Software Engineering - SFSU CSC 648/848
Spring 2015 Milestone 0 Instructions

By Marc Sosnick (SFSU), Prof. D. Petkovic (SFSU),
Prof. Shihong Huang (FAU), and Prof. R. Todtenhoefer (Fulda)

February 16, 2015

This document is intended to walk students and student team leads through the process of completing the individual Milestone 0 (M0) assignment. It is strongly suggested that you read through this document *before* proceeding, using the document as a guide as you complete M0. Throughout this document the term group and team will be used interchangeably, meaning the team/group to which you are assigned with whom you will be creating a final project.

Background, Objectives and Overview

Introduction

Milestone 0 is designed to help you learn about, setup and begin using the basic collaborative and software development tools and environments you are *required to use* to develop your team's final class project. The tools described in this document and used in class are industry standard. Learning how to use these tools will provide you valuable and marketable experience. Completing this assignment will provide you skills critical for completion of the final team project for the class.

M0 is to be done by each student individually. You are encouraged to treat this as group work, with your teammates helping each other to complete the task. However, the work you submit for M0 credit is to be done by each student *individually,* and you are individually responsible for completing it.

Milestone 0 consists of four parts:

- Learning about and practicing ***programming*** in PHP, MySQL, CSS and HTML. This is done through CodeAcademy tutorials. You are also encouraged to brush up on your Unix skills.
- Learning about, setting up, registering, and/or subscribing to the main ***collaborative tools*** (deployment server accounts, svn, etc.)
- Learning and setting up the ***software development environment and tools*** (NetBeans)
- ***Creating a simple PHP application*** that manipulates images, and connects to and uses the database.

The Server

The software development and collaborative tools for this class are located on a server located at http://sfsuswe.com. This is a virtual Ubuntu 14.01 LTS server running in the AWS (Amazon Web Services) cloud. You will not have to interact with the AWS infrastructure in any way, and the server will appear to you as a standard remote Linux server.

You will use sfsuswe.com both as the server for M0 tasks and the development and deployment server for your group's final project. On sfsuswe.com you will have access to two accounts that have been automatically created:

- an ***individual shell account*** for your own personal use during development, and
- a ***group shell account*** that all group members share, and is where your group's current version of the site should always exist.

Your *individual shell account* serves two purposes: initially is used to serve the application you will create for M0. When M0 is complete you will use your individual account for developing your contributions to your group's project.

Through the semester, the team will use your *group shell account* collaboratively. **Your group's sfsuswe.com group shell account *must* be used to serve your group's project to the Internet for both your final presentation, as well as for presenting your site during scrum meetings during the semester**.

Subversion Repository

You will have access to your *group's* Subversion (SVN) software repository (there is no *individual* SVN repository) which is centrally located on sfsuswe.com. Initially, you will store your M0 code to a directory in your group's repository. Later, you and your teammates will use your group's subversion repository to store and share code during development.

Milestone 0 Grading

In the course of completing M0 you will be producing a number of files, including some PHP script files. These files will be deployed in your *individual* shell account for public viewing, and the source code will be committed to your *group's* source code repository, all on sfsuswe.com server.

Milestone 0 is a mandatory assignment worth 5 out of 100 points for the semester. Milestone 0 will be graded on a number of specific things: emails you send to the instructor, creation of a specific program, and deployment of code both to your individual shell account and to your group's software repository. A checklist has been included at the end of the document to help you ensure that you have completed all aspects of the assignment. Please see the section

Submission and Grading at the end of the document for detailed information on how M0 will be graded.

Getting Help

The Internet: It is amazing what resources are available for learning on the web, but one must be careful to choose a good site. If you have any questions about whether a website site is good or not, feel free to ask your instructors.

Your Team: You are encouraged to get clarifications and help working with your newly formed student team, which will help develop team cohesion. But remember, at the end, you yourself have to perform and execute all required tasks for M0.

Your Instructors: As a last resort, If you have used your available resources such as those above, and you are still unclear about something, please contact Chin-Chia directly at zero1590@mail.sfsu.edu.

Information Technology Resources Acceptable Use Policy

Your use of the sfsuswe.com server is covered under the San Francisco State University Computer Science Department's Information Technology Resources Acceptable Use Policy. For more information, see http://cs.sfsu.edu/acceptable_use_policy.html.

Step 0: Unix Skills Needed

A minimum level of Unix skills will be important for your successful completion of this class and the professional world. The purpose of this section is to help you learn and practice basic Unix skills. If you feel you are already proficient with Unix, you may skip this step. You will not be graded on the work you do in this section.

1. Learn Linux command line basics at http://linuxcommand.org/learning_the_shell.php
2. Learn the basics of Linux file permissions at http://www.comptechdoc.org/os/linux/usersguide/linux_ugfilesp.html
3. After logging into your individual account on the deployment server as described below, practice the following steps:
   a. Locate the `public_html` folder in your home directory. This directory will be used to store and serve your web files.
   b. Familiarize yourself with either vi or nano for text editing.

Milestone 0

The following tasks are presented in the order in which you should execute them. **The key is to complete all tasks individually and by the requested deadline by carefully following all the instructions here**.

You will maintain a number of different accounts on the sfsuswe.com server for the various tools for this class. In the steps that follow, you will access and/or create these accounts on sfsuswe.com. Pay close attention to and remember which username and password you use for each account and tool.

For each of the steps below, there is a background and instructions section. The background should help you understand the steps you are following in the instructions section. Be sure to read the background section before you do the steps in the instructions section.

Upon completion of M0 you will send an email to the instructor containing relevant M0 information. It is highly recommended that you keep notes while you perform the steps in M0.

For your convenience, in the following document steps that produce or involve components that will be used for grading are marked with a star (★).

Step 1: HTML, CSS, jQuery, PHP, and MySQL Tutorials ★

Background

In past Software Engineering classes it has been discovered that students have an unequal distribution of skills and experience using HTML, CSS, jQuery, PHP, and MySQL, all of which are important for your group project. We have collected a series of online tutorials that will help you get up to speed if you have not used these languages, or refresh your memory if you have. Even if you have a tremendous amount of experience in these languages, it is important that you do the tutorials so that you have a basis of common experience while helping your teammates.

The tutorials required for M0 are located at CodeCademy. There are additional tutorials located at w3schools.com and PHP.net that are suggested but not required for M0; these are provided to help you create the code that you will submit for M0.

Instructions

You will each receive an email to your SFSU email account from msosnick@sfsu.edu with the subject line "CSC 640-848: CodeCademy Tutorial Information". This email contains:

- links to tutorials that you must complete (see grading below) and
- your unique username to use for the CodeCademy tutorials.

It is vital that you login to CodeCademy using the unique username sent to you. This username allows us to track your progress through the tutorials, but it hides your identity from CodeCademy. The default password to your account is listed in the box that follows. Follow each of the links below, sign in with the username provided to you in the email, and complete the tutorial.

CodeCademy Tutorials

URLs:	http://www.codecademy.com/tracks/web http://www.codecademy.com/en/tracks/php http://www.codecademy.com/skills/make-an-interactive-website
Username:	*Sent to you by email*
Default Password:	`sfsu2014`

In addition to the above required tutorials, here are two tutorials that will help you with specific aspects of the program that you are to write for M0:

- Uploading images: http://www.w3schools.com/php/php_file_upload.asp
- Resizing images: http://php.net/manual/en/function.imagecopyresampled.php

★*Grading*

This Step 1 of M0 (Step 1) is worth 20% of the total grade. Your progress in the CodeCademy tutorials will be verified using CodeCademy's teacher resources.

Step 2: Access Your Individual Shell Account, Change Individual Password

Background

As mentioned above, you must use sfsuswe.com as the deployment server for your work in this class. You will use your group shell account for final project deployment, and your individual account for M0 deployment. The `public_html` directory in your *individual* shell account is your individual website's root directory, and is where you will upload your M0 files. This is also where you can test your work before committing it to the group's repository. **M0 files used for grading must be published to your *individual* shell account's `public_html` directory on sfsuswe.com.**

Individual Shell Account Information

URL:	sfsuswe.com
Access Method:	SSH via port 22. You will need an SSH client to connect to your account. If you do not have an SSH client installed, you must download one.
Username:	Your *username* is made up of your first initial and up to the first five characters of your last name. Therefore Jane Doe's username would be jdoe, and Sandy Squirrel's username would be ssquir.
Default (initial) Password:	swes2015
Individual Web Page:	http://sfsuswe.com/~*username* (where *username* is the same as above)

Table 1. Information for accessing your individual shell account.

Instructions

Using SSH and the above information, login to your individual shell account on sfsuswe.com. Once you have logged in, change your individual account password using the Unix `passwd` command. PC users who have not already done so will need to install an SSH client to connect to sfsuswe.com.

If you are unfamiliar with Linux, it is recommended that you complete the Unix skills section above. In addition, search for "linux change password" on your favorite search engine for more help with this step.

Step 3: Access Your Group's Shell Account

Background

The group shell account's `public_html` directory is the root directory for your group's website, and is used for deploying the final project. You will not use this directory for Milestone 0. However, one person on your team must change the password for the account.

Group Shell Account Information

URL:	sfsuswe.com
Access Method:	SSH via port 22. See above.
Group Username:	`s15g`*`xx`*, where *xx* is your group number (with leading 0's).
Default (initial) Password:	swes2015
Group Web Page:	http://sfsuswe.com/~s15g*xx* (where *xx* is as above)

Table 2. Information for accessing your group shell account.

Instructions

Tech Lead Only

Log into the group account using the default password, change the password, and provide the other members of the group the new password.

All Team Members

To make sure everyone in the group can access the group account, everyone in the group should login to the group shell account, then log back out. Do this after the new password is provided to you.

Step 4: Access Your MySQL Database and Change your MySQL Password

Background

A MySQL database account and a database has been automatically created for you. This is the database to which you will connect when completing M0. When accessing your database, you must use your MySQL username and password. The MySQL username automatically created for you is the same as your sfsuswe.com individual shell account username. The initial password is listed in the table below. Please note, the MySQL account password is separate from and not synchronized to your sfsuswe.com account. If you change the password on your account, the password on your database will not change unless you change it.

When connecting to the database server, use your MySQL username and your MySQL password. After connecting to the database server, you must select a database to use. You may use only one database which has already been created for you. The database name is student_*username*, where *username* is your MySQL account username. Note that you do not have permission to add databases. You may add/delete/modify tables in your database, but you may add no additional databases.

MySQL Account Information

URL:	sfsuswe.com
Web Access:	http://sfsuswe.com/phpmyadmin
Database Name:	student_*username*, where username is the same as your sfsuswe shell account username
Username:	your sfsuswe.com shell account username
Initial Password:	swes2015db

Table 3. MySQL account information

If you are unfamiliar with phpMyAdmin as a database administration tool, or with MySQL databases in general, you can familiarize yourself by watching the online tutorials at http://www.webhosting.uk.com/phpmyadmin-tutorials.php.

Changing your Database Password

There is a special script on the server to allow you to change your database password. This script does not change your shell account password. Any time you wish to change your database password, browse to http://sfsuswe.com/changedbpassword, and follow the instructions.

Instructions

Change your MySQL password. Go to http://sfsuswe.com/changedbpassword, and provide your sfsuswe.com individual shell username and password, as well as a new MySQL user password.

When creating your new MySQL password, be sure to use ONLY alphanumeric (upper and lowercase letters, and numbers) characters.

Step 5: Access Your Group MySQL Database and Change Your Group MySQL Password

Background

Your group also has a MySQL database automatically created on sfsuswe.com. This database is to be used for the group's final project.

Group MySQL Account Information

URL:	sfsuswe.com
Web Access:	http://sfsuswe.com/phpmyadmin
Database Name:	student_*username*, where username is the same as your group's sfsuswe shell account username
Username:	your sfsuswe.com shell account username
Initial Password:	swes2015db

Table 4. Group's MySQL account information

Instructions

Tech Lead

Follow the instructions outlined above to change the group's MySQL password, and provide the other members of the group the new password.

All Team Members

To make sure everyone in the group can access the group account, everyone in the group should try to connect to the group MySQL account using phpMyAdmin. Do this after the new password is provided to you.

Do not use this database for your M0 project. This database is to be used for your final team project only.

Step 6: Install NetBeans

Background

You will be using the NetBeans integrated development environment (IDE) to develop your project, and will be programming the project using the PHP scripting language.

If you do not already have NetBeans installed on your system, you will need to do so. If you have it installed, please make sure you have PHP support installed.

Instructions

Go to the NetBeans website and install the most recent version of NetBeans PHP release (8.0.2 as of this writing). When installing, be sure to select an installation that includes PHP support.

Step 7: Connect to Subversion

Background

You will be using the Subversion (SVN) version control system this semester. This step in M0 helps you setup NetBeans to connect to the Subversion server located on sfsuswe.com.

You do not have an individual SVN repository on sfsuswe.com. Instead, you share your group's repository. Even though it is your group's repository, **you use your sfsuswe.com individual shell username/password to log in.** SVN on sfsuswe.com is synchronized to your sfsuswe.com individual shell account, so the username and password for the SVN repository is the same as the username and password for your individual shell account; changing your sfsuswe.com password will change the password for access to the repository.

One of the advantages of SVN is that you can browse to your repository as if it were a website. The URL for your group's repository is http://sfsuswe.com/svn/`f15g`*`xx`*, where *`xx`* is your group number (with leading 0's). You will include this URL in the email to be submitted for M0.

Group SVN Repository Information

URL:	http://sfsuswe.com/svn/`s15g`*`xx`*, where *`xx`* is your group number (with leading 0's).
Access Method:	http or svn+ssh
Username:	Your sfsuswe.com *individual* shell account username.
Password:	Your sfsuswe.com *individual* shell account password.

Table 5. Group SVN Repository Information

Instructions

Follow the Guided Tour of Subversion at https://netbeans.org/kb/docs/ide/subversion.html#settingUp. Setup subversion clients on your local machine as indicated in the tour for your particular system.

If you are on a Windows machine, you may wish to install an additional GUI-based SVN. TortoiseSVN (http://tortoisesvn.net) is recommended. Apple and Unix users are advised to learn command-line SVN.

In the SVN manual (http://svnbook.red-bean.com/), read and understand *Chapter 1: Fundamental Concepts* in the Subversion manual.

In the SVN manual, read and understand *Chapter 2: Basic Usage*.

Step 8: Designate an SVN Administrator, Create a SVN Directory for your M0 Work ★

Background

It is recommended that your group designate one person who is responsible for the group's SVN repository. This person will maintain and ensure correct operation of the group's SVN repository, as well as keep an eye on code deployment and code compliance throughout the semester.

In this step you will create directories in your group's repository. Be very careful how you create these directories; an automated tool will check for their existence. ***The directory structure must match the following instructions.***

Instructions

Tech Lead / SVN Administrator

Create a directory named `m0` from the root of your group's repository.

It is also suggested at this point that you begin thinking about deployment. How do you get the current website code into the directories where it needs to go to be served?

All Team Members

Once the `m0` directory is created in the repository, create a directory off this `m0` directory that is your username directory (i.e. m0/*username*, where *username* is your username). For example if your name is Sam Smith, your username is ssmith, and you would create a ssmith directory off the `m0` directory. This directory is where you will put the files that you create in the next step.

Use a web browser to browse to the URL in the table from the previous section above to make sure you can see your group's repository from a browser.

★*Grading*

The existence of correct directorieswith your source code in your group's SVN repository will be verified and graded. Correct placement of the files into your individual user directory and SVN directory is worth 20% of the M0 grade.

Step 9: Create an Application In NetBeans ★

Background

This small application ties together the concepts of working on a remote system with a remote database and a SVN repository. It is also a good "vertical slice" project, in that it shows that you understand well enough to code a rudimentary database application from the code level all the way up to the page being browsed.

Instructions

The program that you are to write allows a user to upload an image, the filename of the image, and a description of the image. In one form, provide the user the opportunity to enter the description of the picture and upload the picture (the uploaded image name is the name of the image you will store in the database). After uploading the images, your program will resize the image into two additional sizes, small and medium. Please note that you must physically create two thumbnails of the image you upload, do not simply use the width and height attribute of the HTML img tag. Your program will store the name and description of the picture, as well as the filename of the picture and the thumbnails. If there is an error, the user is directed to an error page describing the error that occurred. If the upload was successful, the user will be directed to a page that displays the image and its two thumbnails, as well as the filenames of the images and the description.

★*Grading*

As previously mentioned, the existence of files created for this program, both in your deployment server account and in the software repository, will be checked to exist. The correct placement of these files is worth 20% of your M0 grade.

Correct operation of your program will count for 50% of your M0 grade. These will be checked, have files uploaded to them, etc. Do not delete these files until instructed to do so.

Submission and Grading

Submission

To submit Milestone 0, send an email to Chin-Chia at zero1590@mail.sfsu.edu. The email must include the following information:

Subject Line must read (not in quotations!):

a) CSC 640/848 Software Engineering Spring 2015 Milestone 0 Submission

In the body include:

b) Your Full Name

c) Your group number

d) Your Student ID Number

e) A *link* to your web site account on sfsuswe.com (e.g. http://sfsuswe.com/~msosnick)

f) A link to your *individual* directory in the subversion repository of your group

Grading

The deadline for M0 will be announced in class. Submission of milestone 0 is mandatory. Milestone 0 will be worth 5/100 grade points for the semester. Late submissions of Milestone 0 must be approved by your instructor by sending an e-mail requesting the extension *prior* to the deadline to dpetkovic@sfsu.edu or msosnick@sfsu.edu.

Grades will be based upon completion of the assigned tasks, including the existence of files, emails, accounts and correct operation of the site created in all the above.

Grading Checklist

The following checklist will be used to grade M0:

Source Step	Description	Value	Received
Step 1	All CodeCademy tutorials completed.	20%	
Submission	Email received with correct information and subject line.	10%	
Submission	Can browse to user's site with URL provided in email		
Step 8	Directory with correct name created in group's SVN repository	20%	
Step 9	Files correctly deployed to SVN repository directory		
Step 9	Correct operation of program	50%	
		Total:	

Table 6. M0 Grading Checklist