3 topics

15 minutes

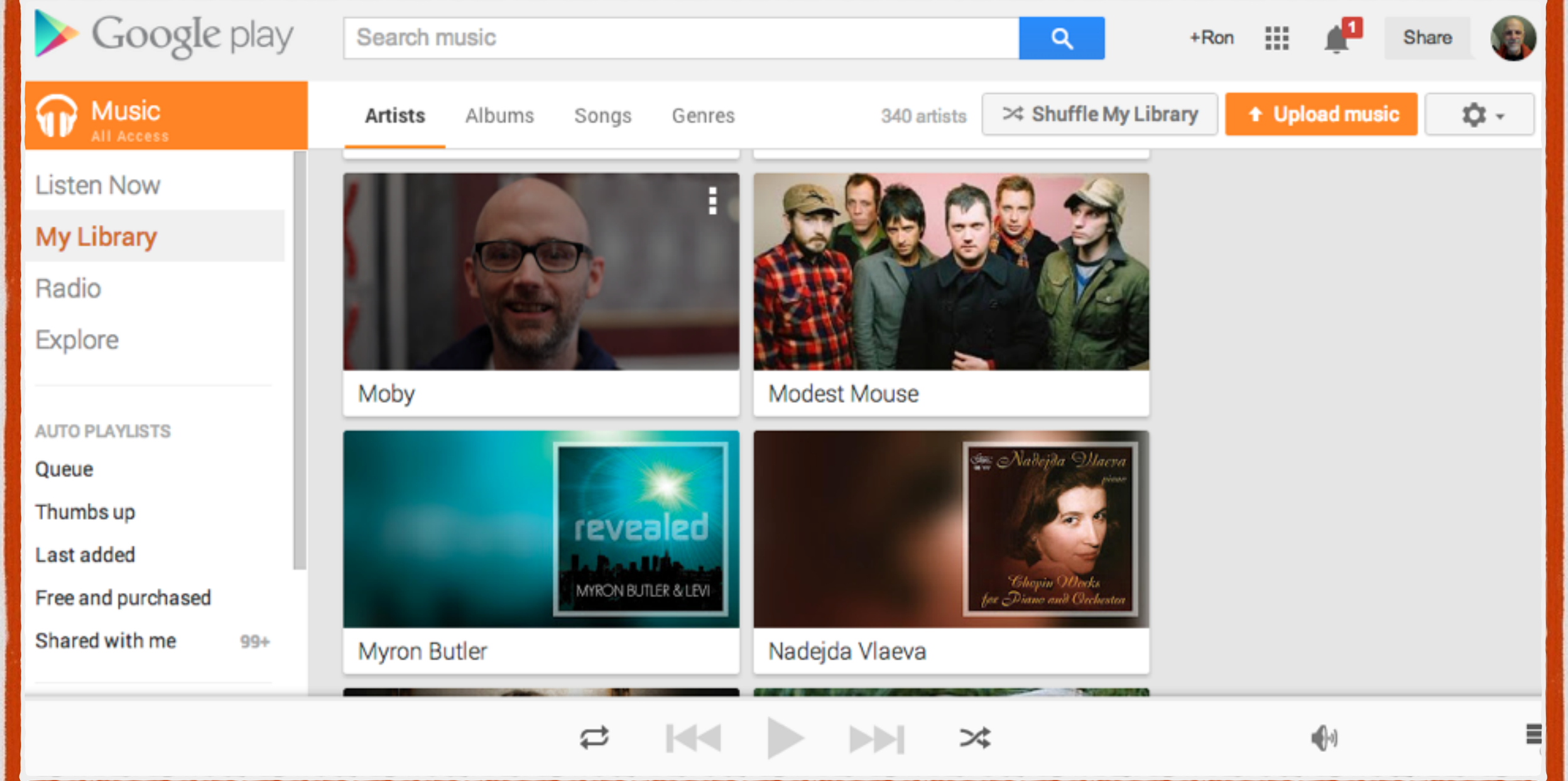
Session Control

HTTP is a stateless protocol

What does that mean?

HTTP is a stateless protocol

HTTP has no built-in way of maintaining state between 2 transactions.



html stateless

no memory

session variables

- session variables stored on the server
- they persist across multiple pages
- unlike cookies - no expiration date. They die when the session ends.
- one way for a session to end is to close the browser. (cookies can persist through a browser close)

session variables in Flask:

Step 1: starting a session

```
from flask import session
import os
app = Flask(__name__)

app.secret_key = os.urandom(24).encode('hex')
...
```

session variables in Flask:

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...
```

Return a string of n random bytes suitable for cryptographic use.

returns random bytes from an OS-specific randomness source.

used to sign cookies

session variables in Flask:

Step 2: using session variables

```
session['username'] = 'zacharski'
session['zipcode'] = '88005'


print(session['username’])
q = "select * from users WHERE username = '%s'" %
        session['username']
```

session variables in Flask:

Step 3: deleting session variables

```
session.pop('username', None)
```

Dangerous Characters

Topic 2

demo

solution:

you already know

Use this for ALL user input!

not 100% effective but a start!

demo

passwords

topic 3

Mashable MUST READS SOCIAL MEDIA TECH BUSINESS ENTERTAINMENT MORE

AdChoices ▷ ▶ Network Passwords ▶ Hotmail Passwords ▶ Password Cracker ▶ Password Securit

The 20 Most Popular Passwords Stolen From Adobe

The Top 20

1. 123456
2. 123456789
3. password
4. adobe123
5. 12345678
6. qwerty
7. 1234567
8. 111111
9. photoshop

CBSNews.com / CBS Evening News / CBS This Morning / 48 Hours / 60 Minutes / Sunday Morning /

CBSNEWS Video US World Politics Entertainment Health

AP / *January 30, 2014, 5:54 PM*

Yahoo email account passwords stolen

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More than 2 million stolen passwords found on hacker server

How would you feel if it was your code that contributed to passwords getting stolen?

Simple Solution: Never store passwords in the clear:

id	username	password
1	raz	p00d13
2	ann	changeme
3	lazy	qwerty
extremely	bad	idea!!!!

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1	raz	p00d13
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extremely	bad	bad idea!!!!

postgreSQL ->
many hash function options.

once you create a db:

```
CREATE EXTENSION pgcrypto
```

Adds crypto functions to your database.

One possibility: blowfish

```
insert into users
(username, password, zipcode)
 VALUES ('ann',
  crypt('password', gen_salt('bf')),
  88005);
```

```
session=# select username, password from users;
 username |                              password
----------+-------------------------------------------------------------
 raz      | p00d13
 ann      | changeme
 lazy     | qwerty
 foo      | $2a$06$LNEwiBctQkKjVatn0QSht.LJDRraYyC8AL15RweitjBssMrAG0l7a
 foo      | $2a$06$xSHddxN1HldRPwDVB.uBoeRzlghNBY/TkLCpOIVtQ9wkdZfgPAk5S
 foo      | $2a$06$ns8fXTCHanoXduRoHmWHre8aKvIwceU8eFz8OD1GvkAyHwsipr5Qq
 foo      | $1$d4x0dbu4$u8M6hl/BTkz/7R4evOvs7.
 bar      | $1$hG8URQvU$o2hgOHjzhc6xJ.0KM7cL..
(8 rows)
```

One possibility: blowfish

```
session=# select username, password from users where password =
crypt('p00d13', password);
 username |                           password
----------+--------------------------------------------------------------
 bar      | $2a$06$oT8bsN/kp1Cek2Eqe8Zehe2u9dqg5qJlwygFn.cmUovpjAvpuBrqq
(1 row)
```

how long to crack?

- ☐ 8 character pw a-z: 246 years
- ☐ 8 character pw A-Za-z0-9: 251,322 years

Summary

1. saw how to implement sessions
2. saw how to escape dangerous characters (more later)
3. saw how to handle passwords

Task

- ☐ clone session repository (see website)
- ☐ implement sessions so when a user logs in it is remembered on future searches
- ☐ protect user input strings (so a user can search on Peet's)
- ☐ implement create account and new login using hashed passwords.
- ☐ demo up to next Thursday get max XP. (work in team demo individually