SEEM4540 Open Systems for E-Commerce

Lecture 04 - CMS

Prolog

- To show our e-commerce store, we need to have a web server.
- There are three ways to "obtain" a web server:
  - Pay a "hosting company" which setup everything for you.
  - Buy a server-grade computer, rent an IP address and set up everything by yourself.
  - Hybrid: pay a hosting company for the hardware and IP, you set up yourself.
- Each approach has pros and cons.

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More About Web Server

- Note:
  - "Web servers", although are developed for the web in the beginning, they are not always used for serving the Internet now. They can also be found in devices such as printers, routers, webcams (serving only a local network)
    - The web server may then be used as a part of a system for monitoring and/or administering the device in question.

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Find a Hosting Company

- Two types of hosting companies:
  - Paid
    - E.g. GoDaddy, NameCheap, etc.
  - Free
    - E.g. http://www.free-webhosts.com/
    - A real story:
      - I put every thing on a free hosting company
      - The company suddenly disappeared one day when I woke up …
      - Everything is gone…

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Find a Hosting Company (cont'd)

- When choosing a hosting company, some general question you need to ask (at least):
  - What kind of programming language you want? (PHP? JSP?)
  - How to upload file to the web server?
  - What is the operating system? (Windows? Linux?)
  - What is the DBMS? (MySQL? Oracle?)
  - What kind of web server it is using? (Apache? Microsoft IIS?)
  - What is the maximum single file size for upload/download?
  - What is the maximum total bandwidth?
  - What is the speed?
  - How much memory your are allowed to use?

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Find a Hosting Company (cont'd)

- Where is the server?
  - Some countries may block some servers in some locations...
- The reputation of the server?
  - This is extremely useful for sending and receiving emails.
  - Most hosting companies also provides email services, i.e., they have set up both web servers and email servers.
  - You may not send email out successfully if the email server has bad reputation!

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Setup a Web Server

- In case you want to set up your own web server, there are many web servers. Two most popular:
  - Apache HTTP Server
    - http://httpd.apache.org/
  - Nginx
    - http://nginx.org/
  - You can install the above Web Servers in most of the common operating systems, such as Windows, Linux, Mac.

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Setup a Web Server (cont'd)

- By default, web server does not know programming, i.e. it cannot do any server side programming, such as connecting to a database system, allowing user login/logout, reading PHP, JSP, ASP, etc. So we need to install *modules* to let the web server understand different programming languages.
  - Install PHP module then the web server understand PHP programs
  - Install JSP module then the web server understand JSP programs
- Note:
  - If you want to write ASP programs, you must install Microsoft IIS Server. There is no "ASP module" for Apache or Nginx.

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XAMPP

- Instead of installing thhe web server, the PHP module and the database system one by one, there is an extremely handy package called XAMPP that can do everything for you with just one click:
  - https://www.apachefriends.org/index.html
- After your servers are up, you are now ready to build your web store!

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Content Management Systems (CMS)

- Allows publishing, editing and modifying content, organizing, deleting as well as maintenance *from a central interface*.
  - Available since the late 1990s.
- Provides procedures to manage workflow in a collaborative environment.
  - Allows a *content creator* to use an editor to create and edit content with an *authorized user* to approve the content to be published in a live environment.
  - All of this interaction is controlled through security, workflow and audit trails and all of this is stored and tracked in a database.

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Why Need a CMS?

- In the past, an organization usually will have a group of people (without IT background) responsible for writing the content, i.e. *content creator*.
- The content creator needs to send the content to the web developer to implement.
- This is inefficient. A better approach: tools for the the content creator to write the content directly without seeking the help from the web developer.

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Why Need a CMS? (cont'd)

- In addition, as more and more pages are added to the website, it often becomes necessary to create new layouts and arrangements to accommodate the new content.
  - Changes to the layout and appearance of the website often mean that a programmer will need to be involved in the creation of these new pages and layouts. In the end, the website is comprised of numerous page templates, countless pages of content, and multiple content authors with no real system to manage everything.

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Benefit of CMS

- CMS makes your website easier to use, less expensive to maintain, and more secure:
  1. Allows content to be controlled by the people who own the content.
     - No more relying on developers to make changes to the web content. We can add content without knowing HTML or any code. This saves money and time.
  2. Content can be added to the site much more quickly and efficiently.
     - Nothing is worse than time-sensitive information not getting posted in time because the web developer are too busy to post the updated content!

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Benefit of CMS (cont'd)

3. Keeping content controlled by the content authors frees up the developers' time to focus on other things (like the design of the front end of the website or implementation of new features and functionality).
4. Allows you to distribute content authoring duties to different people within your organization.
   - Many good CMSs allow you to set up approval chains and permissions. This helps to make sure that content doesn't appear on the website unless it has been fully approved.
5. Workflows are built-in as part of the CMS.
   - This gives people the ability to view, share, and approve drafts of content without needing to refer to any printouts or emails. Everything is self-contained within the CMS.

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List of CMSs

- There are numerous of CMS exists!
  - E.g., see: http://en.wikipedia.org/wiki/List_of_content_management_systems

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Choosing CMS

- Secure
  - When the CMS has its last security review or latest version?
- Multilingual
  - Can the CMS cater for different language both on the frontend and backend?
- Scalable
  - Can the software be load balanced across multiple web servers?
- Migration tools
  - Does it come with tools or methods for migrating to different domains?

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Choosing CMS (cont'd)

- Documentation and Support
  - Is it backed up with appropriate technical documentation?
- Web standards
  - Can it produce clean, semantic HTML and accessible content? It is useful for SEO.
- Installers
  - Does it have a simple 1 click installation, or is an army of engineers required to make it work?
- Usability
  - Is it simple to use or it needs extensive training?

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WordPress

- In this course, we will focus on WordPress.
  - https://wordpress.org/
- Why?
  - Easy to use
  - Extremely popular
  - Have all of the previous properties
- Note:
  - www.wordpress**.org** and www.wordpress**.com** are different!

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Install WordPress

- Prerequisite:
  - Web server:
    - You must have a web server running PHP
  - DBMS:
    - For standard installation, you must have MySQL or MariaDB

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Install WordPress

- Steps:
  1. Create a database for WordPress in MySQL
  2. Download the latest WordPress installation package
     - http://www.wordpress.org
  3. Upload the WordPress files to your server
  4. Go through the installation process

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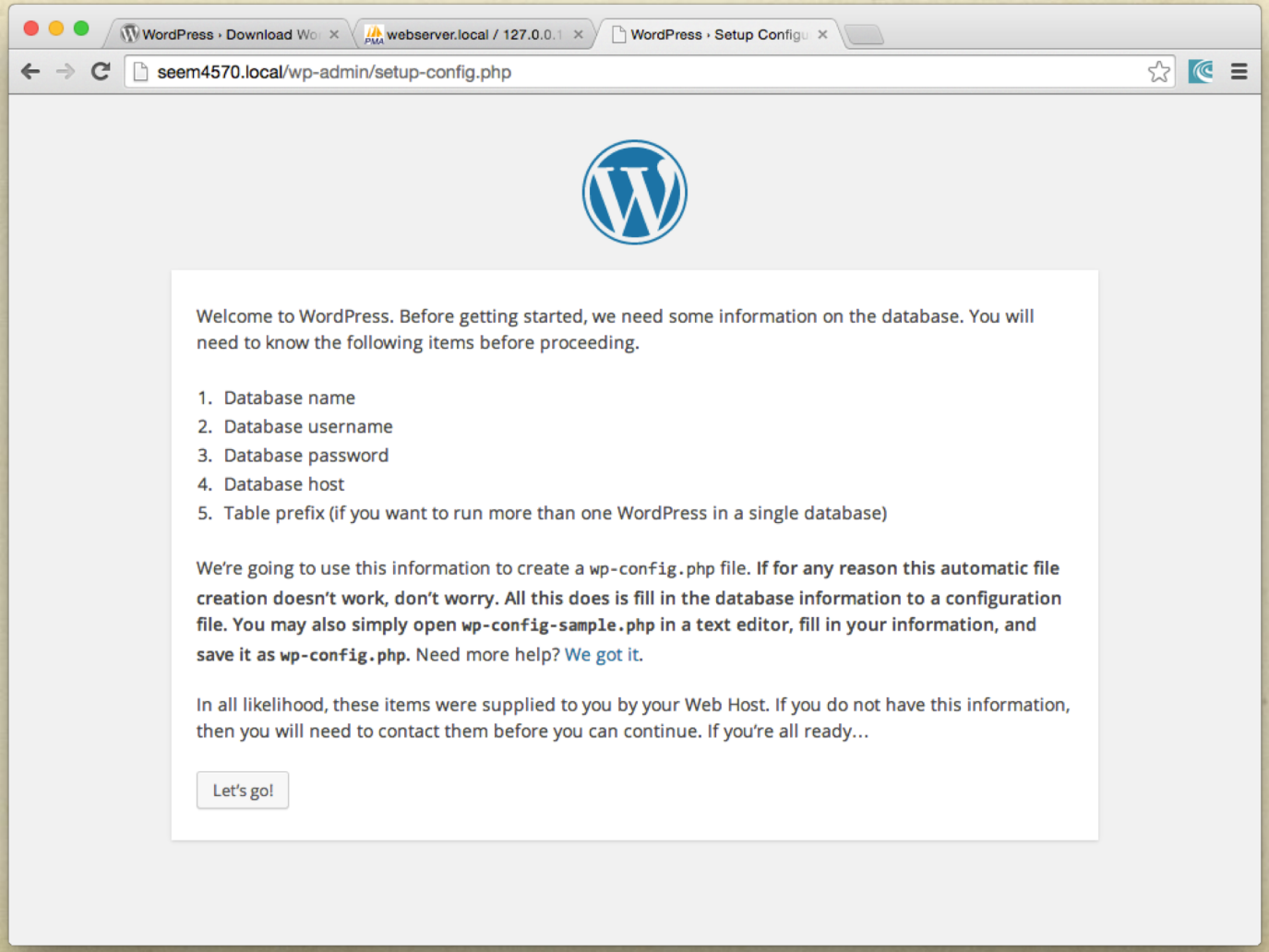
Sample Screenshots



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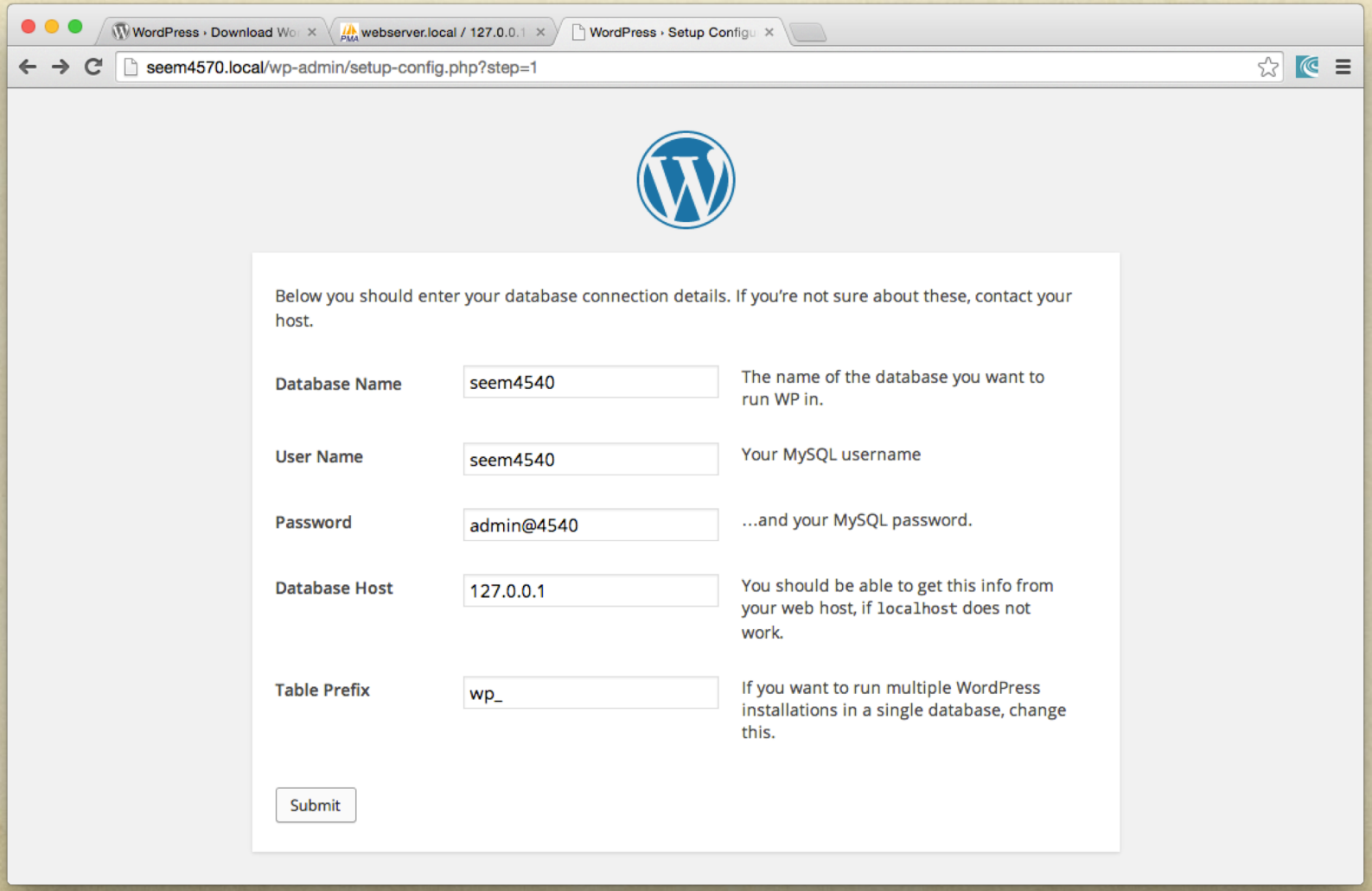
Sample Screenshots (cont'd)



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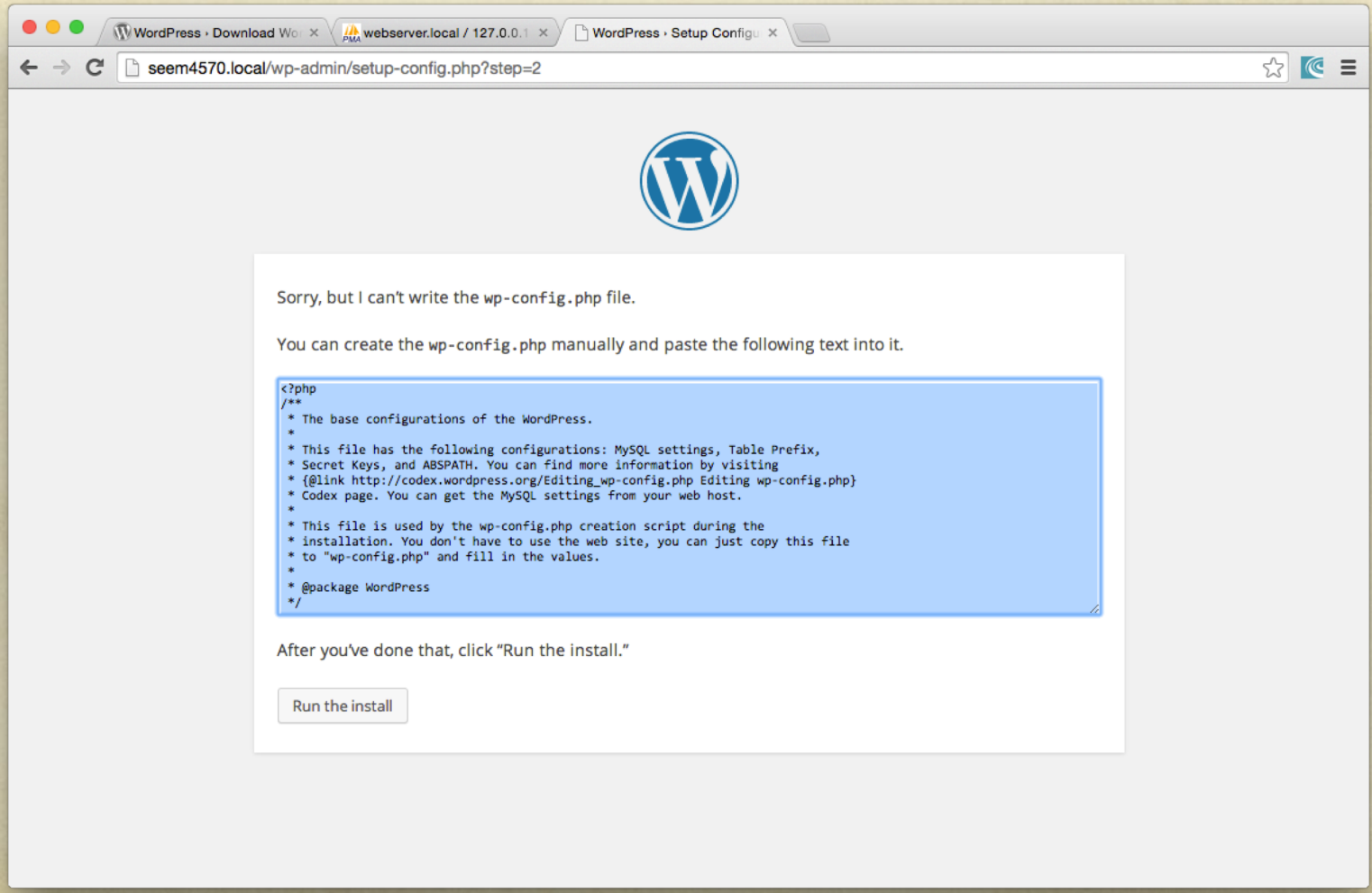
Sample Screenshots (cont'd)



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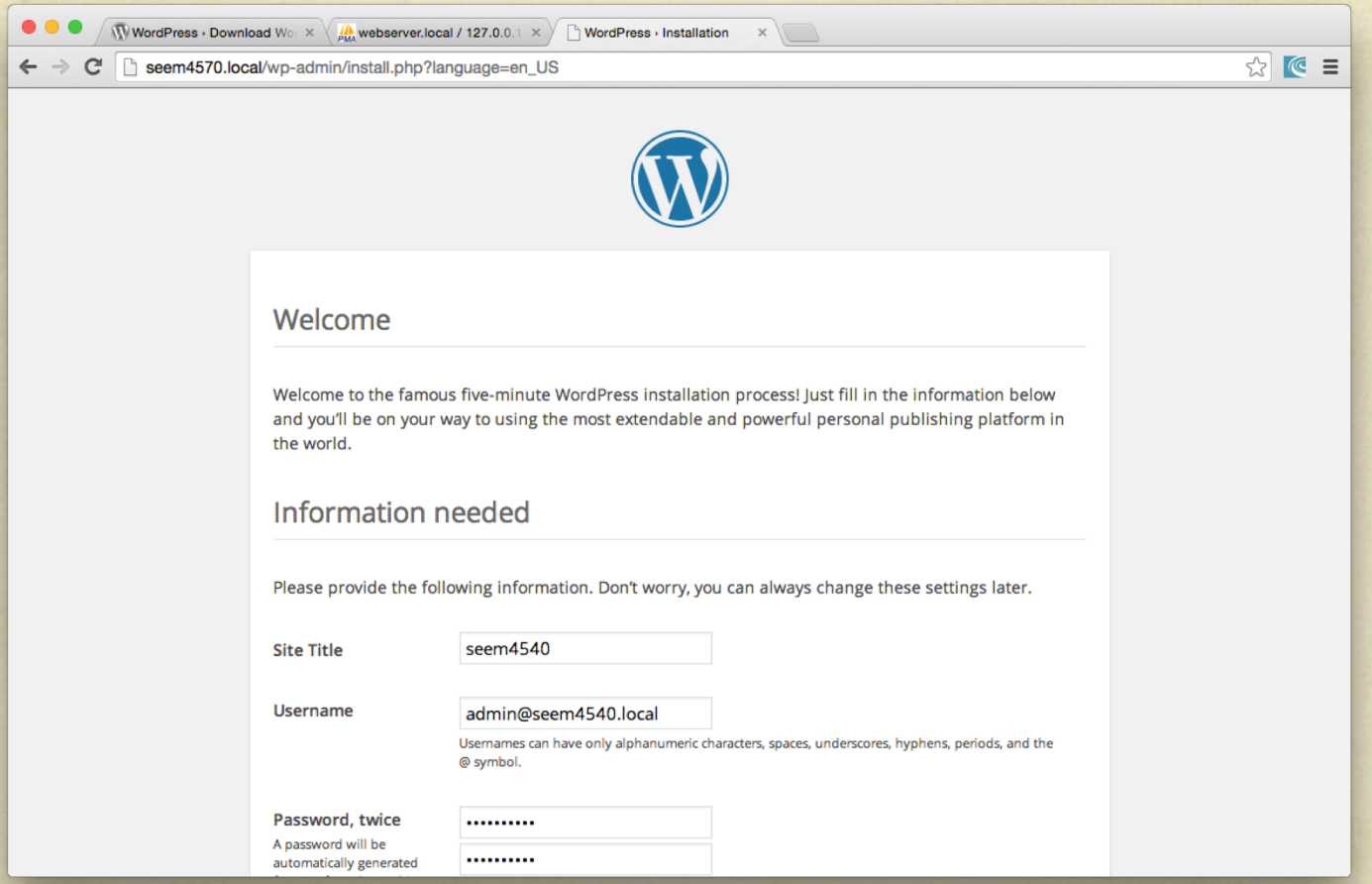
Sample Screenshots (cont'd)



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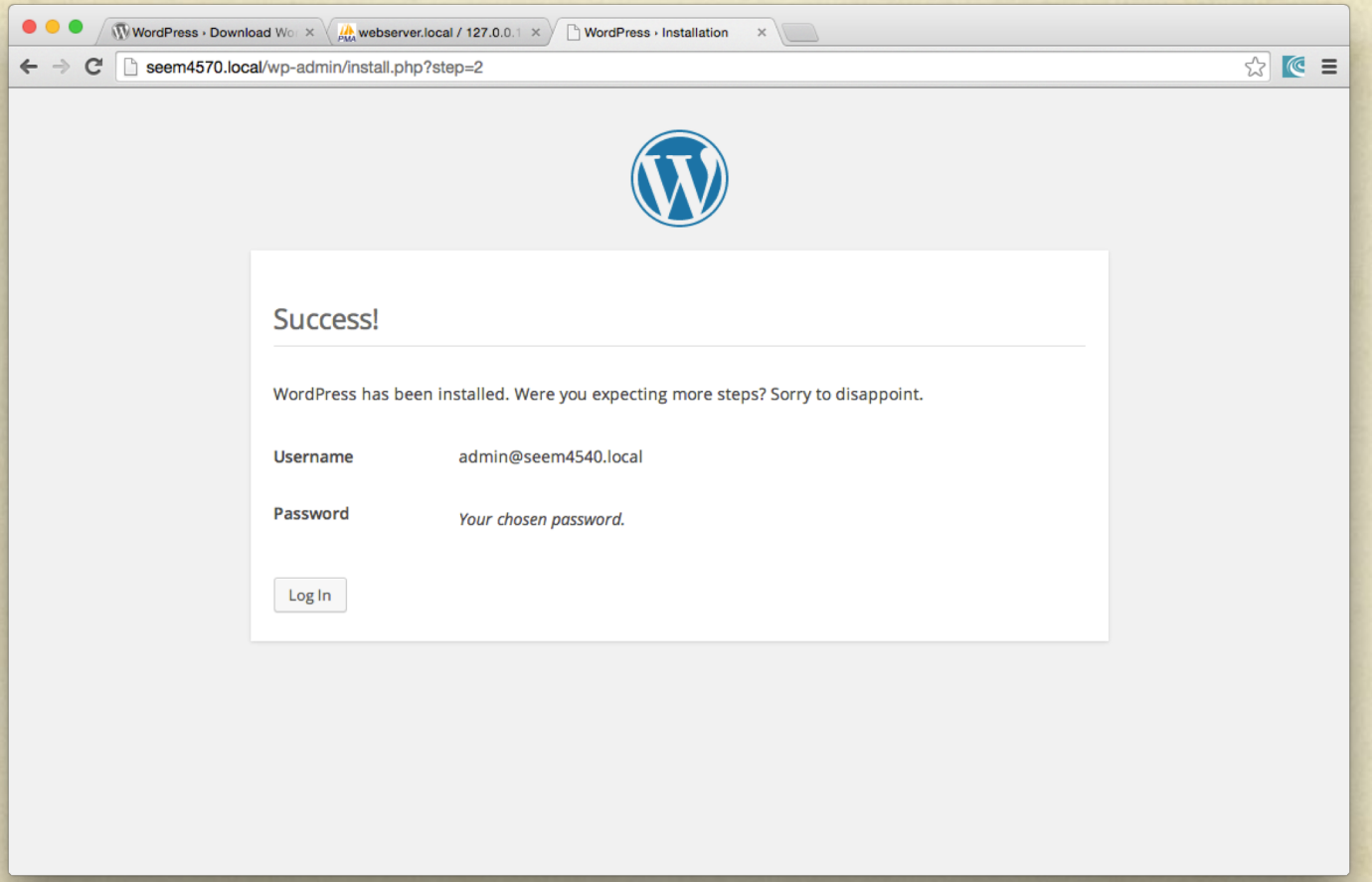
Sample Screenshots (cont'd)



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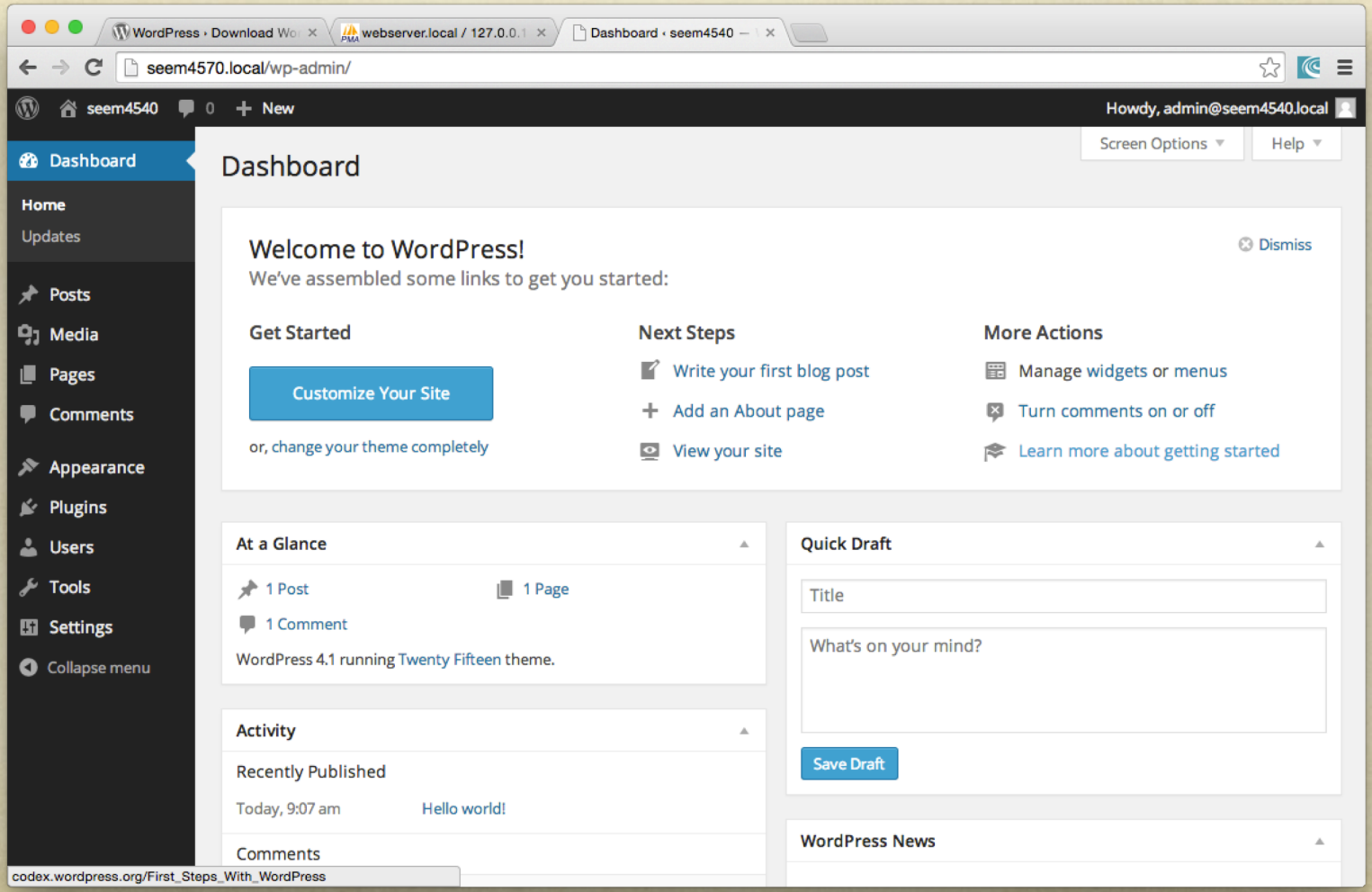

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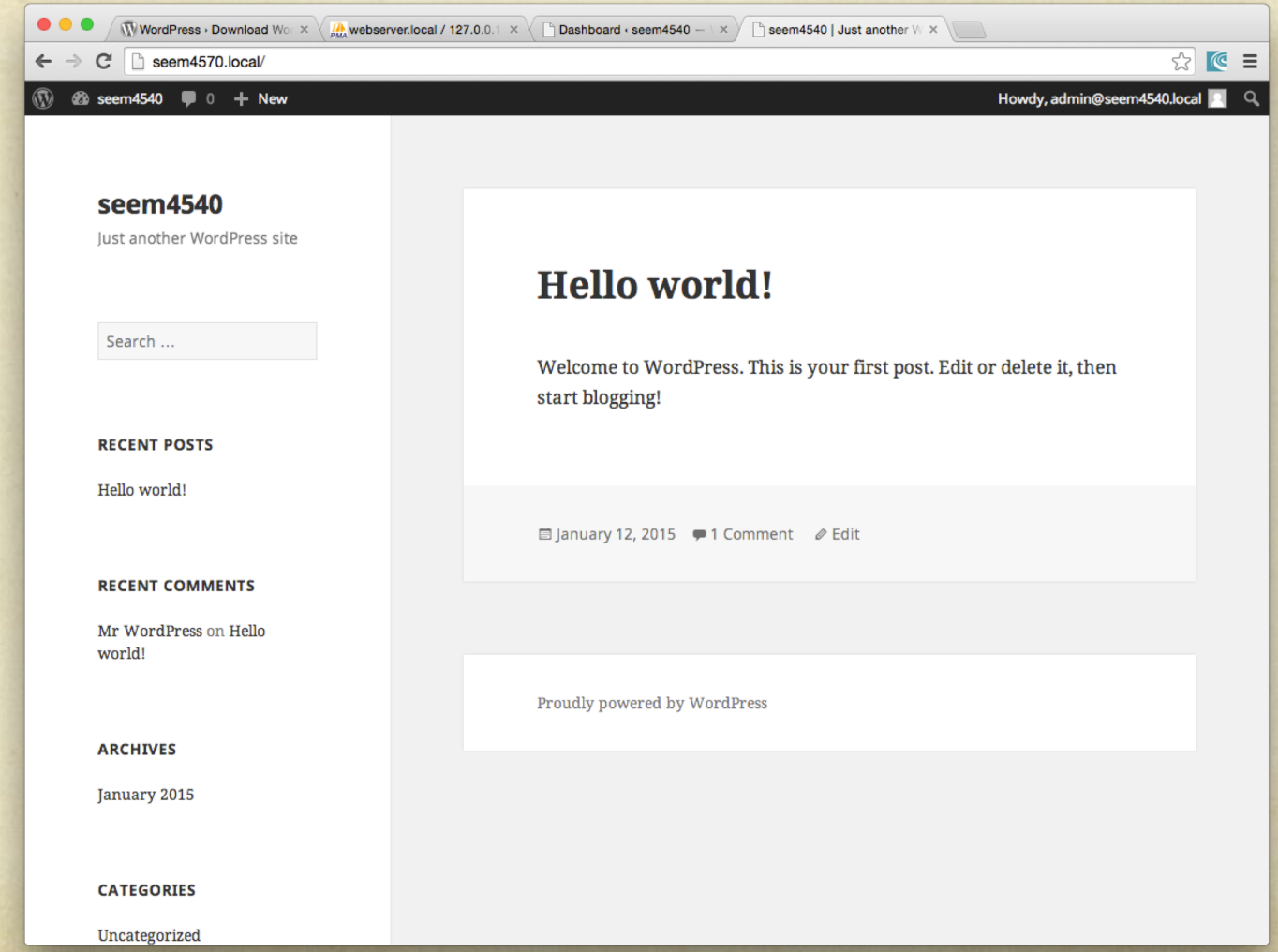
Sample Screenshots (cont'd)



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WordPress Loading Sequence

- Please refer to:
  - http://codex.wordpress.org/Template_Hierarchy

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About Database Management System (DBMS)

- MySQL is one of the most popular large-scale DBMS. It is a feature rich, open-source product that powers a lot of web-sites and applications online. Getting started with MySQL is relatively easy and developers have access to a massive array of information regarding the database on the internet.
- In 2008, Sun Microsystem acquired MySQL.
- In 2009, the founder of MySQL, Michael Monty Widenius leads another DBMS called MariaDB.
  - MariaDB has extremely high capability with MySQL

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Advantages of MySQL/MariaDB

- Distributed operations
  - Excellent for client-server environment
- Feature rich, scalable and powerful
  - Supports many SQL functionalities and can handle lots data. Third-party tools, including visual ones (i.e. GUIs) make it extremely simple to get started with the database.
- Secure and multi-user management:
  - A lot of security features.
- Speedy:
  - Giving up some standards so as to work very efficiently and cut corners, thus providing speed gains.

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Disadvantages of MySQL

- SQL compliance:
  - MySQL does not implement the full SQL standard, this tool is not completely SQL compliant.
- Concurrency:
  - Even though MySQL and some storage engines perform really well with read operations, concurrent read-writes can be problematic.

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Note

- In case you forgot your username and password of wordpress admin, you can modify the table “wp_users” directly.
  - Change the file “user_pass”. **Make sure you set the function to be “md5”.**

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Other Popular CMS

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