Secure and Remote 3D Printing

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General Information:

Meeting Dates:

- September 17th
- September 30th

Client
Mike C Newton

Faculty Sponsor
Dr. Sid Bhattacharyya

Milestone 1

1. Investigative tools
   a. Django web development, CAD (3D modeling)
2. Hello World demos
   a. Upload and Home web pages
3. Requirement Document, Design Document, Test Plan
4. Resolve Technical Challenges
   a. Django framework, Ender-3, G-code and 3D modeling
5. Collaboration Tools
   a. Google drive (docs, slides, calendar), Discord, Email, Github

Requirements

1. Security
   a. SQL Query, Cross Site Forgery Protection, DoS Protection, Exterior File Storage, File Hashing, User Privileges, Protect User Information
2. User Interface
   a. Home Page, User Registration, Admin Approvals, Mobile Friendly, Navigation Bar, Login page, Submit button
3. File Uploading
   a. File Information, File Limitations, Upload Directory
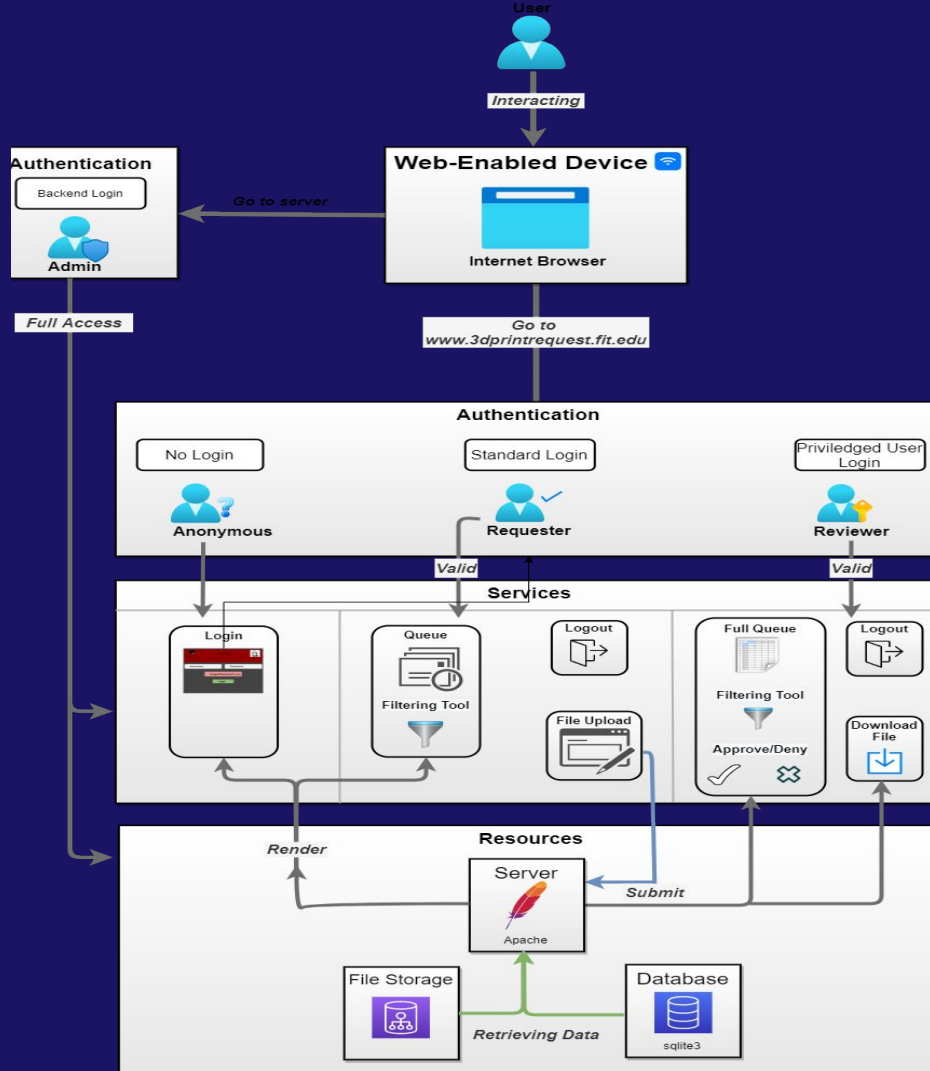
Requirements Cont.

4. File Queue
- **a.** Queue Page (admin/user), Admin Approval/Rejection, Removal of projects (admin/user)

5. Backend & Site Deployment
- a. Robots.txt, Domain Registration, Deploying web server, Forwarding requests, Enabling SSL/HTTPS

Architecture Diagram

Terminal Running Django

```
└$ python manage.py runserver
Watching for file changes with StatReloader
Performing system checks...

System check identified no issues (0 silenced).
October 04, 2021 - 19:27:15
Django version 3.2.7, using settings 'SeniorDesign.settings'
Starting development server at http://127.0.0.1:8000/
Quit the server with CONTROL-C.
AnonymousUser
[04/Oct/2021 19:27:22] "GET / HTTP/1.1" 200 236
[04/Oct/2021 19:27:31] "GET /admin/ HTTP/1.1" 302 0
[04/Oct/2021 19:27:31] "GET /admin/login/?next=/admin/ HTTP/1.1" 200 2214
[04/Oct/2021 19:27:31] "GET /static/admin/css/nav_sidebar.css HTTP/1.1" 304 0
[04/Oct/2021 19:27:31] "GET /static/admin/css/base.css HTTP/1.1" 304 0
[04/Oct/2021 19:27:31] "GET /static/admin/css/login.css HTTP/1.1" 304 0
[04/Oct/2021 19:27:31] "GET /static/admin/js/nav_sidebar.js HTTP/1.1" 304 0
[04/Oct/2021 19:27:31] "GET /static/admin/css/responsive.css HTTP/1.1" 304 0
[04/Oct/2021 19:27:32] "GET /static/admin/css/fonts.css HTTP/1.1" 304 0
[04/Oct/2021 19:27:32] "GET /static/admin/fonts/Roboto-Light-webfont.woff HTTP/1.1" 304 0
[04/Oct/2021 19:27:32] "GET /static/admin/fonts/Roboto-Regular-webfont.woff HTTP/1.1" 304 0
[04/Oct/2021 19:27:36] "POST /admin/login/?next=/admin/ HTTP/1.1" 302 0
[04/Oct/2021 19:27:36] "GET /admin/ HTTP/1.1" 200 4929
[04/Oct/2021 19:27:36] "GET /static/admin/css/dashboard.css HTTP/1.1" 200 380
[04/Oct/2021 19:27:36] "GET /static/admin/img/icon-changelink.svg HTTP/1.1" 200 380
[04/Oct/2021 19:27:36] "GET /static/admin/img/icon-addlink.svg HTTP/1.1" 200 331
[04/Oct/2021 19:27:36] "GET /static/admin/img/icon-deletelink.svg HTTP/1.1" 200 392
[04/Oct/2021 19:27:36] "GET /static/admin/fonts/Roboto-Bold-webfont.woff HTTP/1.1" 304 0
```

Admin Page

Django administration

Site administration

AUTHENTICATION AND AUTHORIZATION		
Groups	➕ Add	✏️ Change
Users	➕ Add	✏️ Change

UPLOAD		
Upload_models	➕ Add	✏️ Change

Recent actions

My actions

➕ upload_model object (2)
Upload_model

✖️ upload_model object (1)
Upload_model

➕ upload_model object (1)
Upload_model

Upload Page

Title: ImageUploadTest

Testing Description

Description:

Testing Summary

Summary:

Upload: Browse… image_to_be_uploaded.jpg

Submit

Successful Upload (Admin View)

Django administration

Home › Upload › Upload_models › upload_model object (7)

AUTHENTICATION AND AUTHORIZATION

Groups   **+** Add

Users   **+** Add

UPLOAD

Upload_models   **+** Add

«

Change upload_model

upload_model object (7)

Title: BlackScreenTest

Description:

Testing

Summary:

123

Upload:

Currently: user_uploads/2021/10/04/image_to_be_uploaded.jpg

Change: Browse…   No file selected.

Delete   Save and add another   Save and continue

Backend For Upload

Home Page Mock-up

Home Page

| Upload Model | Queue Viewer | Register | Login |

Navbar

- Team description
  - Purpose

Text Box and Images

- Functionality of Site
- Contact Information
- Guidelines and Documentation
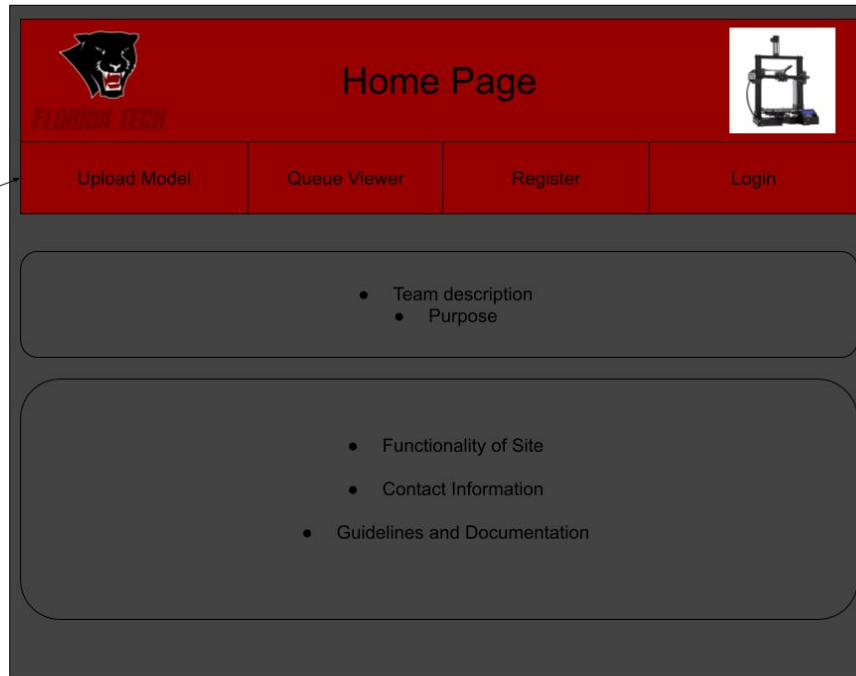
Text Box and Images

Login Page Mock-up

Registration Page Mock-up

Queue Page Mock-up

Username	Email	Upload Name	Queue Position
JaneDoe	janedoe@gmail.com	JanesFile.gcode	1
JoeShcmo	joesh@gmail.com	JoesSecretPrint.gcode	2
...	...	...	...
...	...	...	...
DrOc	droc@gmail.com	drocprint.gcode	11

Queue Page

Upload Model | Queue Viewer | Register | Login

Database ER Diagram
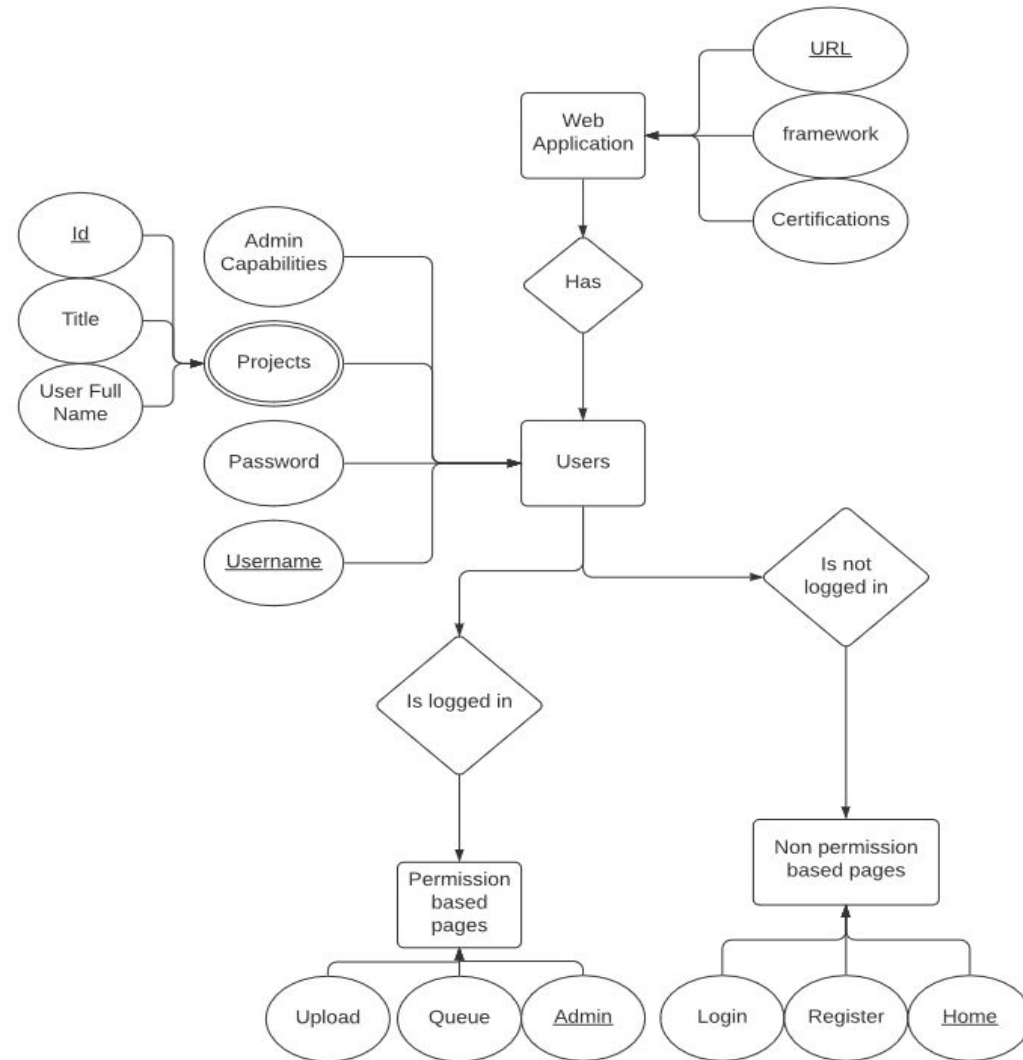
Entity Table:	Table Attributes:
Web Application	web_app(primary key: url, framework, certifications)
Users	users(primary key: username, password, multi-valued: projects, admin capabilities)
Permission Based Pages	perm_pages(primary key: admin, queue, upload)
Non-Permission Based Pages	non_perm_pages(primary key: home, login, register)

Test Cases:

1. Functionality Tests:
   a. Network Connectivity
   b. User Creation
   c. Web Page Restrictions
2. Security Tests:
   a. Cross-Site Scripting
   b. Input Sanitation
   c. DoS Protections

Milestone 2

1. Implement, test & demo *front end of the web application*
2. Implement, test & demo *user features for uploads and creating accounts*
3. Implement, test & demo *Admin account abilities*

Any Questions?

Thank You!