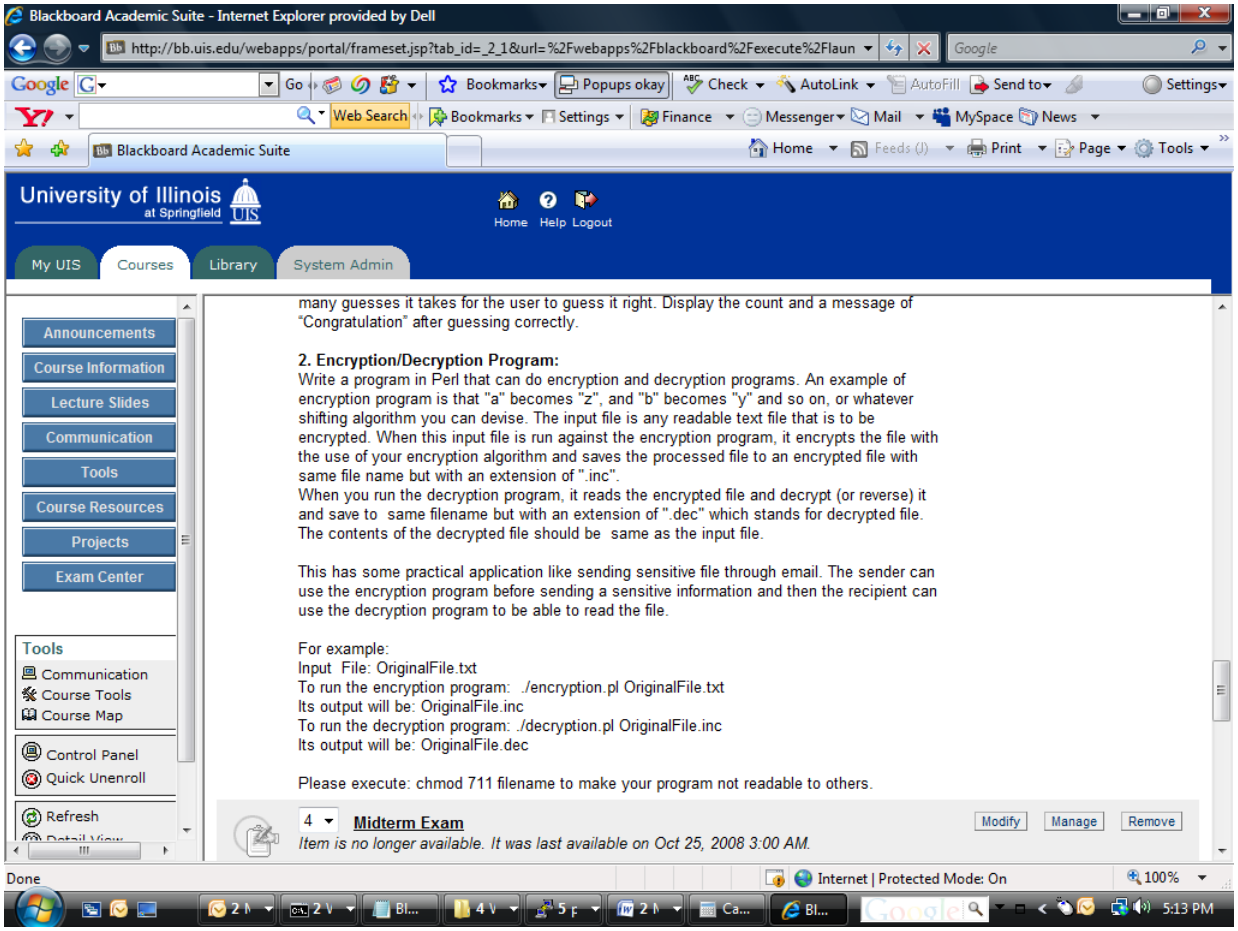
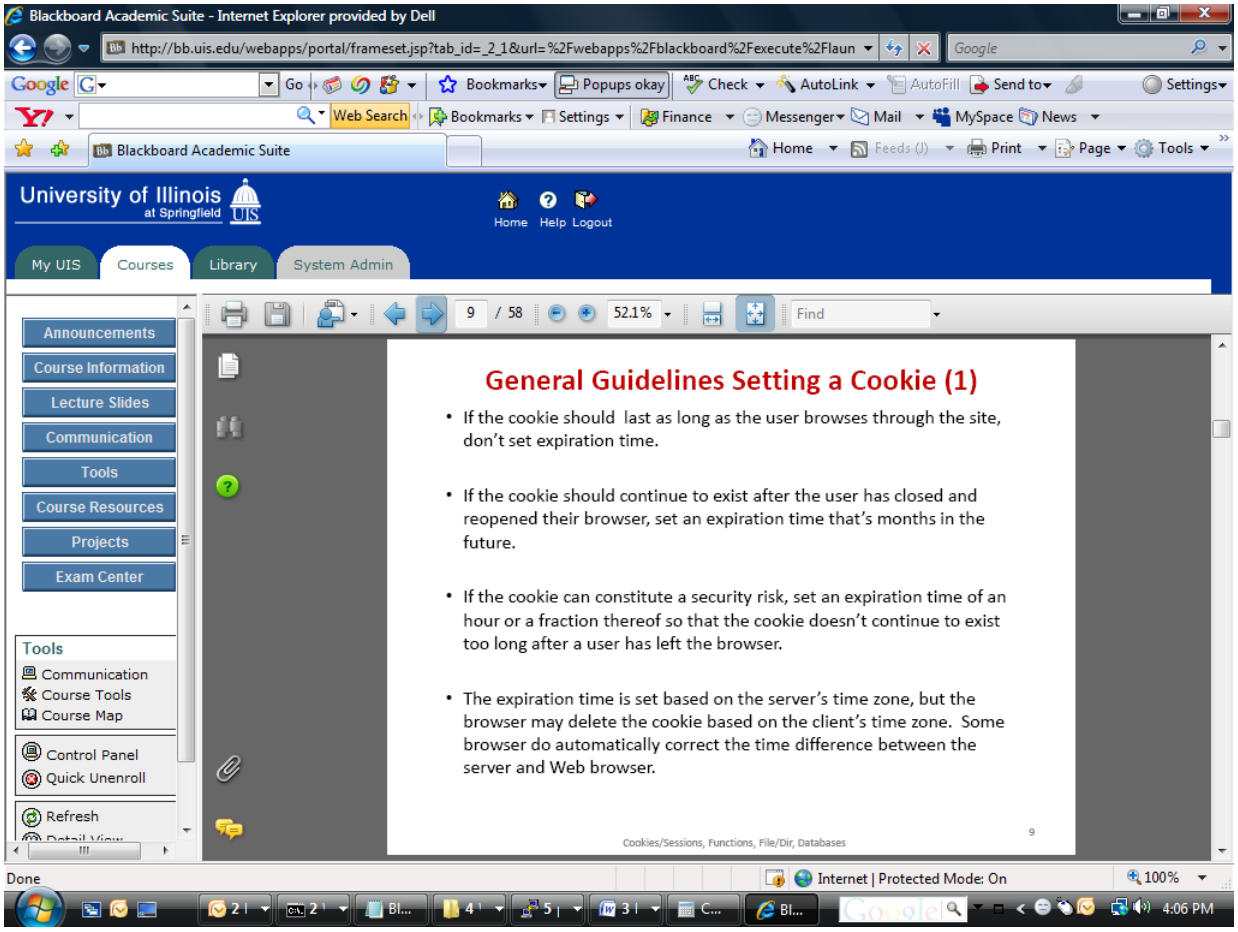
CSC368 Systems Programming Languages

IA Projects given to students:
1. Encryption/Decryption program in Perl - Students have to write a program to encrypt a file and another program to decrypt a file.

2. Management of cookies and web files in PHP - In lecture only.
Semester Offered: Fall 2008

Some snapshots:

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General Guidelines Setting a Cookie (1)
If the cookie should last as long as the user browses through the site, don't set expiration time.
If the cookie should continue to exist after the user has closed and reopened their browser, set an expiration time that's months in the future.
If the cookie can constitute a security risk, set an expiration time of an hour or a fraction thereof so that the cookie doesn't continue to exist too long after a user has left the browser.
The expiration time is set based on the server's time zone, but the browser may delete the cookie based on the client's time zone. Some browser do automatically correct the time difference between the server and Web browser.
Cookies/Sessions, Functions, File/Dir, Databases
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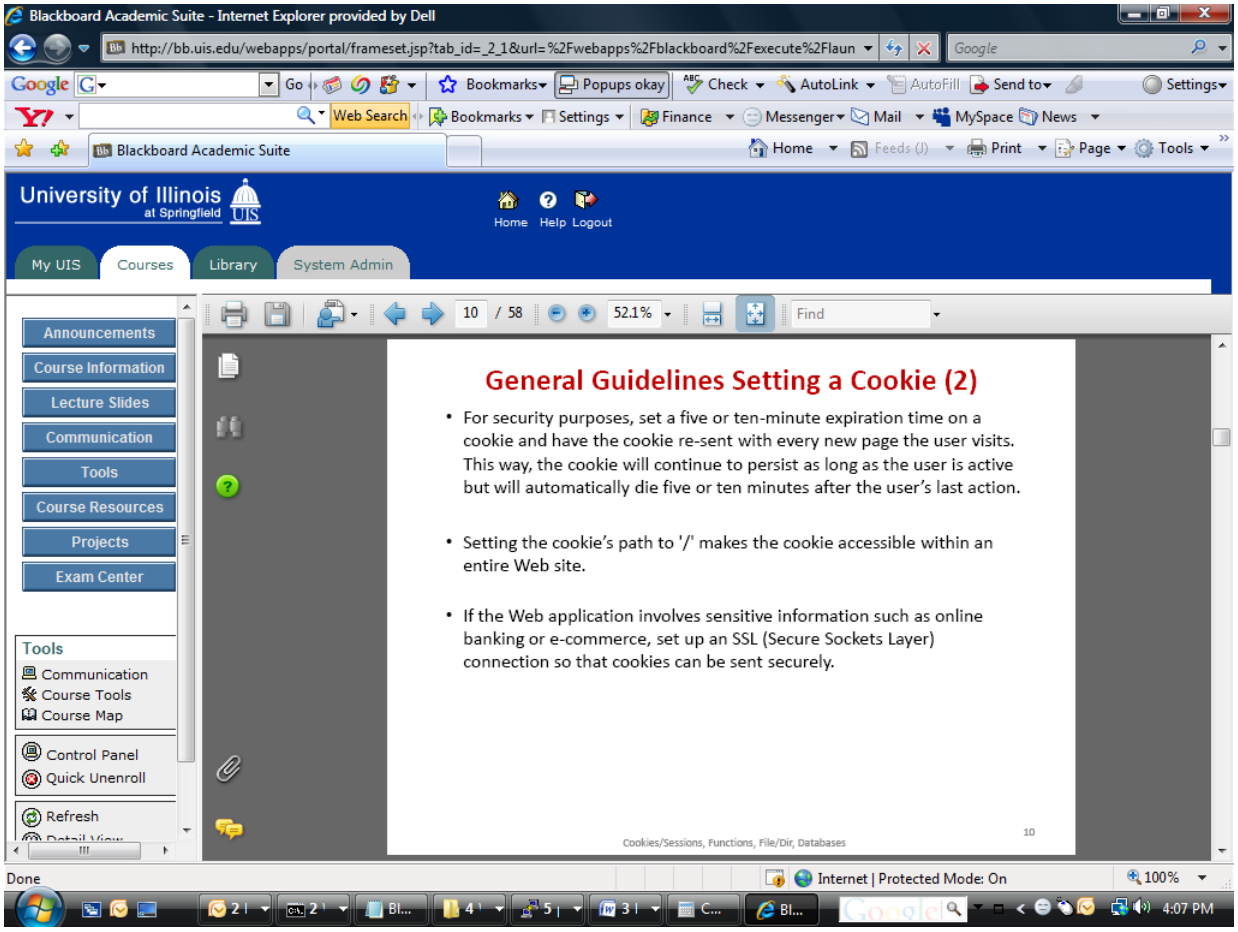
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General Guidelines Setting a Cookie (2)
For security purposes, set a five or ten-minute expiration time on a cookie and have the cookie re-sent with every new page the user visits. This way, the cookie will continue to persist as long as the user is active but will automatically die five or ten minutes after the user's last action.
Setting the cookie's path to '/' makes the cookie accessible within an entire Web site.
If the Web application involves sensitive information such as online banking or e-commerce, set up an SSL (Secure Sockets Layer) connection so that cookies can be sent securely.
Cookies/Sessions, Functions, File/Dir, Databases
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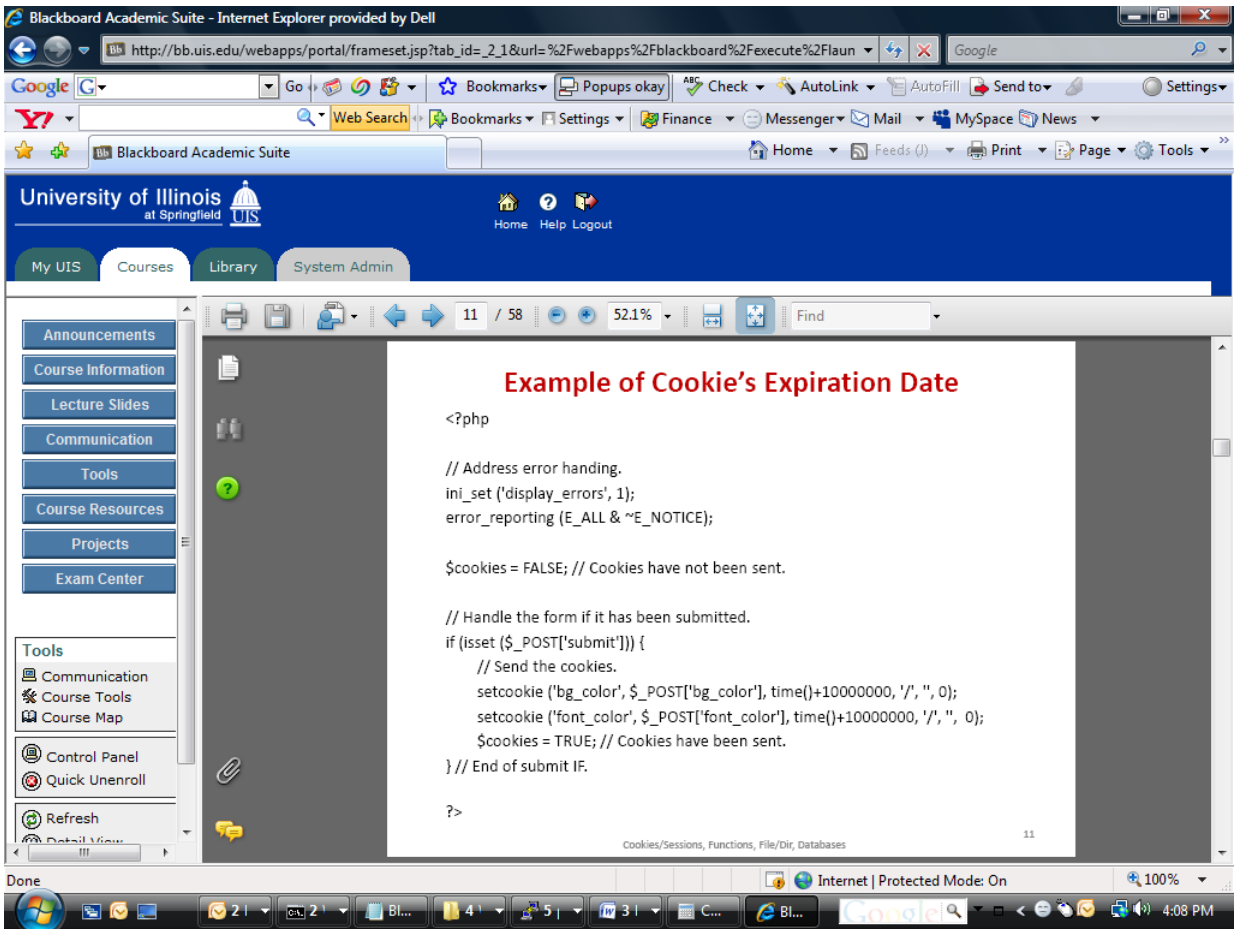
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Example of Cookie's Expiration Date
<?php
// Address error handing.
ini_set ('display_errors', 1);
error_reporting (E_ALL & ~E_NOTICE);
$cookies = FALSE; // Cookies have not been sent.
// Handle the form if it has been submitted.
if (isset ($_POST['submit'])) {
// Send the cookies.
setcookie ('bg_color', $_POST['bg_color'], time()+10000000, '/', '', 0);
setcookie ('font_color', $_POST['font_color'], time()+10000000, '/', '', 0);
$cookies = TRUE; // Cookies have been sent.
} // End of submit IF.
?>
Cookies/Sessions, Functions, File/Dir, Databases
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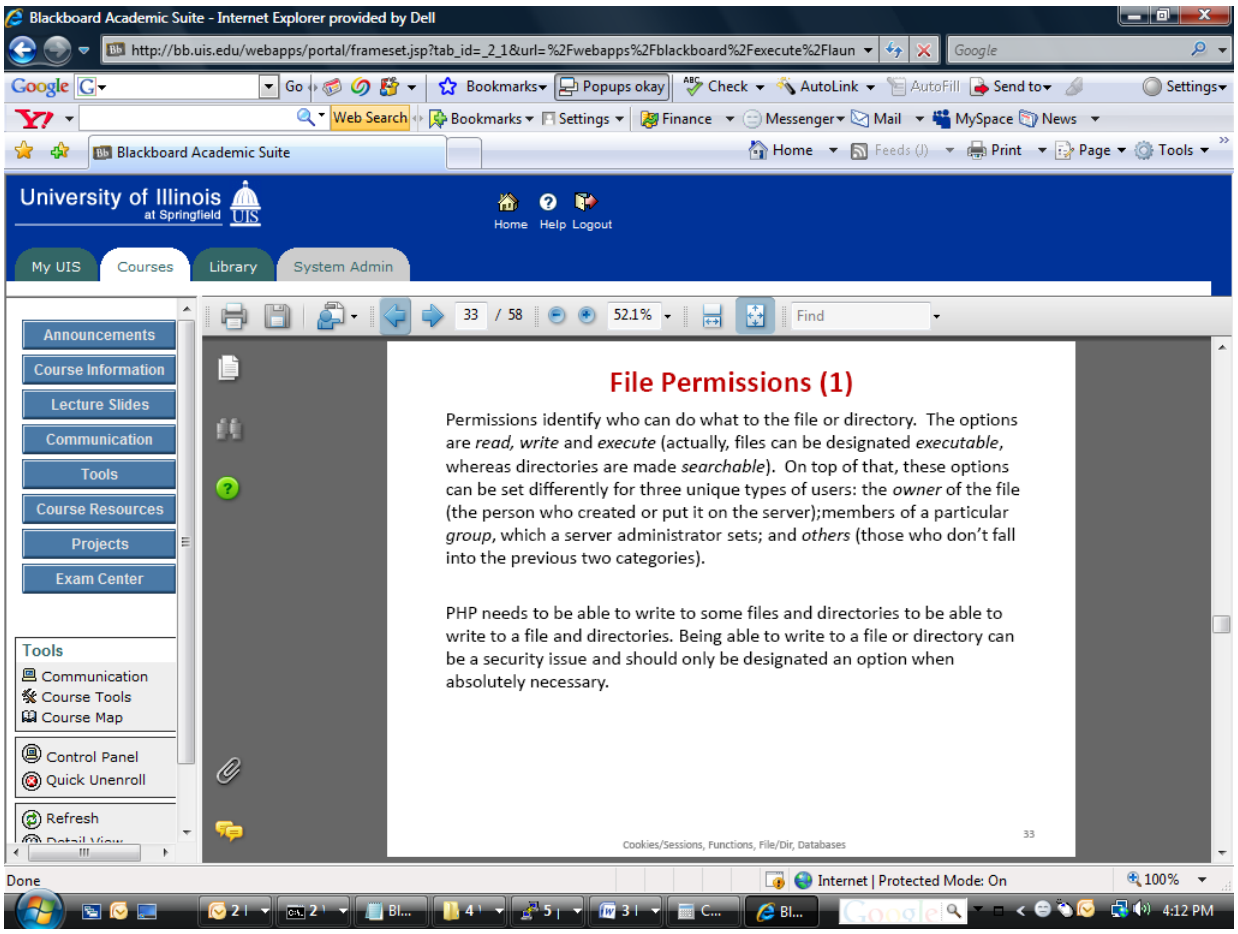
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File Permissions (1)
Permissions identify who can do what to the file or directory. The options are read, write and execute (actually, files can be designated executable, whereas directories are made searchable). On top of that, these options can be set differently for three unique types of users: the owner of the file (the person who created or put it on the server);members of a particular group, which a server administrator sets; and others (those who don't fall into the previous two categories).
PHP needs to be able to write to some files and directories to be able to write to a file and directories. Being able to write to a file or directory can be a security issue and should only be designated an option when absolutely necessary.
Cookies/Sessions, Functions, File/Dir, Databases
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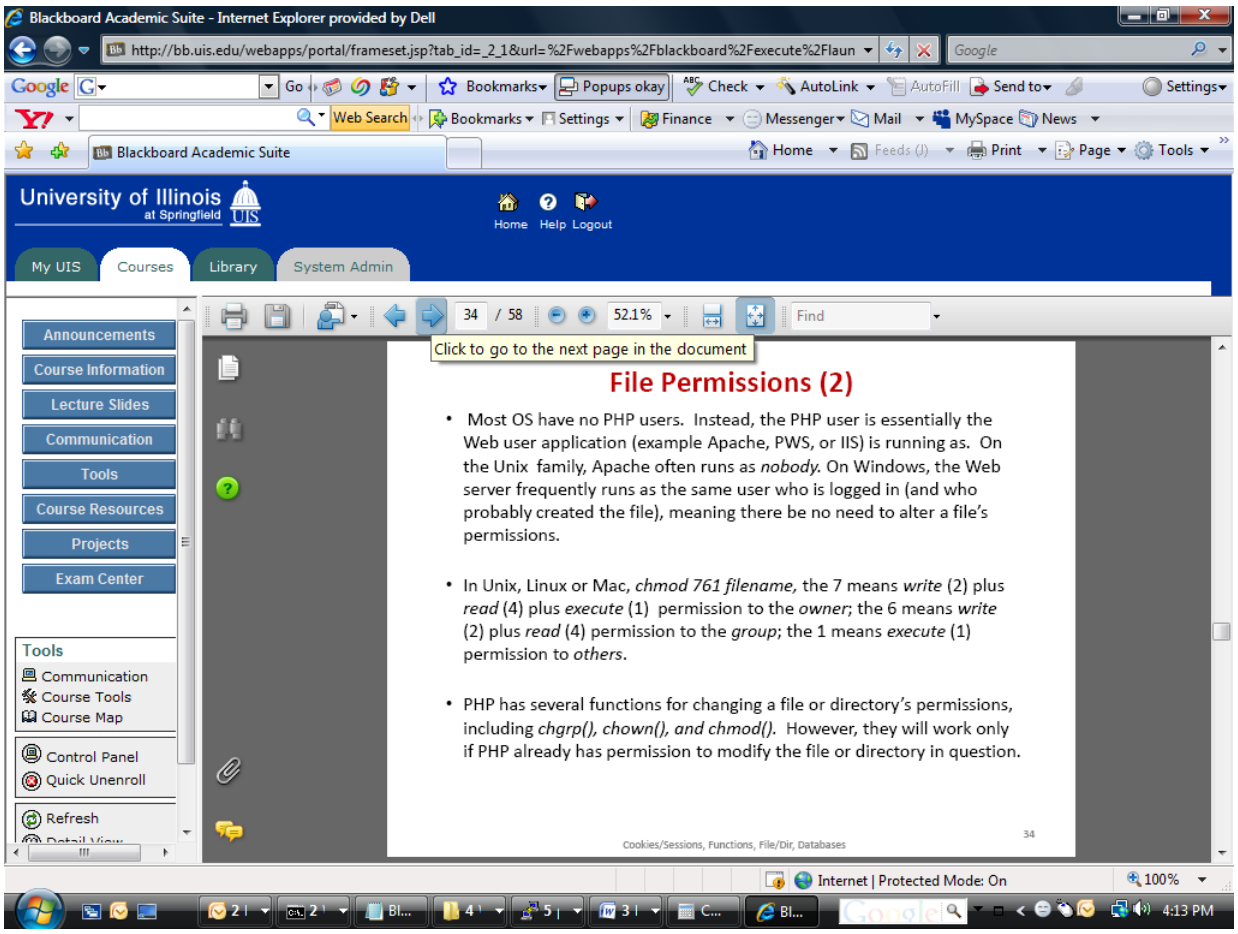
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File Permissions (2)
• Most OS have no PHP users. Instead, the PHP user is essentially the Web user application (example Apache, PWS, or IIS) is running as. On the Unix family, Apache often runs as nobody. On Windows, the Web server frequently runs as the same user who is logged in (and who probably created the file), meaning there be no need to alter a file's permissions.
• In Unix, Linux or Mac, chmod 761 filename, the 7 means write (2) plus read (4) plus execute (1) permission to the owner; the 6 means write (2) plus read (4) permission to the group; the 1 means execute (1) permission to others.
• PHP has several functions for changing a file or directory's permissions, including chgrp(), chown(), and chmod(). However, they will work only if PHP already has permission to modify the file or directory in question.
Cookies/Sessions, Functions, File/Dir, Databases
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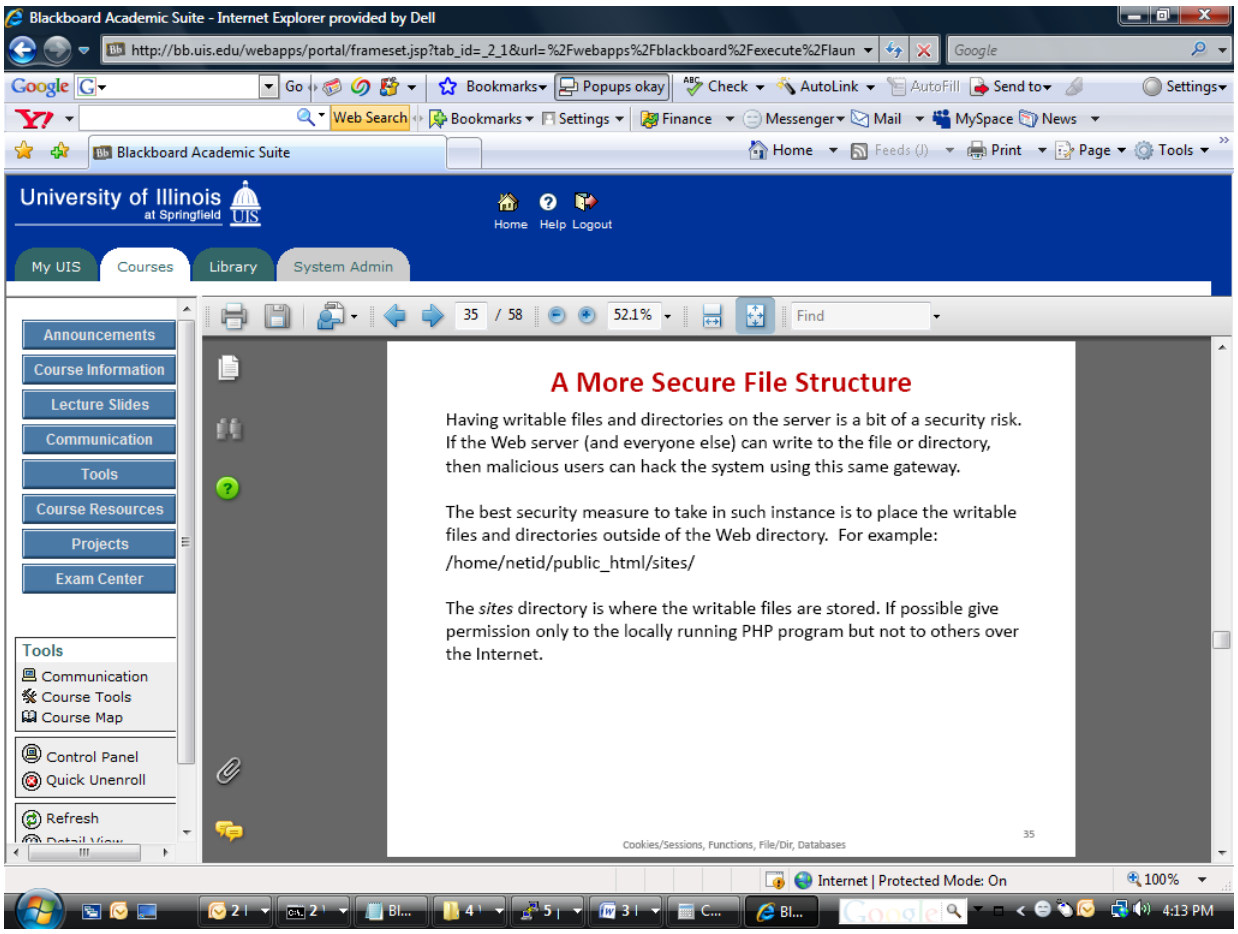
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A More Secure File Structure
Having writable files and directories on the server is a bit of a security risk. If the Web server (and everyone else) can write to the file or directory, then malicious users can hack the system using this same gateway.
The best security measure to take in such instance is to place the writable files and directories outside of the Web directory. For example:
/home/netid/public_html/sites/
The sites directory is where the writable files are stored. If possible give permission only to the locally running PHP program but not to others over the Internet.
Cookies/Sessions, Functions, File/Dir, Databases
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