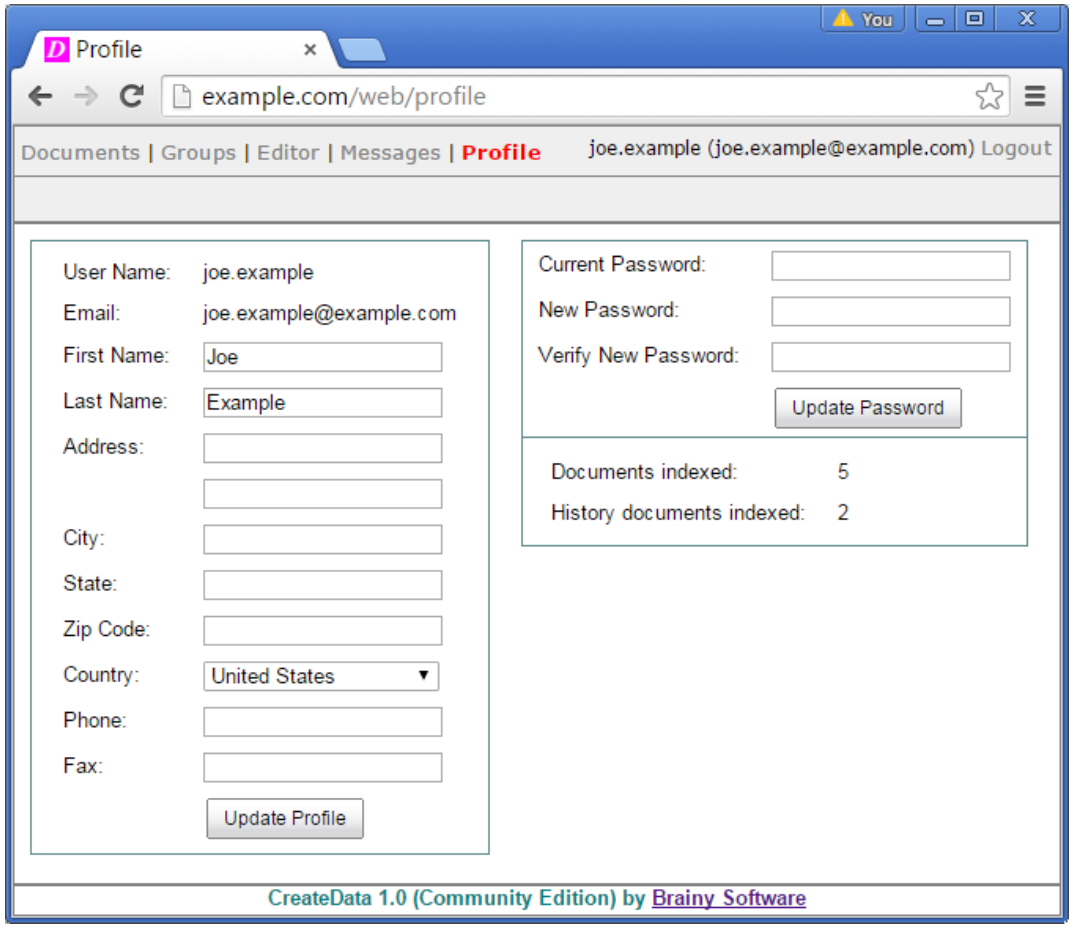

Figure 6.1: The Profile page

You can edit your profile and click the **Update Profile** button to save it.

To change your password, type in your current password and your new password twice. To change the password, click the **Update Password** button.

Chapter 7
Installing CreateData

Installing CreateDataCreateData is a server application written in Java servlets/JSP. As such, you need a Java runtime environment (JRE) and a servlet/JSP container to run it. You can download the JRE from Oracle's website. As for the servlet/JSP container, there are a couple of open source servlet/JSP containers on the market today, including Apache Tomcat and Jetty. Apache Tomcat 8 was used to run the CreateData instance used in the making of this documentation. However, CreateData will work with other compliant servlet/JSP containers as well as Java EE containers that support Servlet 3.0 or later.

CreateData will run wherever Java can run. This means it can run on Windows, Linux, Mac OS X and other operating systems.

Hardware and Software Requirements

CreateData does not require a top end computer to run on. In fact, it will run on a computer with at least a 1GHz processor and 512MB of RAM.

You need two pieces of software:

- JRE version 8 or later
- Apache Tomcat version 7.0 or later.

If you are familiar with Java web application development, you may also use a servlet container other than Tomcat or a Java EE container. Note that non-Tomcat servlet containers might require a Java Development Kit to compile JSP pages. Tomcat does not need a JDK because it ships with the Eclipse Java compiler.

Installing Java

The following section contains instructions for downloading and installing Java in Windows, Mac OS X and Linux.

On Windows

1. Direct your browser to http://java.com.
2. Click the Download button.
3. Select **Windows Offline** if your computer has a 32 bit processor or **Windows Offline (64 bit)** if it is a 64 bit system. Most recent computers are 64 bit.
3. When the File Download dialog box appears, save the file to a known location in

your local system.
4. Open Windows Explorer and find the saved file and double-click on it to start the installation process.
5. On the first dialog that appears, click the **Install** button to accept the license terms and continue with the installation.
6. You might see product offers from various partner of Oracle, the owner of java.com. Simply reject them.
7. When you reach the last dialog, click the Close button.

More information can be found here:

```
http://java.com/en/download/help/windows_offline_download.xml
```

On Mac

You need an Intel-based Mac running Mac OS X version 10.7.3 or later. To install Java, you also need to be an administrator and a 64-bit browser.

Follow these steps to download and install Java.

1. Direct your browser to http://java.com.
2. Click the Download button.
3. Review and agree to the terms of the license agreement before downloading the file, in dmg format.
4. Double-click the .dmg file to launch it.
5. Double-click on the package icon to launch install Wizard.
6. Click Next on the first dialog of the Install Wizard.
7. You may be presented with product offers from Oracle's partners. Simply reject them. Keep clicking Next.
8. When you reach the last dialog, click Close to close the wizard.

More information can be found here:

```
https://www.java.com/en/download/help/mac_install.xml
```

On Linux

Follow these steps to download and install Java:

1. Direct your browser to http://java.com.
2. Click the Download button.
3. Select the 32 bit or 64 bit installation file and save it on your local system.
4. Extract the gz file using this command, replacing [*file*] with the name of the downloaded file.

```
tar zxvf [file]
```

Installing and Running TomcatTomcat is an open source servlet container. Follow these steps to download and install Tomcat.

Downloading Tomcat

Download Tomcat from its website:

```
http://tomcat.apache.org
```

Select a version from the left hand menu. Remember you need Tomcat 7 or later. You should download the most recent version that is available (which is currently version 8).

Tomcat is distributed in both binary and source code and each is distributed in multiple packages. You need the binary and this chapter only explains how to install Tomcat from a zip file, so download the binary zip file under the Core heading. (See Figure 7.1.)

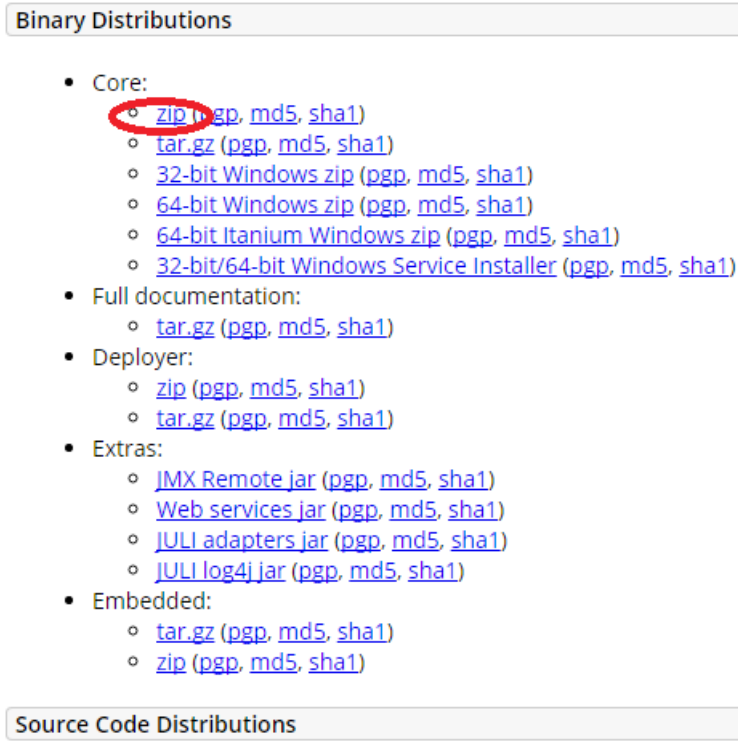

Figure 7.1: Selecting a Tomcat binary distribution

Save the zip file to a directory of your choice and unzip the file. A directory will be created that has the name in this format:

```
apache-tomcat-[version]
```

For example, the directory name for Tomcat 8.0.23 will be **apache-tomcat-8.0.23**.

That's it. Tomcat installation is that easy. Notice that there are several directories under the Tomcat installation directory, including **bin**, **conf**, **logs** and **webapps**. Refer to Appendix A, "Apache Tomcat," for more information about this servlet/JSP container.

Setting An Environment Variable

Because Tomcat is a Java application, it needs Java to run. As such, before you can run Tomcat, you need to tell Tomcat where to find Java. This is done by setting an

environment variable named **JRE_HOME**.

There are many ways of creating an environment variable, but the recommended way for the purpose of running Tomcat is by creating a **setenv.sh** (on Linux or Mac OS X) or **setenv.bat** file (on Windows)

On Windows

On Windows, create a **setenv.bat** file under the **bin** directory of Tomcat's installation directory using a text editor. Here is the content of the file:

```
set "JRE_HOME=java-path"
exit /b 0
```

Replace *java-path* with the path to the Java installation directory. Here is an example **setenv.bat** file.

```
set "JRE_HOME=%ProgramFiles%\Java\jre8"
exit /b 0
```

On Linux or Mac OS X

Create a setenv.sh under the **bin** directory of Tomcat's installation directory. Here is the content of the file:

```
JRE_HOME=/path/to/java
```

Replace */path/to/java* with the path to the Java installation directory. Here is a sample setenv.sh file:

```
JRE_HOME=/usr/local/java8
```

Running Tomcat

Here is how you can run (and stop) Tomcat.

On Windows

Double click on the **startup.bat** file in the **bin** directory of the Tomcat installation directory. To stop Tomcat, close the console window that was opened when you started Tomcat.

On Linux or Mac OS X

Change directory to the **bin** directory of the Tomcat installation directory and then type this command:

```
./startup.sh
```

To stop it, type this command from the **bin** directory.

```
./shutdown.sh
```

Testing Tomcat

By default, Tomcat runs on port 8080. Here is the URL to test if Tomcat is running:

`http://localhost:8080`

If Tomcat is running, you will see a web page like the one shown in Figure 7.2.

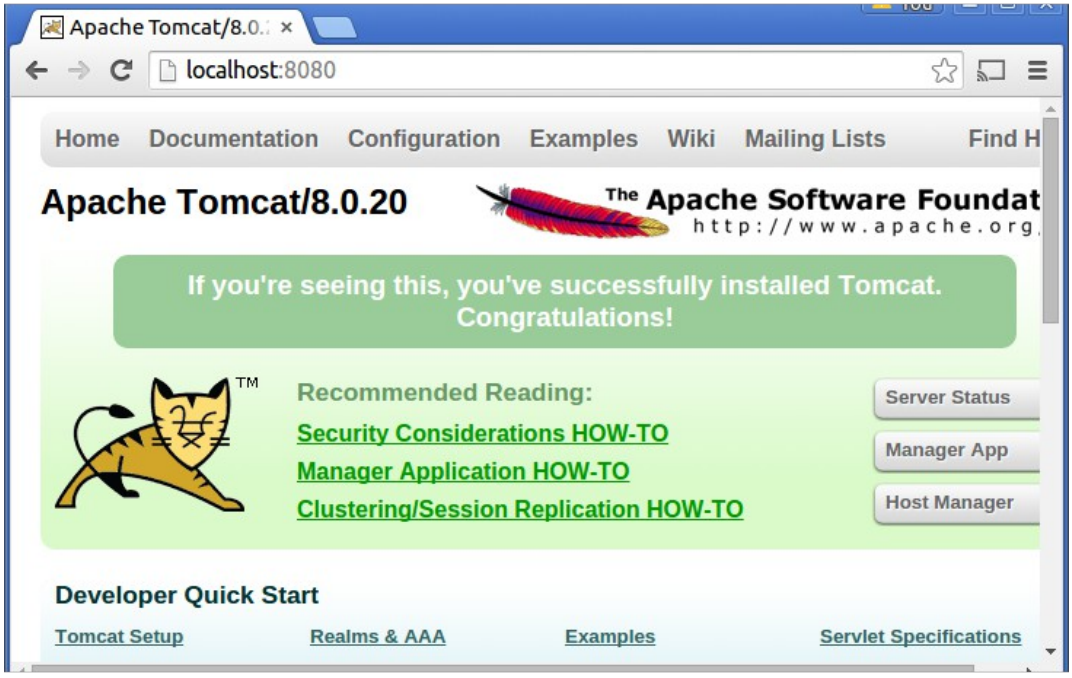

Figure 7.2: Tomcat's default page

Installing CreateData

Download CreateData from http://brainysoftware.com. It is distributed as a war file, which is the standard distribution package for Java web applications. The easiest way to deploy it is to copy the war file to Tomcat's **webapps** folder. The next time you start Tomcat, Tomcat will unpack the war file to a directory named **createdata** in the **webapps** folder.

CreateData will need a directory for your files and other data. This directory must be accessible to the user running Tomcat. You should create one if you have not had one dedicated for CreateData.

Now restart Tomcat. CreateData should now be running.

From the same computer that runs Tomcat, open a browser and type the following URL in its address box:

```
http://localhost:8080/createdata/myadmin
```

Or, from another computer in the same network, you can access CreateData using this URL, replacing *ip-address* with the IP address of the computer running CreateData:

```
http://ip-address:8080/createdata/myadmin
```

You can also run CreateData as the root context, which means a shorter URL. To achieve this, follow these steps:

1. Rename the **ROOT** directory under Tomcat's **webapps** directory to **ROOT-ORG**.
2. Rename the **createdata** directory under Tomcat's **webapps** directory to **ROOT**.
3. Restart Tomcat.

You can now access the Admin module with one of these URLs:

```
http://localhost:8080/myadmin
```

```
http://ip-address:8080/myadmin
```

You can even use your own domain name. For this, you have to define a host in Tomcat and the process is explained in Appendix A, "Apache Tomcat." For example, Figure 7.3 shows the admin module of a CreateData instance deployed with the domain name example.com.

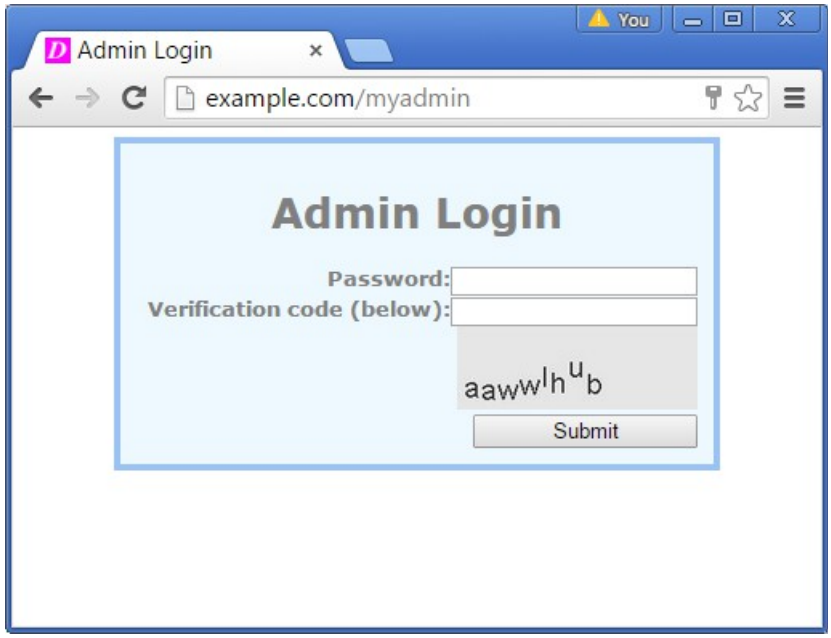

Figure 7.3: The admin login page

If you can see this page, it means CreateData is running.

Application administration is discussed in Chapter 8, "Administration."

Chapter 8
Administration

This chapter explains how to manage CreateData as an administrator. It is assumed the CreateData application is mapped to the domain name example.com on the default port 80.

Logging in to the Admin Module

The URL for logging in to the Admin module is http://*host*/myadmin or http://*host*/*context*/myadmin. For an instance deployed to example.com, the URL is as follows:

```
http://example.com/myadmin
```

Figure 8.1 shows the Admin login page.

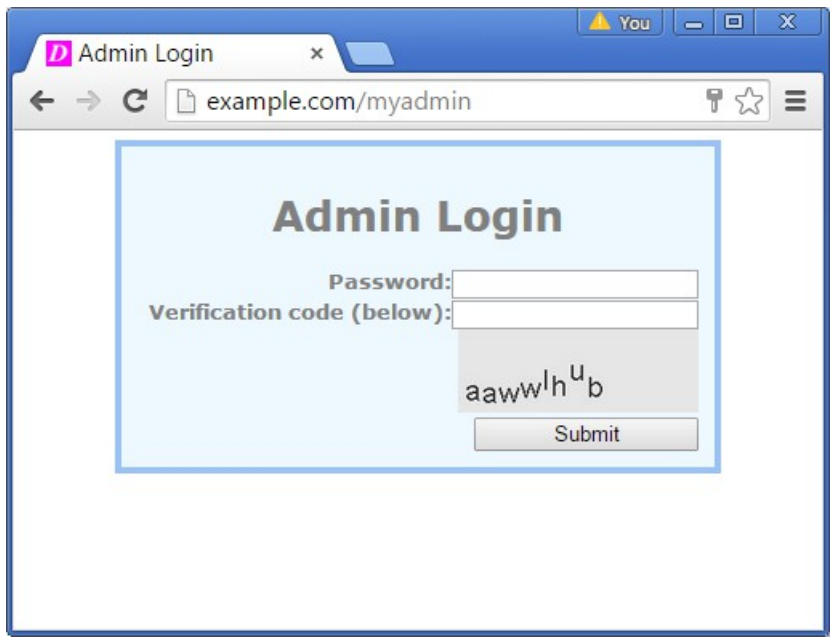

Figure 8.1: The admin login page

The default admin password for CreateData is the empty string. In other words, there is no

password. Leave the Password field blank and type in the verification code and click Submit. If you are running CreateData for the first time, you will see the page in Figure 8.2.

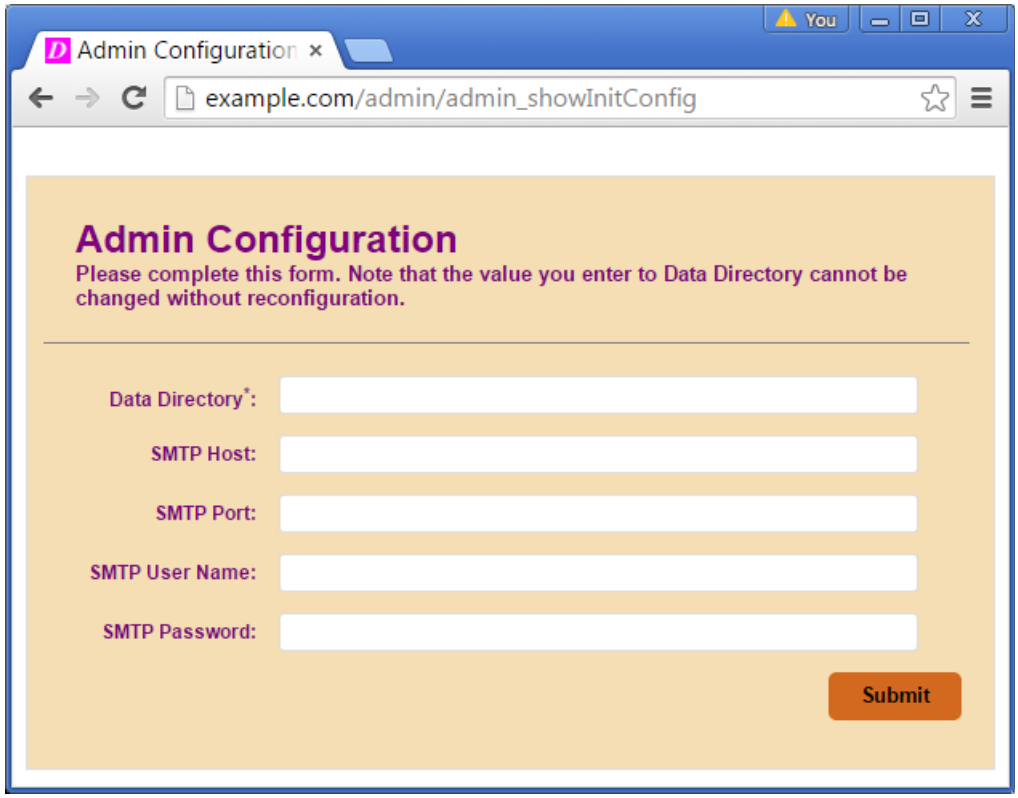

Figure 8.2: First time admin login

All you need is a directory for CreateData to store your data. In addition, you need an SMTP server to email user registration confirmation and user files. However, CreateData can still work without an SMTP server.

Type in the information needed by the page in Figure 8.2 and click Submit. The first thing you need to do is change the administrator password.

If this is not the first time you logged in, you will see the page like that in Figure 8.3.

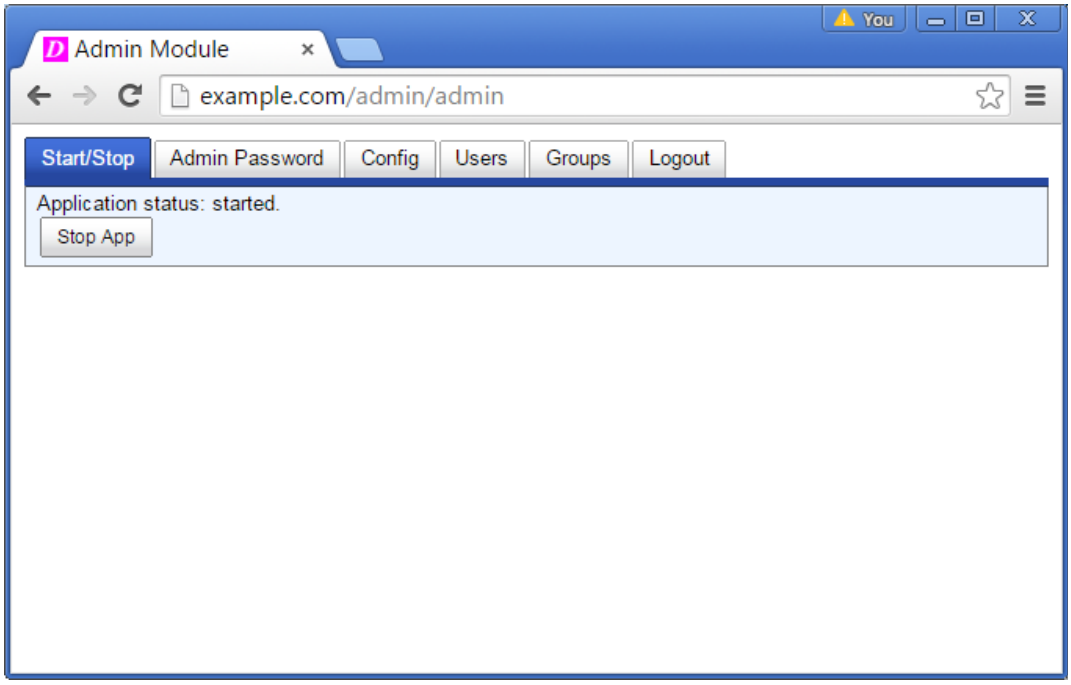

Figure 8.3: The admin main page

There are six tabs in the Admin module:

- Start/Stop. Starts and stops the application.
- Admin Password. Update the admin password.
- Config. Configures the application.
- Users. Manages users.
- Groups. Manages groups.
- Logout. Logs out.

The next sections discuss each of the tabs.

Starting and Stopping the Application

You can start or stop the application by clicking the button in the Start/Stop tab. If the application is stopped, no user can log in to the application and access their assets.

Changing the Admin Password

Click the Admin Password tab and you will see the page in Figure 8.4.

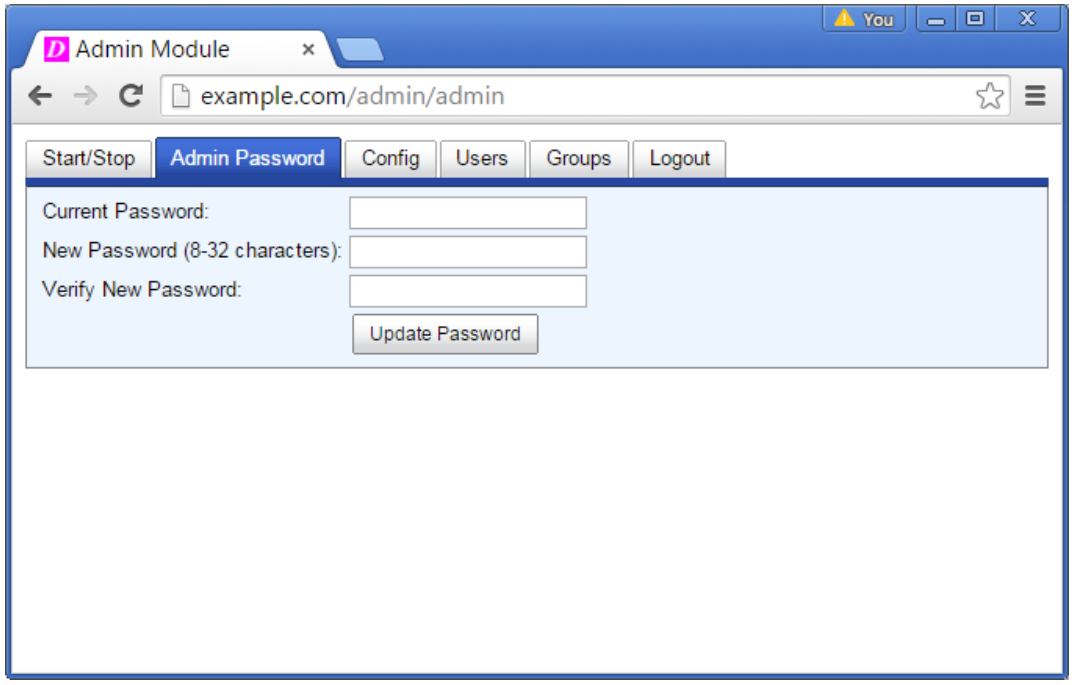

Figure 8.4: Changing the admin password

Type in the current password and the new password. The admin password must be between 8 and 32 characters. Verify the new password and click the **Update Password** button.

Configuring the Application

You can configure the application in the **Config** tab, which is shown in Figure 8.5.

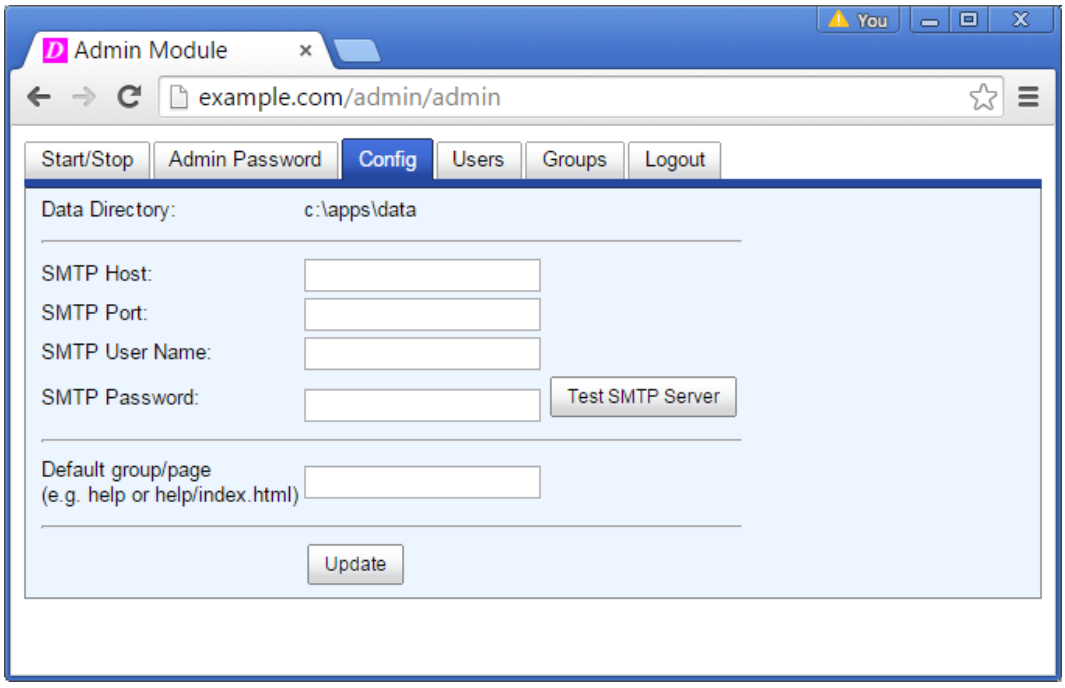

Figure 8.5: Configuring the application

Here you see the data directory and the details of the SMTP server for sending emails. The application will still work without an SMTP server, however the users will not be able to email files. In addition, user registration will be affected as the application will not be able to send email confirmation and the only way to add new users is to create them manually.

The last field in the Config page is the default group/page that will be displayed instead of the user login page.

Managing Users

Figure 8.6 shows the Users tab. You can view the user list, create new users, reset user passwords and delete users in the Users tab.

To create a user, click the **Add User** button and fill in the form that appears.

To delete a user, click the user on the list and click the **Delete User** button. You will be asked to confirm this action before the user is deleted.

To reset a user password, select a user and click the **Reset Password** button. You will see a form and you need to type in a new password and confirm it.

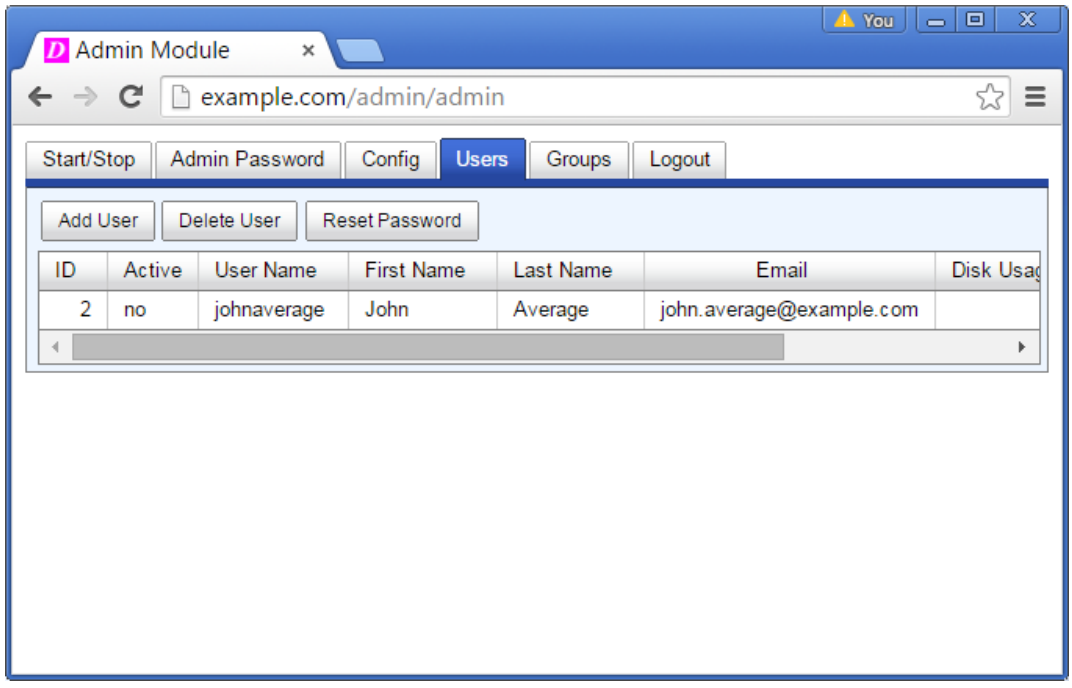

Figure 8.6: Managing users

Managing Groups

Figure 8.7 shows the Groups tab. Here you can view the list of groups, create a group, delete and undelete a group, and manage group members.

To create a new group, click the **Add Group** button and fill in the form.

To delete a group, select a group from the list and click the **Delete Group** button. A deleted group is not really deleted but simply deactivated.

To undelete (reactivate) a group, select a group and click the **Undelete Group** button.

To manage group members, select a group and click the **Manage Members** button. Figure 8.8 shows the window for managing group members.

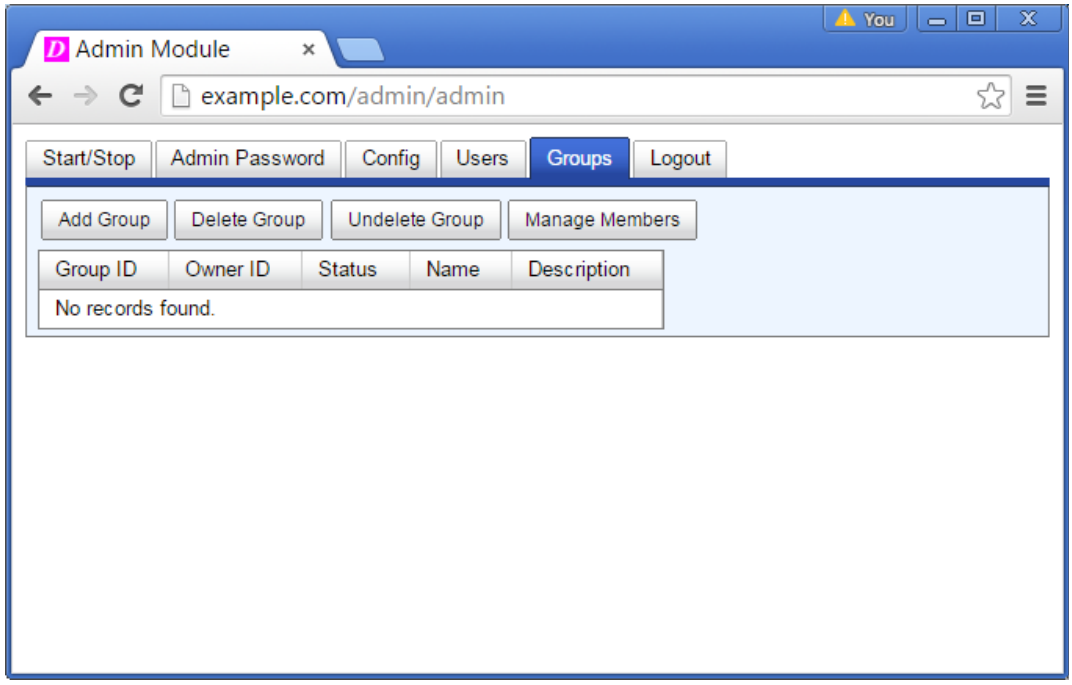

Figure 8.7: Managing groups

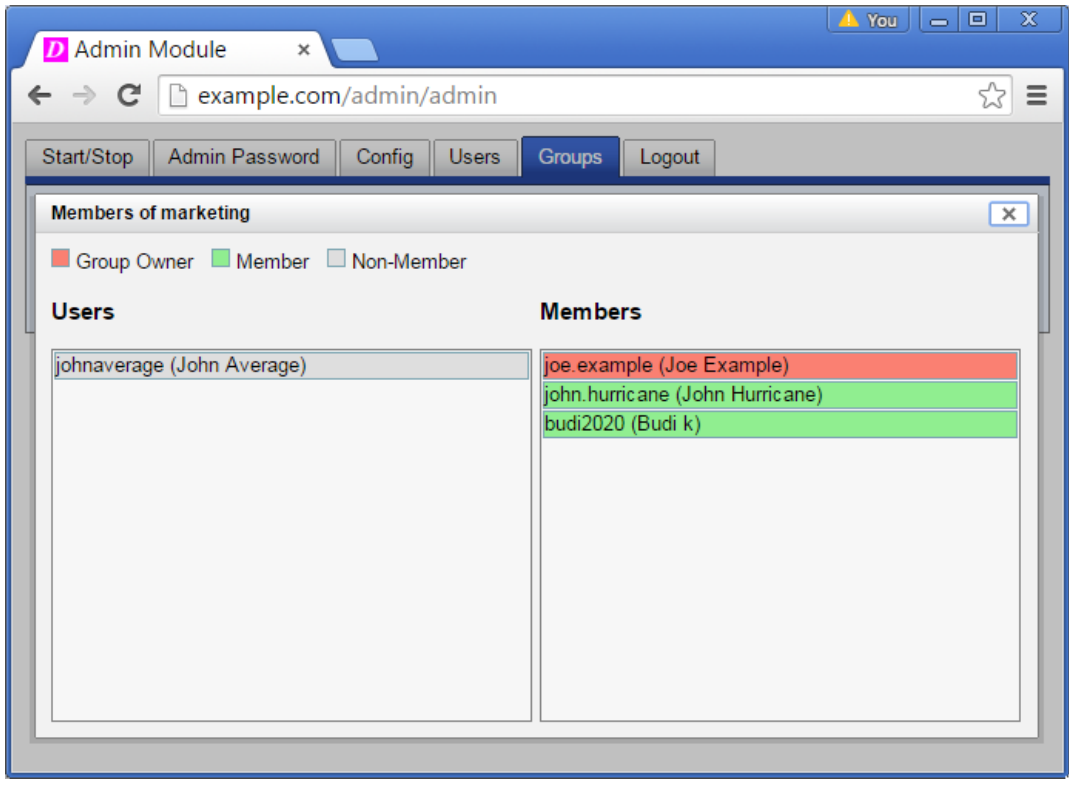

Figure 8.8: Managing group members

The left pane contains all users that are not a member and the right pane all members. The name in red is the group owner (the person who created the group). The names in green are ordinary members. Drag a name to make the user a member or remove a user from a group.

Backing Up Your DataBacking up your application data is very easy. Basically, there are only two things you need to save a copy of, the configuration file named **config** in the **WEB-INF** directory of your application and all the files in the data directory.

Appendix A
Apache Tomcat

Apache Tomcat is the most popular servlet/JSP container today. It's free, mature, and open-sourced. You need Tomcat 7 or later or another compliant servlet/JSP container to run CreateData. This appendix provides a quick installation and configuration guide and is by no means a comprehensive tutorial.

Downloading and Configuring Tomcat

You should first download the latest version of Tomcat from http://tomcat.apache.org. You should get the latest binary distribution in either zip or gz.

After you download the zip or gz file, unpack the file. You will see several directories under the installation directory.

In the **bin** directory, you will find programs to start and stop Tomcat. The **webapps** directory is important because you can deploy your applications there. In addition, the **conf** directory contains configuration files, including the **server.xml** and **tomcat-users.xml** files. The **lib** directory is also of interest since it contains the Servlet and JSP APIs that you need to compile your servlets and custom tags.

After extracting the zip or gz file, set the **JRE_HOME** environment variable to the JDK installation directory.

For Windows users, it is a good idea to download the Windows installer for easier installation.

Starting and Stopping Tomcat

Once you've downloaded and extracted a Tomcat binary, you can start Tomcat by running the **startup.bat** (on Windows) or the **startup.sh** file (on Unix/Linux/Mac OS). Both files reside under the **bin** directory of Tomcat's installation directory. By default, Tomcat runs on port 8080, so you can test Tomcat by directing your browser to this address:

```
http://localhost:8080
```

To stop Tomcat, run the **shutdown.bat** (on Windows) or **shutdown.sh** file (on Unix/Linux/Mac OS) in the **bin** directory.

Defining A Context

To deploy a servlet/JSP application to Tomcat, you need to define a Tomcat context either explicitly or implicitly. Each Tomcat context represents a web application in Tomcat.

There are several ways of defining a Tomcat context explicitly, including

- Creating an XML file in Tomcat's **conf/Catalina/localhost** directory.
- Adding a **Context** element in Tomcat's **conf/server.xml** file.

If you decide to create an XML file for each context, the file name is important as the context path is derived from it. For example, if you place a **createdata.xml** file in the **conf/Catalina/localhost** directory, the context path of your application will be **createdata** and a resource can be invoked using this URL:

```
http://localhost:8080/createdata/resourceName
```

A context file must contain a **Context** element as its root element. Most of the times the element does not have child elements and is the only element in the file. For example, here is an example context file, consisting of a single line.

```
<Context docBase="C:/apps/createdata" reloadable="false"/>
```

The only required attribute is **docBase**, which specifies the location of the application. The **reloadable** attribute is optional, but if it is present and its value is set to true, Tomcat will monitor the application for any addition, deletion, or update of a Java class file and other resources. When such a change is detected, Tomcat will reload the application. Setting **reloadable** to **true** is recommended during development but not in production.

When you add a context file to the specified directory, Tomcat will automatically load the application. When you delete it, Tomcat will unload the application.

Another way of defining a context is by adding a **Context** element in the **conf/server.xml** file. To do this, open the file and create a **Context** element under the **Host** element. Unlike the previous method, defining a context here requires that you specify the **path** attribute for your context path. Here is an example:

```
<Host name="localhost" appBase="webapps" unpackWARs="true"
        autoDeploy="true">
    <Context path="/commerce"
            docBase="C:/apps/commerce"
            reloadable="true"
    />
</Host>
```

Generally, managing contexts through **server.xml** is not recommended as updates will only take effect after you restart Tomcat. However, if you have a bunch of applications that you need to test quickly, you may find working with **server.xml** almost ideal as you can manage all your applications in a single file.

Finally, you can also deploy an application implicitly by copying a war file or the whole application to Tomcat's **webapps** directory.

More information on Tomcat contexts can be found here:

http://tomcat.apache.org/tomcat-8.0-doc/config/context.html

Defining A Host

A host represents a virtual host. If you wish to run CreateData on a server on the Internet and use your own domain, you need to create a **Host** element in the **conf/server.xml** file in the Tomcat installation in the server.

There are various attributes that can appear in the **Host** element, but you just need the **name** attribute whose value must be set to your domain name. The following shows an example:

```
<Host name="example.com" appBase="" unpackWARs="true">
    <Context path="" docBase="/home/fiona/createdata"></Context>
</Host>
```

Within the **Host** element, you must have a **Context** element whose **path** attribute is set to an empty string and whose **docBase** attribute is given the location of CreateData's extracted war file.

More information about Tomcat's hosts can be found here:

http://tomcat.apache.org/tomcat-8.0-doc/config/host.html

Defining A Resource

You can define a JNDI resource that your application can use in your Tomcat context definition. A resource is represented by the **Resource** element under the **Context** element.

For instance, to add a **DataSource** resource that opens connections to a MySQL database, add this **Resource** element.

```
<Context [path="/appName"] docBase="...">
    <Resource name="jdbc/dataSourceName"
        auth="Container"
        type="javax.sql.DataSource"
        username="..."
        password="..."
        driverClassName="com.mysql.jdbc.Driver"
        url="..."
    />
</Context>
```

More information on the **Resource** element can be found here.

http://tomcat.apache.org/tomcat-8.0-doc/jndi-resources-howto.html

Installing SSL Certificates

Tomcat supports SSL and you should use it to secure transfer of confidential data such as social security numbers and credit card details. You can generate a public/private key pair using the KeyTool program and pay a trusted authority to create and sign a digital certificate for you.

Once you receive your certificate and import it into your keystore, the next step will be to install it on your server. If you're using Tomcat, simply copy your keystore in a location on the server and configure Tomcat. Then, open your **conf/server.xml** file and add the following **Connector** element under **<service>**.

```
<Connector port="443"
    minSpareThreads="5"
    maxSpareThreads="75"
    enableLookups="true"
    disableUploadTimeout="true"
    acceptCount="100"
    maxThreads="200"

    scheme="https"
    secure="true"
    SSLEnabled="true"
    keystoreFile="/path/to/keystore"
    keyAlias="example.com"
    keystorePass="01secret02%%%"
    clientAuth="false"
    sslProtocol="TLS"
/>
```

The lines in bold are related to SSL.

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