

COEN 317: Distributed Systems

Programming Assignment 1

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Assignment: Programming assignment 1

High level description:

This is an HTTP web server that processes and responds to HTTP requests. The application is multithreaded, so after the connection is accepted, it will initiate a new request to process the images. The connection is kept alive for four seconds and then closed (has a timeout of four seconds). HTTP /1.1 protocol is used to respond to HTTP requests.

The application accepts input arguments for the document root and the server's port number. The server generates a new thread for the client when it receives a connection. The client submits one-by-one requests for the HTML page and image files. After the connection is established, the socket is maintained alive for four seconds. The connection parses the HTTP request and provides the result as either an image or an HTML file. The index.html is the default file if the user doesn't enter an explicit filename.

List of submitted files:

1. Source code – PA1_Hima_Mallampati.tar.gz

The contents of PA1 Hima Mallampati are as shown -

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL
(base) himabindu@Himas-MacBook-Air PA1_Hima_Mallampati % ls -al
total 2024
drwxr-xr-x  14 himabindu  staff    448 Oct 13 00:21 .
drwxr-xr-x   9 himabindu  staff    288 Oct 13 19:13 ..
-rw-r--r--@  1 himabindu  staff   6148 Oct 12 23:31 .DS_Store
-rw-r--r--@  1 himabindu  staff  517739 Oct 13 00:14 gif1.gif
-rw-r--r--@  1 himabindu  staff  30643 Oct 13 00:21 image1.jpeg
-rw-r--r--@  1 himabindu  staff  32670 Oct 12 23:24 image2.png
-rw-r--r--@  1 himabindu  staff   8078 Oct 12 23:24 image3.png
-rw-r--r--@  1 himabindu  staff  25787 Oct 12 23:24 image4.png
-rw-r--r--@  1 himabindu  staff 274268 Oct 12 23:24 image5.png
-rw-r--r--@  1 himabindu  staff  64944 Oct 12 23:24 image6.png
-rw-r--r--@  1 himabindu  staff    595 Oct 13 18:48 index.html
-rw-r--r--@  1 himabindu  staff  52913 Oct 13 00:15 pup.jpg
drwxr-xr-x   3 himabindu  staff    96 Oct 12 23:31 scuweb
-rw-r--r--  1 himabindu  staff  4658 Oct 13 19:02 server.py
(base) himabindu@Himas-MacBook-Air PA1_Hima_Mallampati %
```

The contents of folder “scuweb” are as shown-

```
(base) himabindu@Himas-MacBook-Air PA1_Hima_Mallampati % cd scuweb
(base) himabindu@Himas-MacBook-Air scuweb % ls -al
total 80
drwxr-xr-x  3 himabindu  staff   96 Oct 12 23:31 .
drwxr-xr-x 14 himabindu  staff  448 Oct 13 00:21 ..
-rw-r--r--@ 1 himabindu  staff 37339 Oct 12 23:31 index.html
(base) himabindu@Himas-MacBook-Air scuweb %
```

2. README.pdf

Instructions for running my program

1. To test image handling and gif handling function of server

```
python ./server.py -document_root './' -port 8081
```

2. To access SCU home page

```
python ./server.py -document_root './scuweb' -port 8081
```

Demonstration:

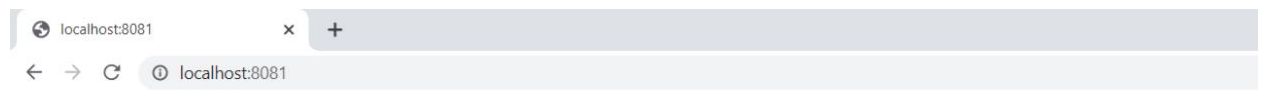
1. To test image handling and gif handling function of server

```
PS C:\Hima_personal\SomeAssign\PA1\PA1_Hima_Mallampati\PA1_Hima_Mallampati> python ./server.py -document_root './' -port 8081
Server host and portlocalhost:8081
Server directory:./
█
```

Log of client request for default page(localhost:8081):

```
(base) himabindu@Himas-MacBook-Air PA1_Hima_Mallampati % python server.py -document_root './' -port 8081
Server host and portlocalhost:8081
Server directory:./
Client request :
['GET', '/', 'HTTP/1.1']
Client request :
['GET', '/image1.jpeg', 'HTTP/1.1']
Client request :
['GET', '/gif1.gif', 'HTTP/1.1']
Client request :
Client request :
Client request :
['GET', '/image3.png', 'HTTP/1.1']
['GET', '/image2.png', 'HTTP/1.1']
Client request :
['GET', '/image4.png', 'HTTP/1.1']
Client request :
['GET', '/image5.png', 'HTTP/1.1']
Client request :
['GET', '/image6.png', 'HTTP/1.1']
Client request :
['GET', '/pup.jpg', 'HTTP/1.1']
[]
```

Response on the browser for default page (localhost:8081):



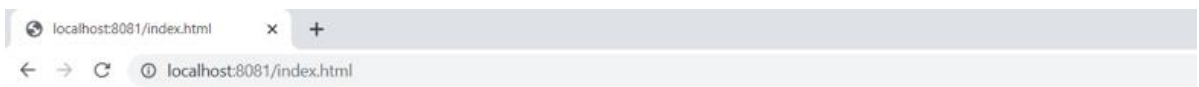
This is the default page to test images and gifs



Log of client request for “localhost:8081/index.html”:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Client request :
['GET', '/index.html', 'HTTP/1.1']
Client request :
['GET', '/image1.jpeg', 'HTTP/1.1']
Client request :
['GET', '/gif1.gif', 'HTTP/1.1']
Client request :
['GET', '/image3.png', 'HTTP/1.1']
Client request :
['GET', '/image2.png', 'HTTP/1.1']
Client request :
['GET', '/image4.png', 'HTTP/1.1']
Client request :
['GET', '/image5.png', 'HTTP/1.1']
Client request :
['GET', '/image6.png', 'HTTP/1.1']
Client request :
['GET', '/pup.jpg', 'HTTP/1.1']
```

Response on the browser for “localhost:8081/index.html”:



This is the default page to test images and gifs



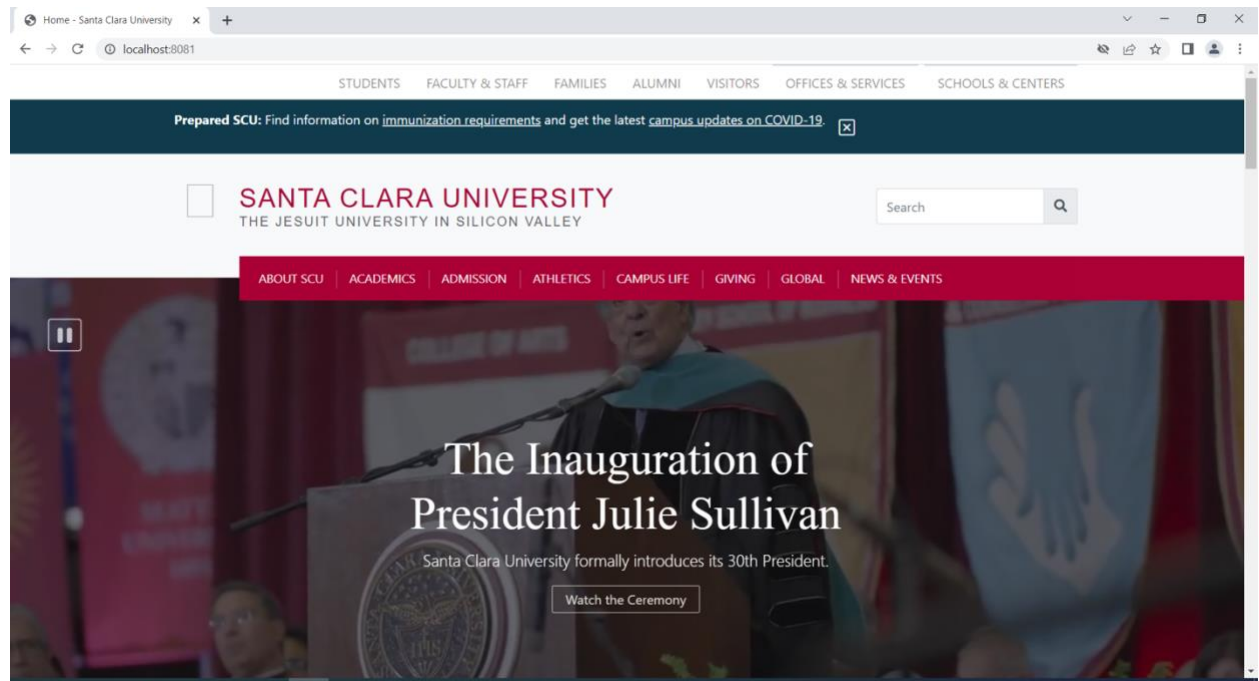
2. To access SCU home page

```
PS C:\Hima_personal\SomeAssign\PA1\PA1_Hima_Mallampati\PA1_Hima_Mallampati> python ./server.py -document_root './scuweb' -port 8081
Server host and portlocalhost:8081
Server directory:./scuweb
█
```

Log of client request for default page(localhost:8081):

```
(base) himabindu@Himas-MacBook-Air PA1_Hima_Mallampati % python server.py -document_root './scuweb' -port 8081
Server host and portlocalhost:8081
Server directory:./scuweb
Client request :
['GET', '/', 'HTTP/1.1']
Client request :
['GET', '/media/scuedu/style-assets/stylesheets/f.css', 'HTTP/1.1']
Client request :
['GET', '/media/institutional-pages/news-amp-events/Claire_Alford_20220921_JG_0153_pp.jpg', 'HTTP/1.1']
Client request :
['GET', '/media/institutional-pages/news-amp-events/campusbeautystudents.jpg', 'HTTP/1.1']
Client request :
['GET', '/media/institutional-pages/news-amp-events/Stranger_Things_logo.png', 'HTTP/1.1']
Client request :
['GET', '/media/institutional-pages/news-amp-events/Inauguration_20221006_JL_9200.JPG', 'HTTP/1.1']
Client request :
['GET', '/media/institutional-pages/giving/images/campaign-banner.png', 'HTTP/1.1']
Client request :
['GET', '/media/offices/umc/web-design/crowd-pic-NEW_0001_20211203_Soccer_Fans_4446.jpg', 'HTTP/1.1']
Client request :
['GET', '/media/institutional-pages/news-amp-events/irinarai400x400-360x360.jpg', 'HTTP/1.1']
Client request :
['GET', '/media/institutional-pages/news-amp-events/BSolomon-360x288.jpg', 'HTTP/1.1']
Client request :
['GET', '/media/institutional-pages/news-amp-events/ackerman-400x400.jpg', 'HTTP/1.1']
Client request :
['GET', '/assets/images/favicons/manifest.json', 'HTTP/1.1']
Client request :
['GET', '/assets/images/favicons/favicon-32x32.png', 'HTTP/1.1']
Client request :
['GET', '/assets/images/favicons/favicon-16x16.png', 'HTTP/1.1']
Client request :
['GET', '/assets/images/favicons/favicon-96x96.png', 'HTTP/1.1']
Client request :
['GET', '/assets/images/favicons/android-chrome-192x192.png', 'HTTP/1.1']
█
```

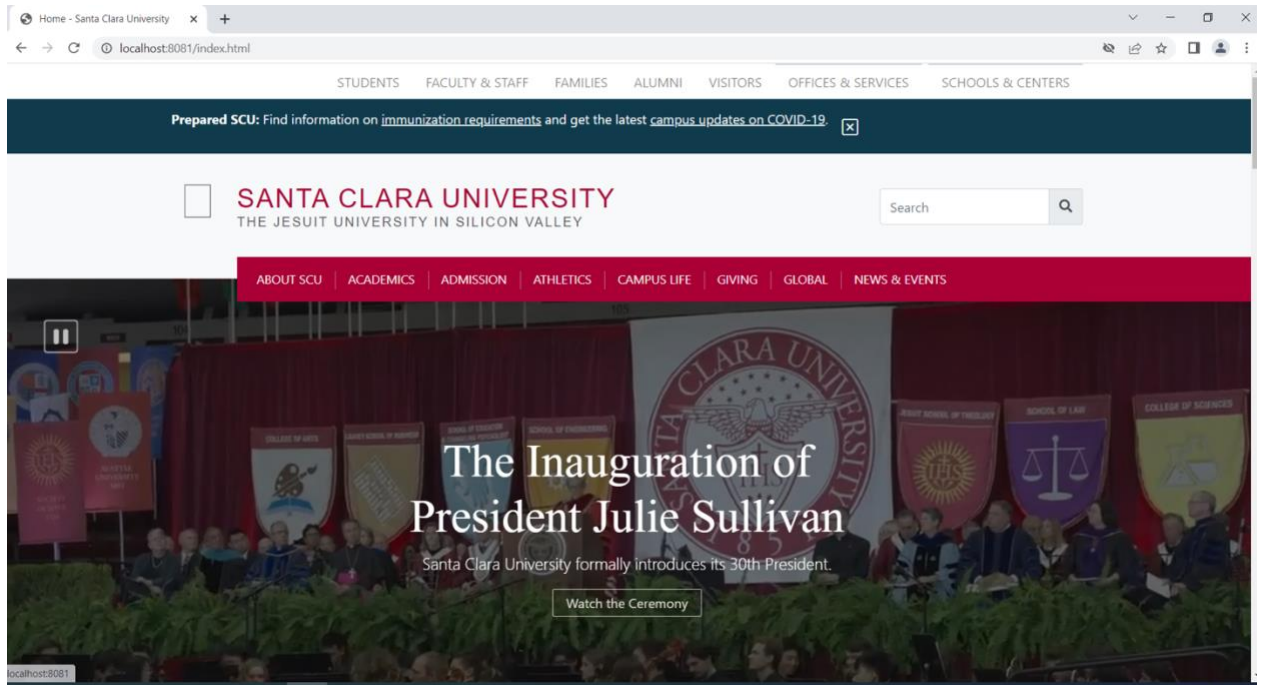
Response on the browser for default page (localhost:8081):



Log of client request for “localhost:8081/index.html”:

```
Client request :  
['GET', '/index.html', 'HTTP/1.1']  
Client request :  
['GET', '/media/scuedu/style-assets/stylesheets/f.css', 'HTTP/1.1']  
Client request :  
['GET', '/media/institutional-pages/news-amp-events/Claire_Alford_20220921_JG_0153_pp.jpg', 'HTTP/1.1']  
Client request :  
['GET', '/media/institutional-pages/news-amp-events/campusbeautystudents.jpg', 'HTTP/1.1']  
Client request :  
['GET', '/media/institutional-pages/news-amp-events/Stranger_Things_logo.png', 'HTTP/1.1']  
Client request :  
['GET', '/media/institutional-pages/news-amp-events/Inauguration_20221006_JL_9200.JPG', 'HTTP/1.1']  
Client request :  
['GET', '/media/institutional-pages/giving/images/campaign-banner.png', 'HTTP/1.1']  
Client request :  
['GET', '/media/offices/umc/web-design/crowd-pic-NEW_0001_20211203_Soccer_Fans_4446.jpg', 'HTTP/1.1']  
Client request :  
['GET', '/media/institutional-pages/news-amp-events/irinaraiacu400x400-360x360.jpg', 'HTTP/1.1']  
Client request :  
['GET', '/media/institutional-pages/news-amp-events/BSolomon-360x288.jpg', 'HTTP/1.1']  
Client request :  
['GET', '/media/institutional-pages/news-amp-events/ackerman-400x400.jpg', 'HTTP/1.1']  
Client request :  
['GET', '/assets/images/favicons/manifest.json', 'HTTP/1.1']
```

Response on the browser for “localhost:8081/index.html”:



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