CSE 154

LECTURE 13: SESSIONS
Expiration / persistent cookies

```php
setcookie("name", "value", expiration);  

expireTime = time() + 60*60*24*7;  # 1 week from now
setcookie("CouponNumber", "389752", expireTime);
setcookie("CouponValue", "100.00", expireTime);  
```

• to set a persistent cookie, pass a third parameter for when it should expire
• indicated as an integer representing a number of seconds, often relative to current timestamp
• if no expiration passed, cookie is a session cookie; expires when browser is closed
• `time` function returns the current time in seconds
  • `date` function can convert a time in seconds to a readable date
Deleting a cookie

```php
setcookie("name", FALSE);

setcookie("CouponNumber", FALSE);
```

- setting the cookie to `FALSE` erases it
- you can also set the cookie but with an expiration that is before the present time:
  ```php
  setcookie("count", 42, time() - 1);
  ```
- remember that the cookie will also be deleted automatically when it expires, or can be deleted manually by the user by clearing their browser cookies
How long does a cookie exist?

- **session cookie**: the default type; a temporary cookie that is stored only in the browser's memory
  - when the browser is closed, temporary cookies will be erased
  - can not be used for tracking long-term information
  - safer, because no programs other than the browser can access them

- **persistent cookie**: one that is stored in a file on the browser's computer
  - can track long-term information
  - potentially less secure, because users (or programs they run) can open cookie files, see/change the cookie values, etc.
What is a session?

- **session**: an abstract concept to represent a series of HTTP requests and responses between a specific Web browser and server
  - HTTP doesn't support the notion of a session, but PHP does

- **sessions vs. cookies:**
  - a cookie is data stored on the client
  - a session's data is stored on the server (only 1 session per client)

- **sessions are often built on top of cookies:**
  - the only data the client stores is a cookie holding a unique session ID
  - on each page request, the client sends its session ID cookie, and the server uses this to find and retrieve the client's session data
How sessions are established

- client's browser makes an initial request to the server
- server notes client's IP address/browser, stores some local session data, and sends a **session ID** back to client (as a cookie)
- client sends that same session ID (cookie) back to server on future requests
- server uses session ID cookie to retrieve its data for the client's session later (like a ticket given at a coat-check room)
Cookies vs. sessions

- **duration**: sessions live on until the user logs out or closes the browser; cookies can live that long, or until a given fixed timeout (persistent)
- **data storage location**: sessions store data on the server (other than a session ID cookie); cookies store data on the user's browser
- **security**: sessions are hard for malicious users to tamper with or remove; cookies are easy
- **privacy**: sessions protect private information from being seen by other users of your computer; cookies do not
Implementing user logins

- many sites have the ability to create accounts and log in users
- most apps have a database of user accounts
- when you try to log in, your name/pw are compared to those in the database
Sessions in PHP: session_start

```php
session_start();
```

- `session_start` signifies your script wants a session with the user
  - must be called at the top of your script, before any HTML output is produced
- when you call `session_start`:
  - if the server hasn't seen this user before, a new session is created
  - otherwise, existing session data is loaded into `$_SESSION` associative array
  - you can store data in `$_SESSION` and retrieve it on future pages
- [complete list of PHP session functions](#)
Accessing session data

```php
$ SESSION['name'] = value; # store session data
$variable = $_SESSION['name']; # read session data
if (isset($_SESSION['name'])) { # check for session data

if (isset($_SESSION['points'])) {
    $points = $_SESSION['points'];
    print("You've earned $points points.\n");
} else {
    $_SESSION['points'] = 0; # default
}

```

- the $_SESSION associative array reads/stores all session data
- use isset function to see whether a given value is in the session
Common session bugs

• `session_start` doesn't just begin a session; it also reloads any existing session for this user. So it must be called in every page that uses your session data:

```
# the user has a session from a previous page
print $_SESSION['name'];  # undefined

session_start();
print $_SESSION['name'];  # joe
```

• previous sessions will linger unless you destroy them and regenerate the user's session ID:

```
session_destroy();
session_regenerate_id(TRUE);
session_start();
```
Ending a session

- `session_destroy()` ends your current session
- potential problem: if you call `session_start` again later, it sometimes reuses the same session ID/data you used before
- if you may want to start a completely new empty session later, it is best to flush out the old one:

```php
session_destroy();
session_regenerate_id(TRUE);  // flushes out session ID number
session_start();
```
Session timeout

- because HTTP is stateless, it is hard for the server to know when a user has finished a session
- ideally, user explicitly logs out, but many users don't
- client deletes session cookies when browser closes
- server automatically cleans up old sessions after a period of time
  - old session data consumes resources and may present a security risk
  - adjustable in PHP server settings or with `session_cache_expire` function
- you can explicitly delete a session by calling `session_destroy`