

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY

Software Documentation on

ISP Censorship Analyzer

COURSE CODE: CSE 408

COURSE NAME: SOFTWARE DEVELOPMENT

Author:

Mahim Mahbub
Md Hasan Al Kayem
Md. Imran Hasan

Student ID:

1505022
1505023
1505026

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1 Vision Statement

People all over the world have differing opinion regarding censorship in any communication medium. Internet, being the most popular communication medium of this age, has enhanced this dispute. According to Freedom on the Net, Bangladesh is among the list of countries that have partly free internet. Our project, ISP Censorship Analyzer aims to investigate the existing internet censorship mechanism in Bangladesh.

1.1 Project Goals

- To detect whether censorship is applied to a url or a list of urls
- To detect which type of censorship is applied to a url or list of urls, if censorship is actually applied.
- To analyze the pattern of censorship types over a period of time per user basis.
- To help an ISP obtain whether their censorship is correctly applied, in a short amount of time.

1.2 Project Scope

We classify method of censorship into three broad categories: DNS, TCP, HTTP related censorship. In this section, we describe the features a user can use.

1.2.1 Desktop End

- Users can create an account in the website using their email, and run tests on a single url or a list of urls (inside a text file).
- Users can choose which test type to run for detection (DNS, TCP, HTTP) in their desktop application.
- Users can login using their email in the desktop application to send the reports back to the system website server.
- Users can view their reports in the desktop application with respect to many filters (eg. within a certain time interval, test type only TCP, on a particular url, etc).

1.2.2 Website End

- On the website end, users (after logging in) are introduced to a dashboard showing various data for their past reports (eg. top 5 urls queried by user, percentage of DNS, TCP, HTTP censorships, etc).
- On the website end, users will also have a screen to view all their reports (and apply various filtering).
- Users will also be able to download the reports in a csv format if they want to run their own custom queries for later use.

1.3 Milestones and Deliverables

1. Requirement Analysis, Class Diagram, E.R Diagram
2. Database Implementation using MySql and Desktop User Interface design.
3. DNS Censorship Detection sub-system implementation.
4. DNS Censorship Detection sub-system integration with Desktop User Interface.
5. TCP Censorship Detection sub-system implementation with Desktop User Interface.
6. HTTP Censorship Detection sub-system implementation with Desktop User Interface.
7. Website Dashboard design and implementation.
8. Website integration testing with Desktop side and all three test types.

2 Software Requirement Specification

2.1 Overview

This software is mainly desktop based. A website is created for central data management where users can store their data if they create user account. Using this software users can explore network problems and analyze his/her network for censorship. The website for this software provides more information and statistics about a network to users.

2.2 Goals and Objectives

The main goal of this project is to create a automated system that can analyze the network for both network problems and censorship such that a user can understand what is going on under the hood.

2.3 Scopes

The desktop site of ***ISP Censorship Analyzer*** software will:

- provide users a automated way to analyze network problems
- allow a user to check for internet censorship applied by his ***ISP***

The website for our software will:

- provide users more information about his network
- provide admins a central network statistics about censorship

2.4 Definitions

user : who interacts with the software.

ISP : who provides internet service.

admin : mainly maintains website.

Internet Censorship : control or suppression of what can be accessed, published, or viewed on the Internet

Stubby : DNS Privacy stub resolver (using DNS-over-TLS)

Tor redirect internet traffic through overlay network consisting of more than seven thousand relays

middlebox : an entity that applies censorship

3 General Design Constraints

3.1 ISP Censorship Analyzer Environment

Part one of ISP Censorship Analyzer (desktop end) will work on desktop side to collect data and run tests. Part two of ISP Censorship Analyzer (website end) will work on browsers.

3.2 User Characteristics

The user of this software must have some knowledge on networking and its protocols.

3.3 Mandated Constraints

This software requires UBUNTU operating system to operate. Software also needs some python modules and tshark to be installed in the operating system.

4 Non-functional Requirements

4.1 Operational Requirements

Users need to know about networking and how it works to operate this software. Users with networking knowledge can easily operate this software by following user manual.

4.2 Performance Requirements

- This software needs strong internet connection and proper setup for better performance.
- The software also needs some modules of python (eg. scapy) to be installed.
- The software also needs tshark to be installed.

4.3 Security Requirements

All the users password are kept in encrypted form in database. Sometimes the software needs to run packet sniffer for operate correctly. The software does not misuse this root privilege. It only sniff packets to identify middle box hop count.

4.4 Documentation and Training

User guide and system documentation to operate the software will be provided to software users. The user guide also includes guide for website usage.

5 Functional Requirements

5.1 Required Features

5.1.1 Desktop Side

- DNS Censorship Analysis
- TCP Censorship Analysis
- HTTP/HTTPS Censorship Analysis

5.1.2 Website Side

- Website Dashboard to analyze various statistics
- Website also used to download report(s) in CSV format for user's future usage

5.2 Optional Features of Desktop Side

- Get information about connected ISP (eg. Global IP, Organization, ASN number, etc.)
- Filter reports based on certain constraints (eg. URL, date etc.)

6 Architecture & Design

6.1 Use Case Diagrams

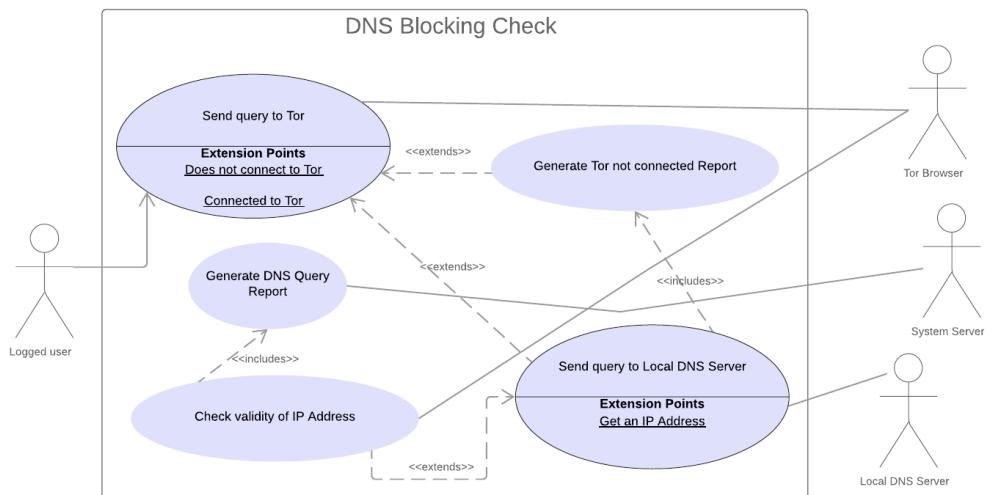


Figure 1: Use-Case: Dns Censorship Analysis

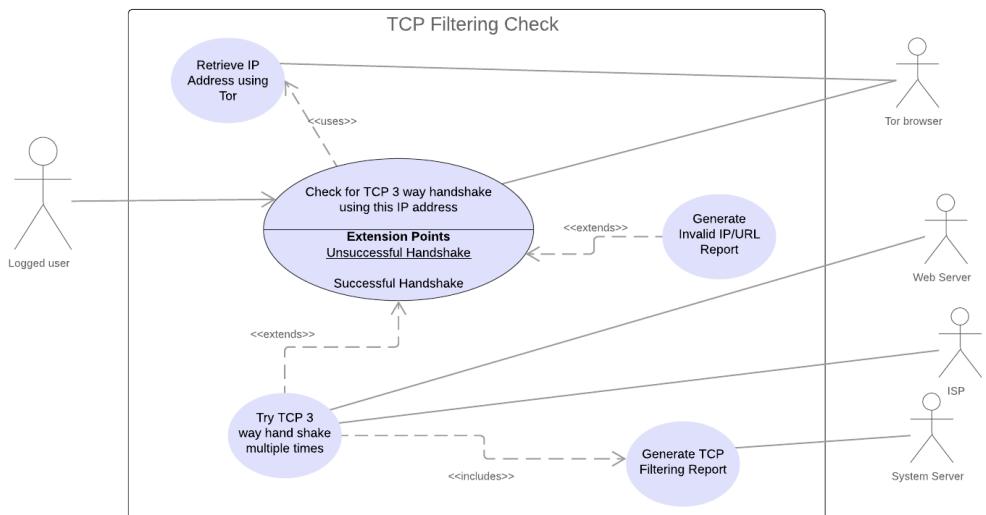


Figure 2: Use-Case: TCP Censorship Analysis

ISP Censorship Analyzer

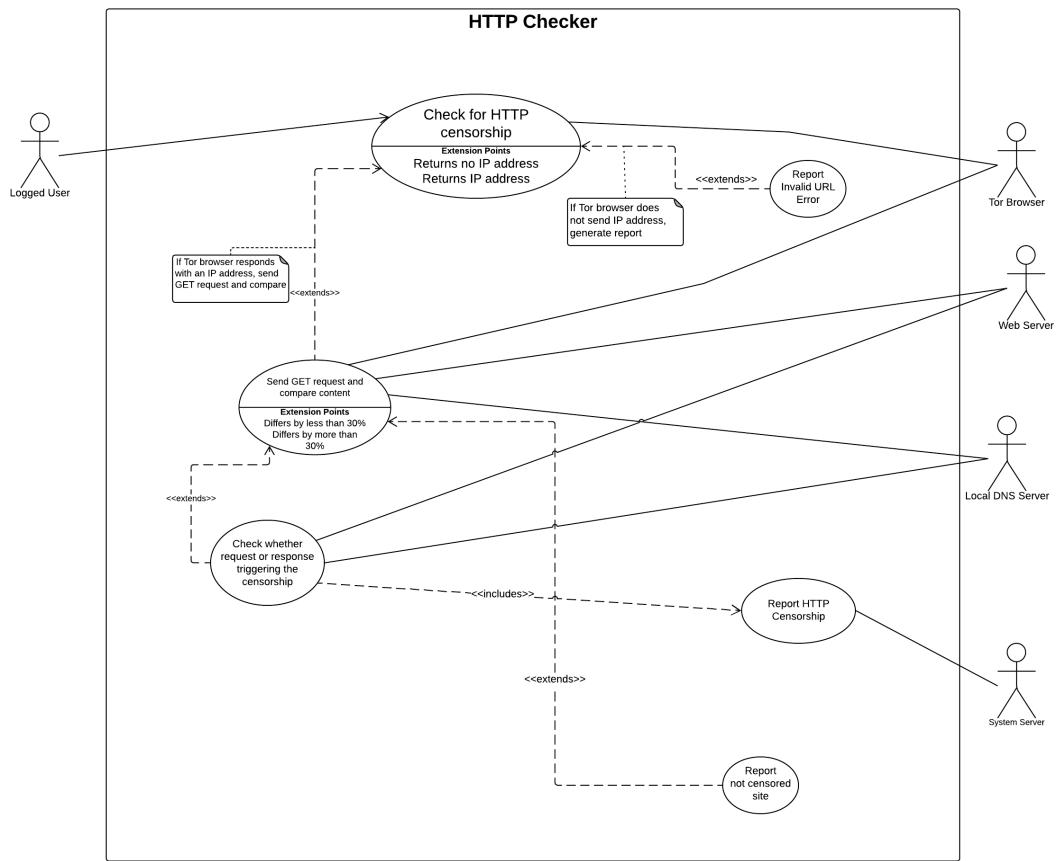


Figure 3: Use-Case: HTTP Censorship Analysis

6.2 Entity Relationship Diagram (ERD)

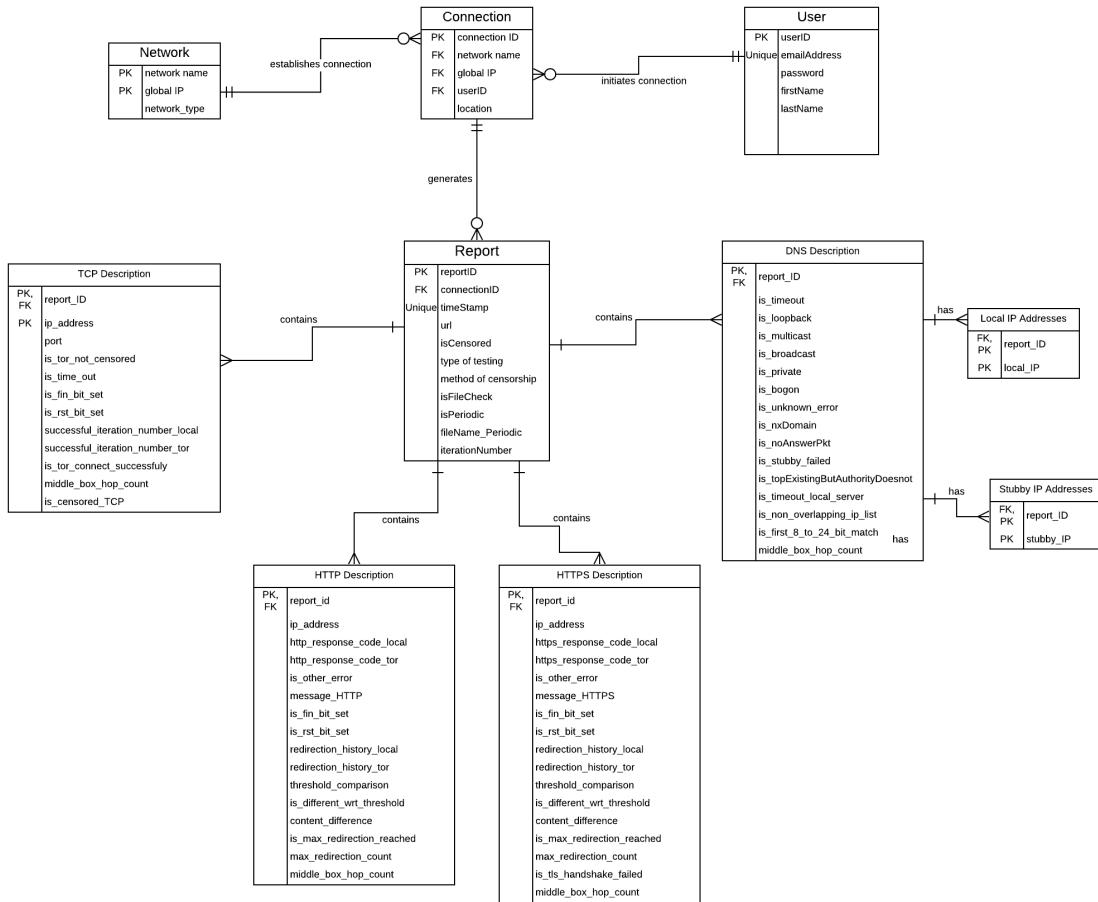


Figure 4: Entity Relationship Diagram

6.3 Class Diagrams

DNS Blocking Mechanism Class Diagram

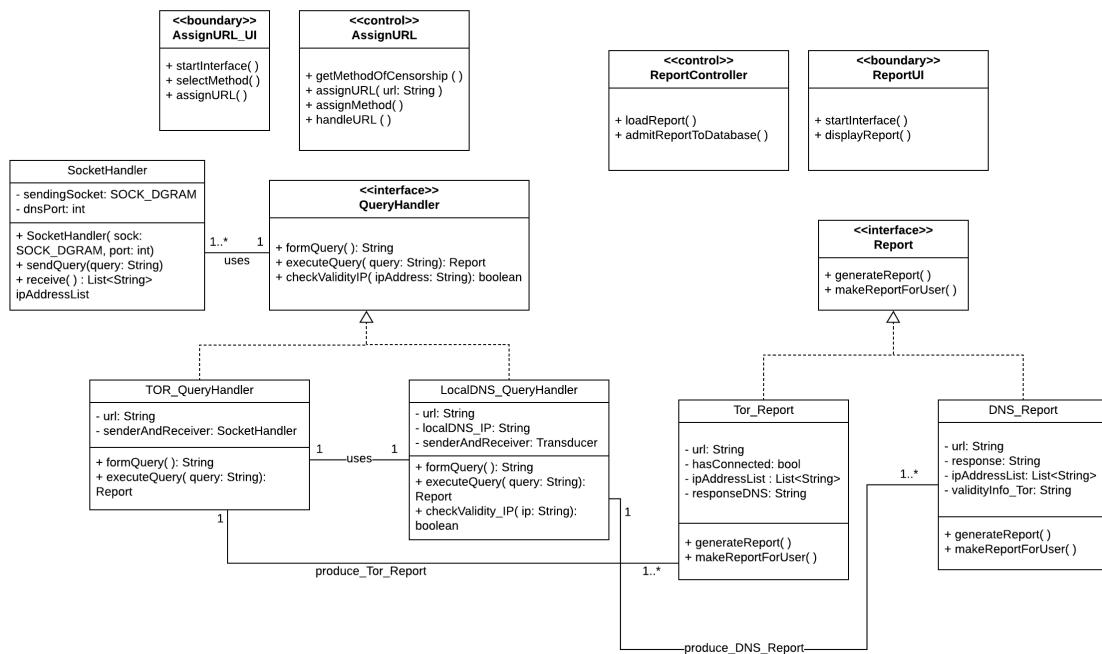


Figure 5: Class Diagram: Dns Censorship Analysis

ISP Censorship Analyzer

DNS Blocking Mechanism Class Diagram

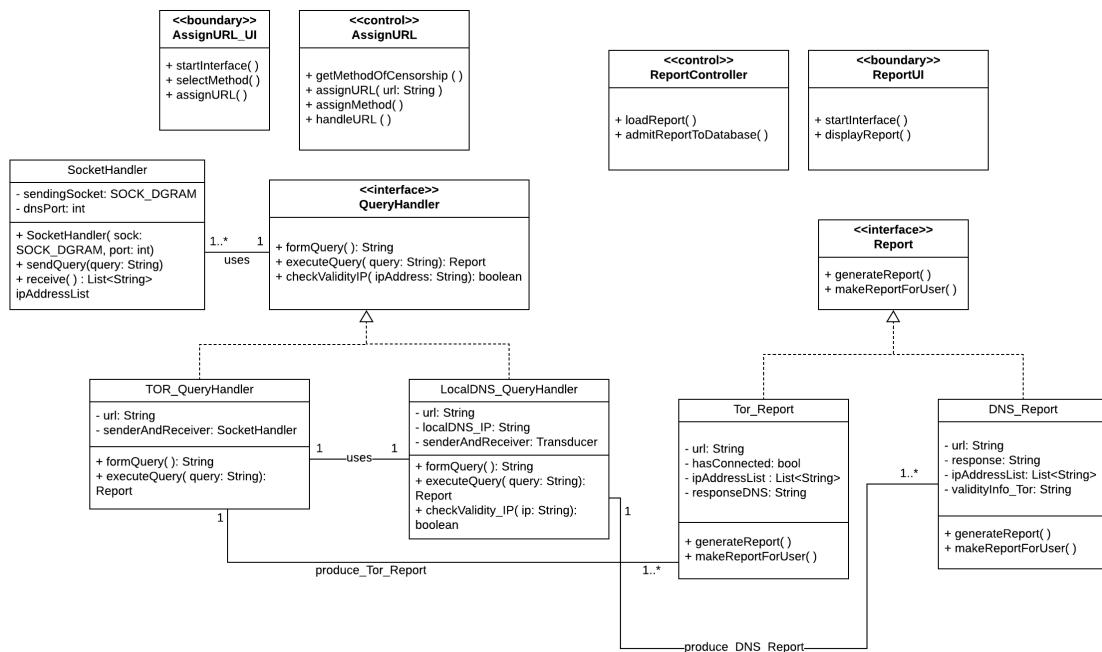


Figure 6: Class Diagram: TCP Censorship Analysis

DNS Blocking Mechanism Class Diagram

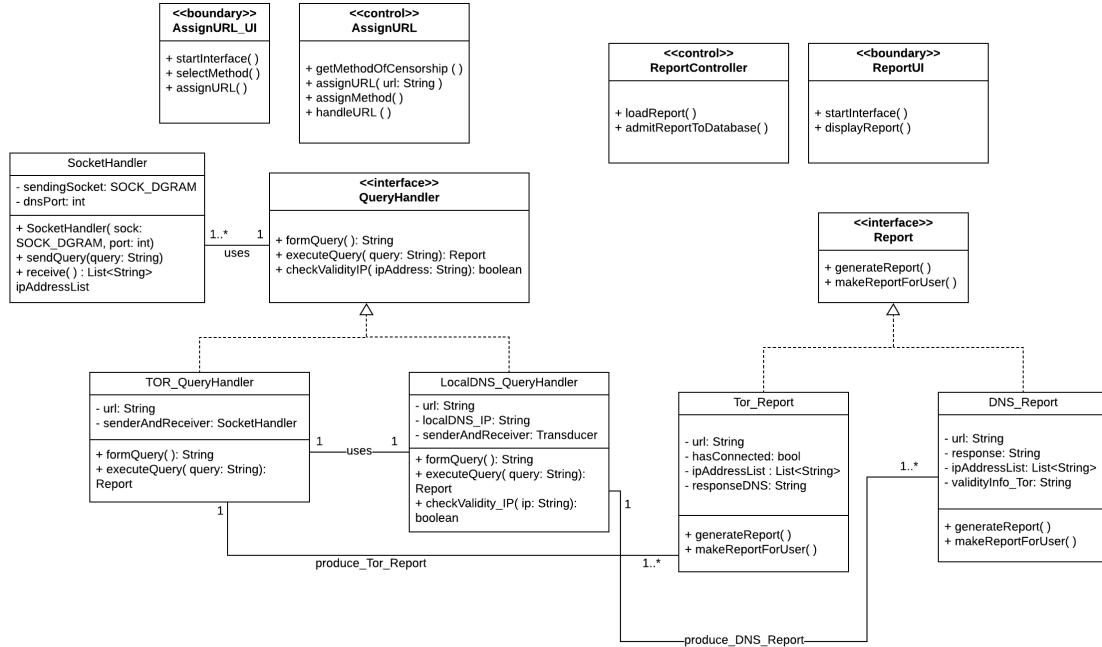


Figure 7: Class Diagram: HTTP Censorship Analysis

7 User Guide

7.1 First step: Registration through website

First of all, a user must register through website. Here he/she should give username, valid email and password for registration. If registration becomes successful, a login window will be shown and he can use the desktop app.

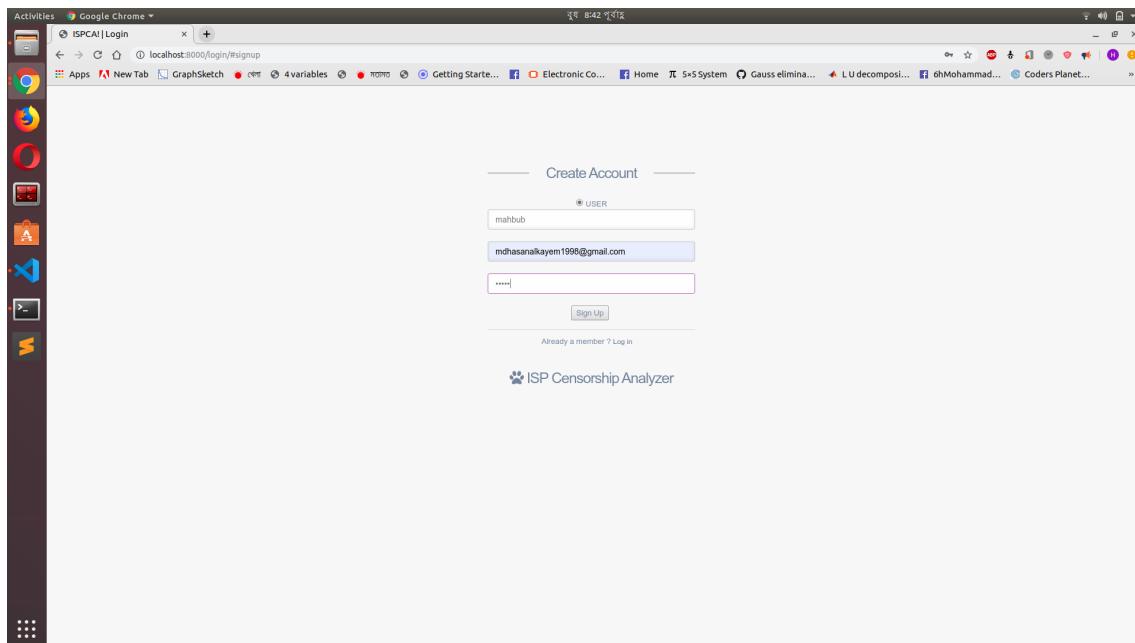


Figure 8: Insert Compulsory field for registration

7.2 Second step: Login through desktop app

7.3 Third step: Checking censorship

Here all the procedure of the system are given in caption of the pictures. A user will come into his home page after successful login. All information regarding Network ISP are given in home page and

A user can see his previous reports by clicking *See Reports* button of home page. He will see all the reports . He can apply various filter on it and after clicking *Refresh* button, he will see filtered test.

After clicking *Back* button, a user can come to home page again.

After clicking *Test Sites* a user should test single url or files of url by clicking file selector, selecting type of test and accepting all terms and condition submit the test query. He can see file's data by clicking *View File* button.

A user can terminate or pause the testing by clicking *Terminate* and *Pause* button respectively.

Real time underlying operation are given when a user click on *Click for Details* button.

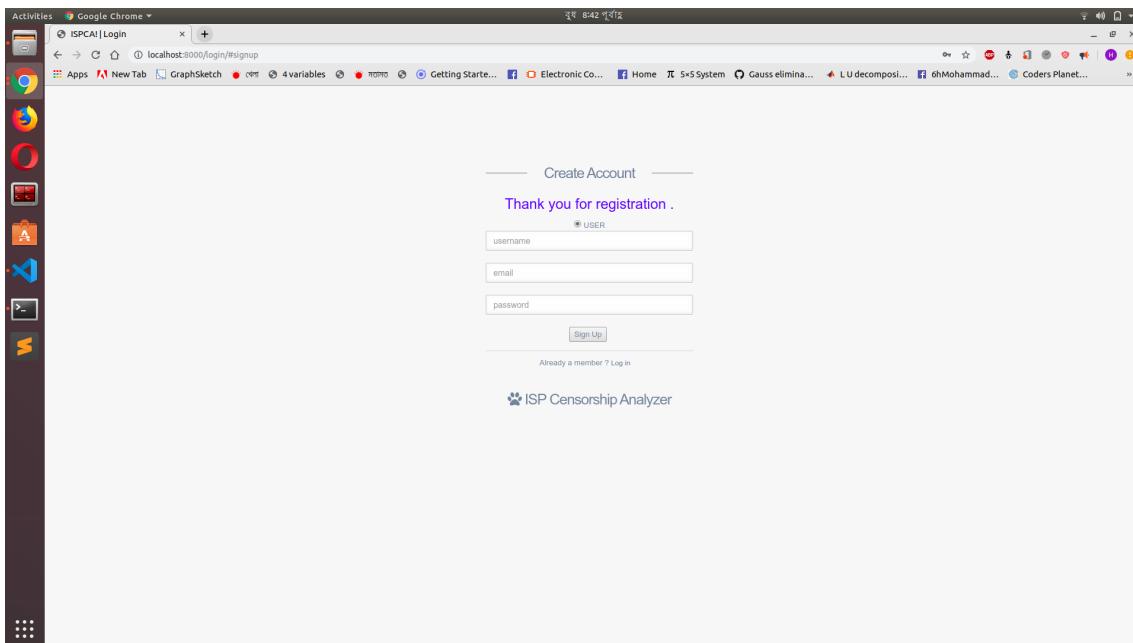


Figure 9: Valid registration

7.4 Fourth step: Checking statistics and downloading csv files

If a user have enough input through desktop app, he can see his all history and statistics in graphical format. To see these information he should log in to the website. Here he should insert his username and password. If his credential is valid he will be redirected to his homepage. But if not error message will be shown.

At homepage he will see all the sections and can navigate through the sections from side bar and can log out from the system. He can see total users of the system, his checked network, his total count tcp, dns, http censored website test. He will see the mostly checked ISP global IP and urls.

He can also see the percentage of censorship of his all visited url.

There are different kind of censorship analytics of a website. When a user go to *Censorship Types* he can see the top 5 indicator of censorship of DNS, TCP and HTTP censorship in a pie chart.

In *Download CSV files* section a user can download his history in 4 file format DNS, TCP, HTTP and HTTPS format. He can analyze his data for further use. Here an example of DNS file is given below.

ISP Censorship Analyzer

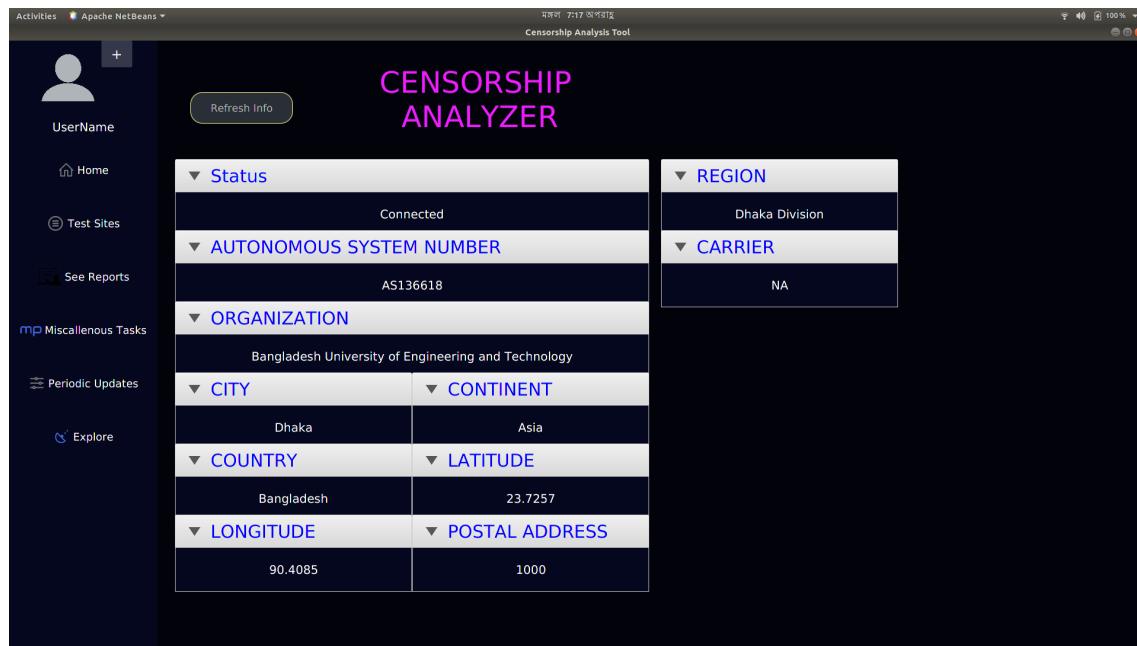


Figure 10: Home page at desktop app

In *Data* section a user can see all his data in tabular form. Here DNS, TCP, HTTP and HTTPS are given in photo format

ISP Censorship Analyzer

The screenshot shows a software interface titled "Censorship Analysis Tool". At the top, there are filter options for "URL", "Time", "Test Type", "Network Name", "Name", "Network Type", and "Censored". Below these filters is a table with columns: URL, Network Name, Network Type, Time, Test Type, Censored, Censored Type, and Details. The table contains 30 rows of data, each representing a network transaction. The "Censored" column for all rows is set to "NO". The "Censored Type" column is also "NONE" for all rows. Each row has a "Details" button in the last column.

URL	Network Name	Network Type	Time	Test Type	Censored	Censored Type	Details
bdmirror24.net	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:15:44	TCP	NO	NONE	Details
bdpolitico.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:15:51	TCP	NO	NONE	Details
bdsaradin.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:15:58	TCP	NO	NONE	Details
belovedbd.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:16:05	TCP	NO	NONE	Details
classbd.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:16:11	TCP	NO	NONE	Details
www.bdsaradin.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:18:29	TCP	NO	NONE	Details
bdmirror24.net	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:20:16	TCP	NO	NONE	Details
bdpolitico.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:20:22	TCP	NO	NONE	Details
bdsaradin.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:20:29	TCP	NO	NONE	Details
www.economist.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:20:35	TCP	NO	NONE	Details
www.hillbd24.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:20:56	TCP	NO	NONE	Details
www.ipnewssbd.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:20:58	TCP	NO	NONE	Details
www.linkedin.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:21:00	TCP	NO	NONE	Details
www.bdpolitico.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:21:03	TCP	NO	NONE	Details
www.quora.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:21:05	TCP	NO	NONE	Details
bdmirror24.net	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:23:06	TCP	NO	NONE	Details
bdpolitico.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:23:12	TCP	NO	NONE	Details
bdsaradin.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:23:17	TCP	NO	NONE	Details
www.economist.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:23:22	TCP	NO	NONE	Details
bdsaradin.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:29:17	TCP	NO	NONE	Details

Figure 11: Records without filtering

The screenshot shows the same software interface as Figure 11. The "Page Number" dropdown is now set to "30". The rest of the interface and data table are identical to Figure 11, displaying 30 rows of network transaction records.

URL	Network Name	Network Type	Time	Test Type	Censored	Censored Type	Details
bdmirror24.net	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:15:44	TCP	NO	NONE	Details
bdpolitico.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:15:51	TCP	NO	NONE	Details
bdsaradin.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:15:58	TCP	NO	NONE	Details
belovedbd.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:16:05	TCP	NO	NONE	Details
classbd.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:16:11	TCP	NO	NONE	Details
www.bdsaradin.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:18:29	TCP	NO	NONE	Details
bdmirror24.net	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:20:16	TCP	NO	NONE	Details
bdpolitico.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:20:22	TCP	NO	NONE	Details
bdsaradin.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:20:29	TCP	NO	NONE	Details
www.economist.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:20:35	TCP	NO	NONE	Details
www.hillbd24.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:20:56	TCP	NO	NONE	Details
www.ipnewssbd.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:20:58	TCP	NO	NONE	Details
www.linkedin.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:21:00	TCP	NO	NONE	Details
www.bdpolitico.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:21:03	TCP	NO	NONE	Details
www.quora.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:21:05	TCP	NO	NONE	Details
bdmirror24.net	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:23:06	TCP	NO	NONE	Details
bdpolitico.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:23:12	TCP	NO	NONE	Details
bdsaradin.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:23:17	TCP	NO	NONE	Details
www.economist.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:23:22	TCP	NO	NONE	Details
bdsaradin.com	MD Manir Hossen trading as Xpl...	WiFi	21-07-2019 07:29:17	TCP	NO	NONE	Details

Figure 12: Inserting page 30

ISP Censorship Analyzer

Database Records

Filter by:

URL	Network Name	Network Type	Time	Test Type	Censored	Censored Type	Details
bdpolitico.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:07:43	TCP	NO	NONE	Details
bdsradin.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:07:56	TCP	NO	NONE	Details
belovedbd.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:08:14	TCP	NO	NONE	Details
classbd.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:08:26	TCP	NO	NONE	Details
defenseupdatebangladesh.word...	banglalink an Orascom Telecom...	GSM	28-07-2019 16:11:22	TCP	NO	NONE	Details
forum.daffodiliversity.edu.bd	banglalink an Orascom Telecom...	GSM	28-07-2019 16:11:37	TCP	NO	NONE	Details
lookeast.in	banglalink an Orascom Telecom...	GSM	28-07-2019 16:11:52	TCP	NO	NONE	Details
m.facebook.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:12:04	TCP	NO	NONE	Details
m.facebook.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:12:17	TCP	NO	NONE	Details
nari.news	banglalink an Orascom Telecom...	GSM	28-07-2019 16:12:28	TCP	NO	NONE	Details
shahjalalairport.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:12:39	TCP	NO	NONE	Details
toprichests.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:12:50	TCP	NO	NONE	Details
vidiloops.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:13:41	TCP	NO	NONE	Details
www.abuniversity.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:14:31	TCP	NO	NONE	Details
www.abuniversity.edu.bd	banglalink an Orascom Telecom...	GSM	28-07-2019 16:14:40	TCP	NO	NONE	Details
defenseupdatebangladesh.word...	banglalink an Orascom Telecom...	GSM	28-07-2019 16:18:00	TCP	NO	NONE	Details
defenseupdatebangladesh.word...	banglalink an Orascom Telecom...	GSM	28-07-2019 16:28:02	TCP	YES	NONE	Details
defenseupdatebangladesh.word...	banglalink an Orascom Telecom...	GSM	28-07-2019 16:31:21	TCP	YES	NONE	Details
defenseupdatebangladesh.word...	banglalink an Orascom Telecom...	GSM	28-07-2019 16:38:29	TCP	YES	NONE	Details
defenseupdatebangladesh.word...	banglalink an Orascom Telecom...	GSM	28-07-2019 16:42:04	TCP	YES	NONE	Details

Figure 13: At page 30

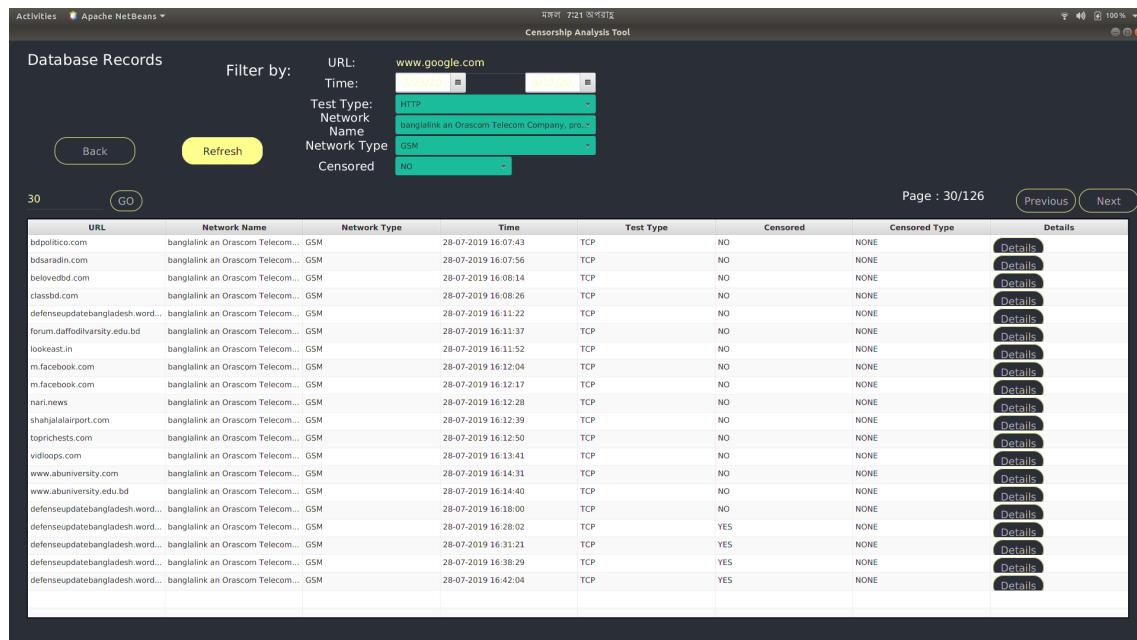
Database Records

Filter by:

URL	Network Name	Network Type	Time	Test Type	Censored	Censored Type	Details
bdpolitico.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:07:43	TCP	NO	NONE	Details
bdsradin.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:07:56	TCP	NO	NONE	Details
belovedbd.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:08:14	TCP	NO	NONE	Details
classbd.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:08:26	TCP	NO	NONE	Details
defenseupdatebangladesh.word...	banglalink an Orascom Telecom...	GSM	28-07-2019 16:11:22	TCP	NO	NONE	Details
forum.daffodiliversity.edu.bd	banglalink an Orascom Telecom...	GSM	28-07-2019 16:11:37	TCP	NO	NONE	Details
lookeast.in	banglalink an Orascom Telecom...	GSM	28-07-2019 16:11:52	TCP	NO	NONE	Details
m.facebook.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:12:04	TCP	NO	NONE	Details
m.facebook.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:12:17	TCP	NO	NONE	Details
nari.news	banglalink an Orascom Telecom...	GSM	28-07-2019 16:12:28	TCP	NO	NONE	Details
shahjalalairport.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:12:39	TCP	NO	NONE	Details
toprichests.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:12:50	TCP	NO	NONE	Details
vidiloops.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:13:41	TCP	NO	NONE	Details
www.abuniversity.com	banglalink an Orascom Telecom...	GSM	28-07-2019 16:14:31	TCP	NO	NONE	Details
www.abuniversity.edu.bd	banglalink an Orascom Telecom...	GSM	28-07-2019 16:14:40	TCP	NO	NONE	Details
defenseupdatebangladesh.word...	banglalink an Orascom Telecom...	GSM	28-07-2019 16:18:00	TCP	NO	NONE	Details
defenseupdatebangladesh.word...	banglalink an Orascom Telecom...	GSM	28-07-2019 16:28:02	TCP	YES	NONE	Details
defenseupdatebangladesh.word...	banglalink an Orascom Telecom...	GSM	28-07-2019 16:31:21	TCP	YES	NONE	Details
defenseupdatebangladesh.word...	banglalink an Orascom Telecom...	GSM	28-07-2019 16:38:29	TCP	YES	NONE	Details
defenseupdatebangladesh.word...	banglalink an Orascom Telecom...	GSM	28-07-2019 16:42:04	TCP	YES	NONE	Details

Figure 14: Agin test are without filter

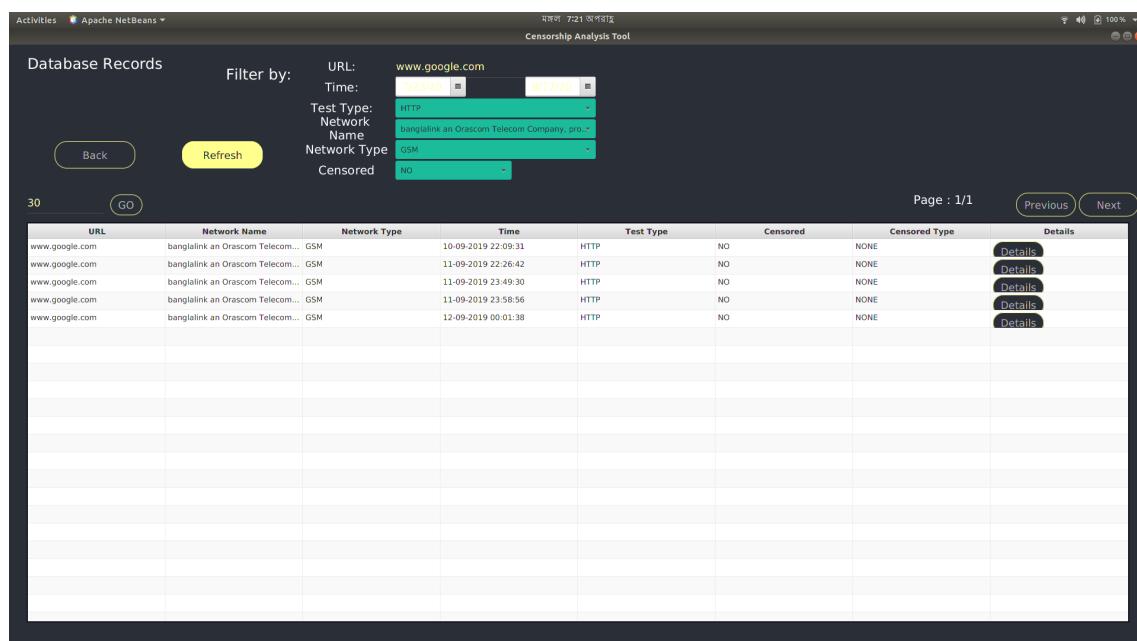
ISP Censorship Analyzer



The screenshot shows the 'Censorship Analysis Tool' interface. At the top, there are filter options: URL (www.google.com), Time (12:00 AM to 12:00 PM), Test Type (HTTP), Network Name (bangalink an Orascom Telecom Company, pvt.), Network Type (GSM), and Censored (NO). Below the filters is a table with 30 rows of data. The columns are: URL, Network Name, Network Type, Time, Test Type, Censored, Censored Type, and Details. The data shows various URLs being tested over time, with most entries having 'NO' in the Censored column.

URL	Network Name	Network Type	Time	Test Type	Censored	Censored Type	Details
bdpolitico.com	bangalink an Orascom Telecom...	GSM	28-07-2019 16:07:43	TCP	NO	NONE	Details
bdsaradin.com	bangalink an Orascom Telecom...	GSM	28-07-2019 16:07:56	TCP	NO	NONE	Details
belovedbd.com	bangalink an Orascom Telecom...	GSM	28-07-2019 16:08:14	TCP	NO	NONE	Details
classbd.com	bangalink an Orascom Telecom...	GSM	28-07-2019 16:08:26	TCP	NO	NONE	Details
defenseupdatebangladesh.word...	bangalink an Orascom Telecom...	GSM	28-07-2019 16:11:22	TCP	NO	NONE	Details
forum.daffodiliversity.edu.bd	bangalink an Orascom Telecom...	GSM	28-07-2019 16:11:37	TCP	NO	NONE	Details
lookeast.in	bangalink an Orascom Telecom...	GSM	28-07-2019 16:11:52	TCP	NO	NONE	Details
m.facebook.com	bangalink an Orascom Telecom...	GSM	28-07-2019 16:12:04	TCP	NO	NONE	Details
m.facebook.com	bangalink an Orascom Telecom...	GSM	28-07-2019 16:12:17	TCP	NO	NONE	Details
nari.news	bangalink an Orascom Telecom...	GSM	28-07-2019 16:12:28	TCP	NO	NONE	Details
shahjalalairport.com	bangalink an Orascom Telecom...	GSM	28-07-2019 16:12:39	TCP	NO	NONE	Details
toprichests.com	bangalink an Orascom Telecom...	GSM	28-07-2019 16:12:50	TCP	NO	NONE	Details
vidiloops.com	bangalink an Orascom Telecom...	GSM	28-07-2019 16:13:41	TCP	NO	NONE	Details
www.abuniversity.com	bangalink an Orascom Telecom...	GSM	28-07-2019 16:14:31	TCP	NO	NONE	Details
www.abuniversity.edu.bd	bangalink an Orascom Telecom...	GSM	28-07-2019 16:14:40	TCP	NO	NONE	Details
defenseupdatebangladesh.word...	bangalink an Orascom Telecom...	GSM	28-07-2019 16:18:00	TCP	NO	NONE	Details
defenseupdatebangladesh.word...	bangalink an Orascom Telecom...	GSM	28-07-2019 16:28:02	TCP	YES	NONE	Details
defenseupdatebangladesh.word...	bangalink an Orascom Telecom...	GSM	28-07-2019 16:31:21	TCP	YES	NONE	Details
defenseupdatebangladesh.word...	bangalink an Orascom Telecom...	GSM	28-07-2019 16:38:29	TCP	YES	NONE	Details
defenseupdatebangladesh.word...	bangalink an Orascom Telecom...	GSM	28-07-2019 16:42:04	TCP	YES	NONE	Details

Figure 15: Before applying filter



The screenshot shows the same 'Censorship Analysis Tool' interface after applying filters. The filters remain the same as in Figure 15. The table now displays only 5 rows of data, indicating that the filters have been applied successfully to reduce the number of results.

URL	Network Name	Network Type	Time	Test Type	Censored	Censored Type	Details
www.google.com	bangalink an Orascom Telecom...	GSM	10-09-2019 22:09:31	HTTP	NO	NONE	Details
www.google.com	bangalink an Orascom Telecom...	GSM	11-09-2019 22:26:42	HTTP	NO	NONE	Details
www.google.com	bangalink an Orascom Telecom...	GSM	11-09-2019 23:49:30	HTTP	NO	NONE	Details
www.google.com	bangalink an Orascom Telecom...	GSM	11-09-2019 23:58:56	HTTP	NO	NONE	Details
www.google.com	bangalink an Orascom Telecom...	GSM	12-09-2019 00:01:38	HTTP	NO	NONE	Details

Figure 16: After applying various filter

ISP Censorship Analyzer

The screenshot shows a Linux desktop environment with the Apache NetBeans interface. A terminal window titled 'Censorship Analysis Tool' is open, displaying a table of database records. The table has columns: URL, Network Name, Network Type, Time, Test Type, Censored, Censored Type, and Details. All entries show 'www.google.com' as the URL, 'banglalink an Orascom Telecom Company, pvt. ltd.' as the Network Name, 'GSM' as the Network Type, and 'NO' as the Censored status. The Censored Type column is 'NONE'. The Details button for each row is labeled 'Details'. At the top of the table, there are filters for URL ('www.google.com'), Time ('10/09/2019 22:09:31' to '12/09/2019 00:01:38'), Test Type ('HTTP'), Network Name ('banglalink an Orascom Telecom Company, pvt. ltd.'), Network Type ('GSM'), and Censored ('NO'). Below the table, there are buttons for 'Back', 'Refresh', 'GO', 'Page : 1/1', 'Previous', and 'Next'. The table also includes a header row with column names.

Figure 17: Clicking back button

The screenshot shows the 'CENSORSHIP ANALYZER' application's main interface. On the left is a sidebar with navigation options: 'UserName' (highlighted), 'Home', 'Test Sites', 'See Reports', 'Miscellaneous Tasks', 'Periodic Updates', and 'Explore'. The main area has a title 'CENSORSHIP ANALYZER' and a 'Refresh Info' button. It displays various geographical and organizational details in a grid format. The details include:

Status	
Connected	
AUTONOMOUS SYSTEM NUMBER	
AS136618	
ORGANIZATION	
Bangladesh University of Engineering and Technology	
CITY	CONTINENT
Dhaka	Asia
COUNTRY	LATITUDE
Bangladesh	23.7257
LONGITUDE	POSTAL ADDRESS
90.4085	1000

On the right side, there are dropdown menus for 'REGION' (Dhaka Division) and 'CARRIER' (NA).

Figure 18: Home page back

ISP Censorship Analyzer

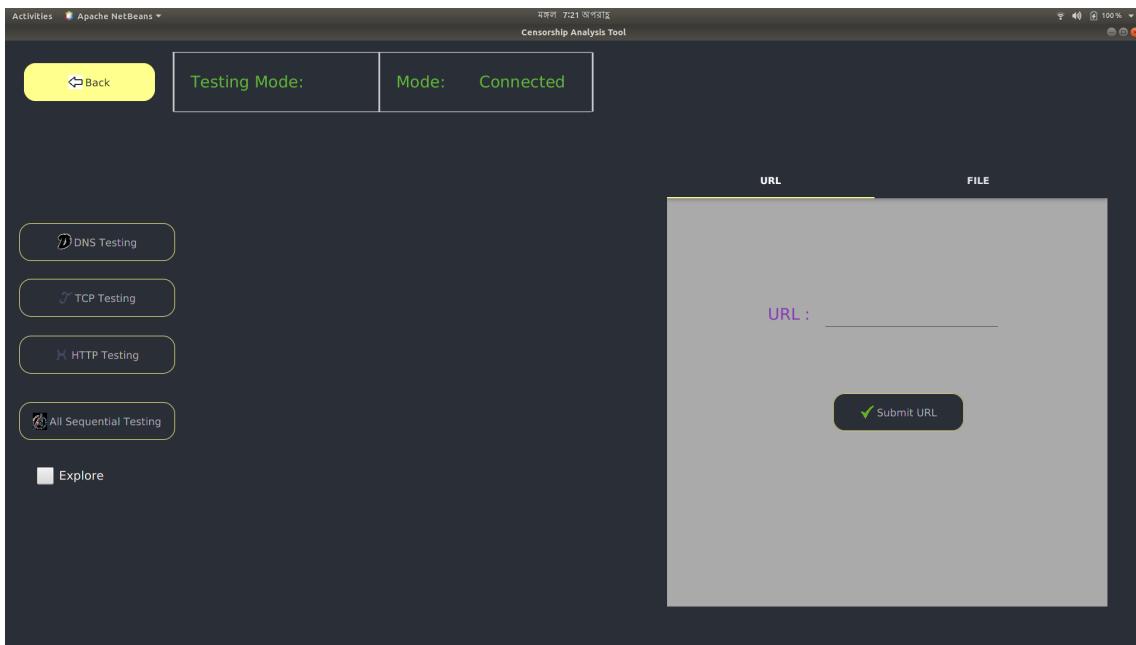


Figure 19: A sample testing window

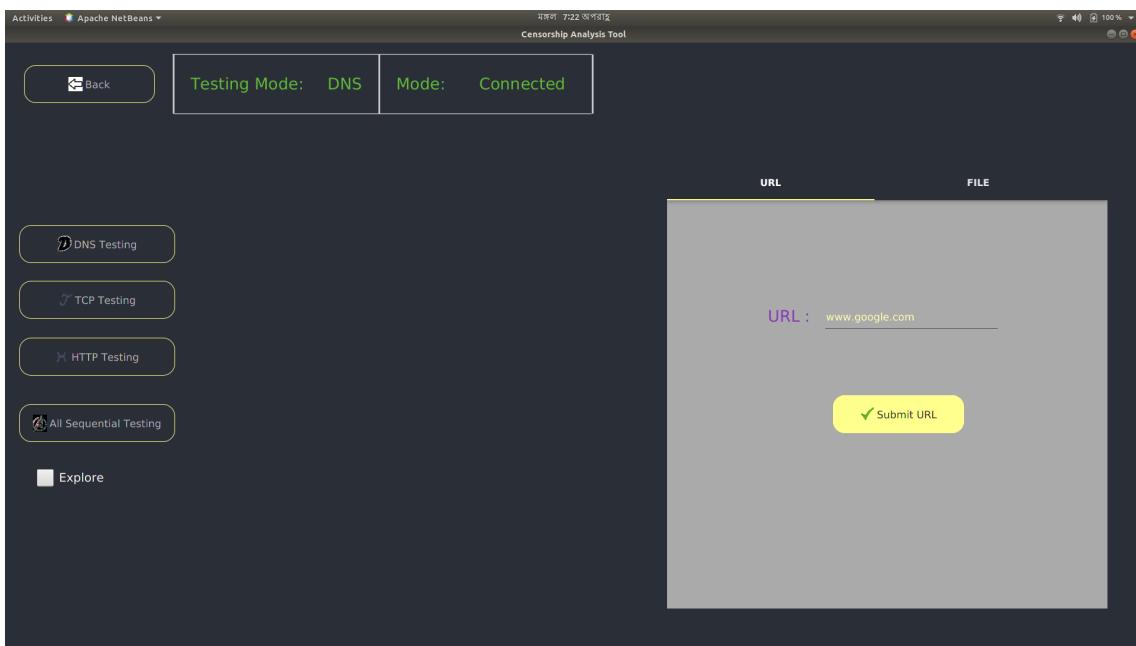


Figure 20: Another dns test input

ISP Censorship Analyzer

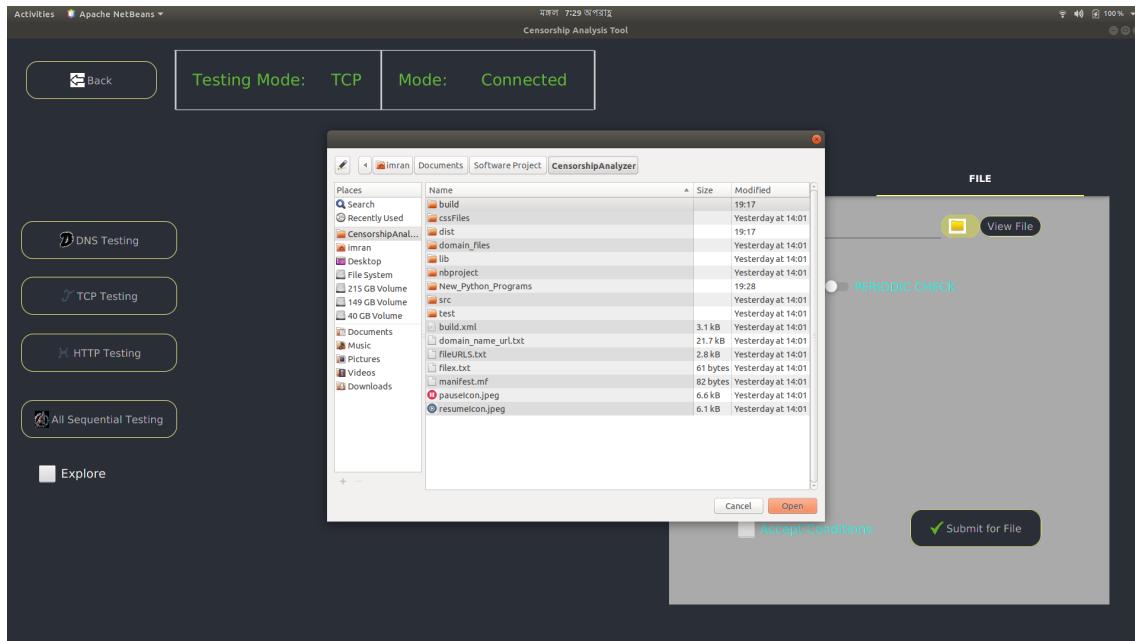


Figure 21: File with urls can be selected to test

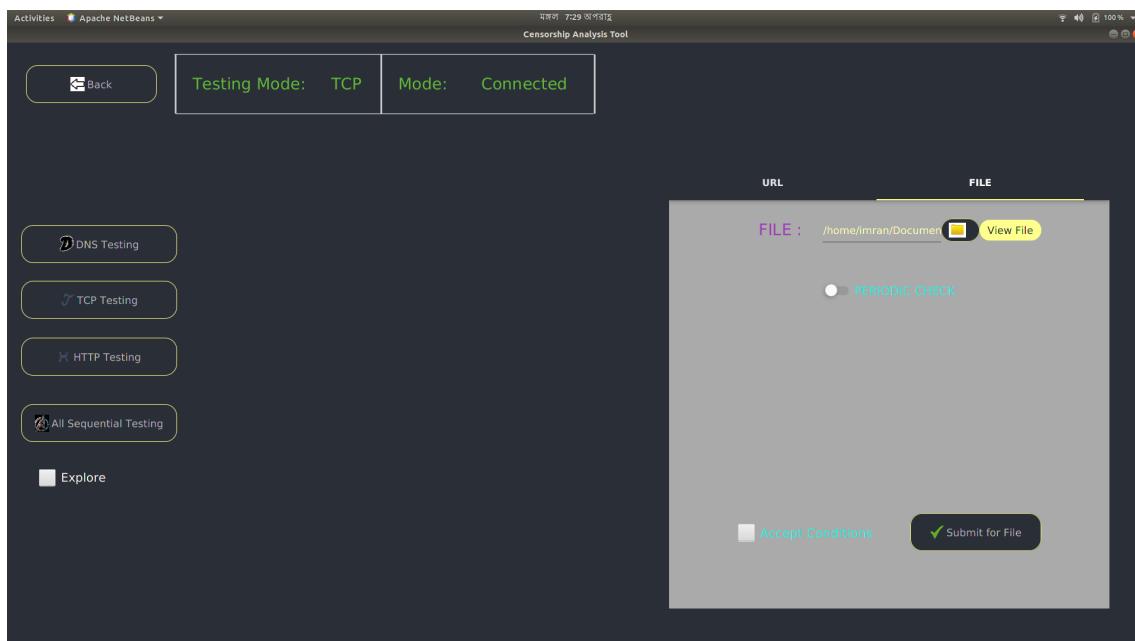


Figure 22: Selected file url is seen

ISP Censorship Analyzer

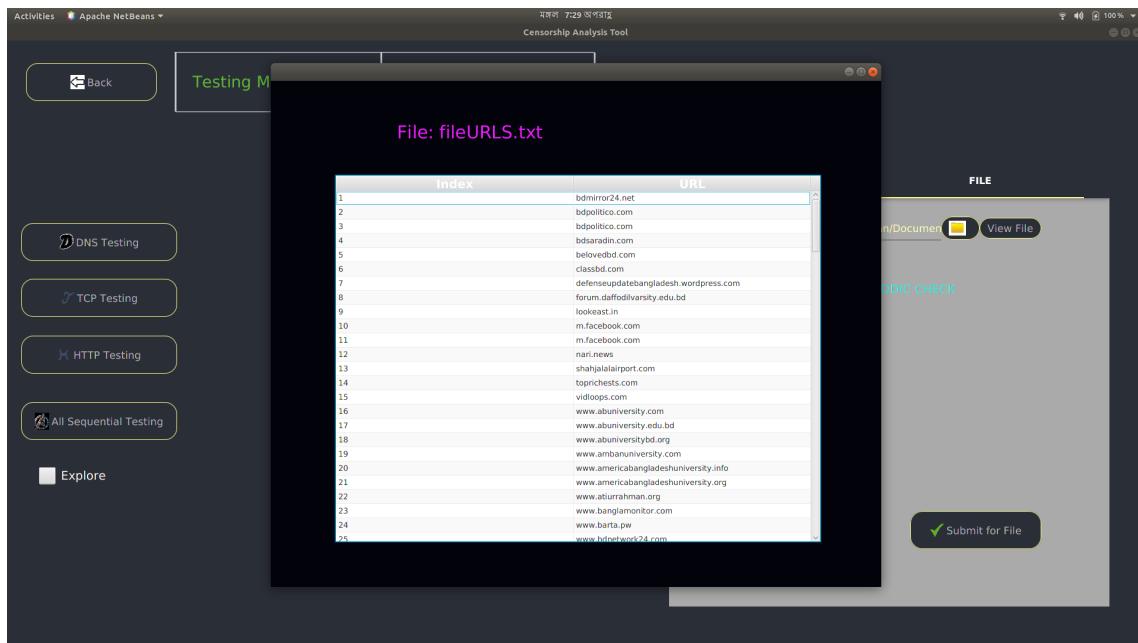


Figure 23: File's url can be seen

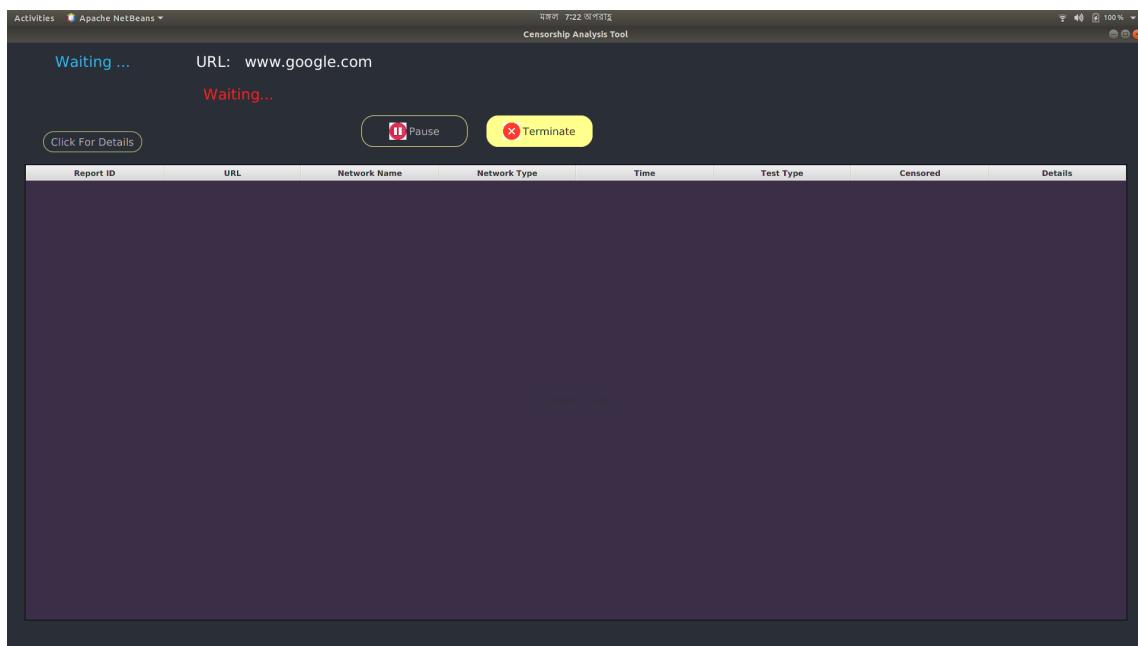


Figure 24: After inserting input of testing new dynamic window appeared

ISP Censorship Analyzer

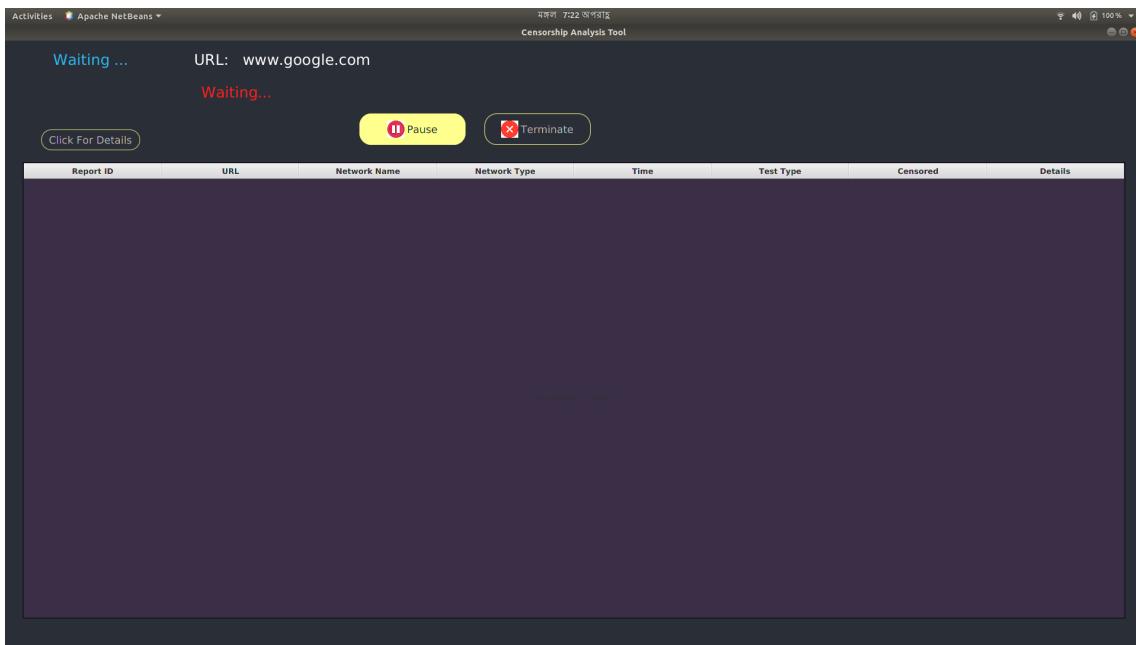


Figure 25: After clicking pause button

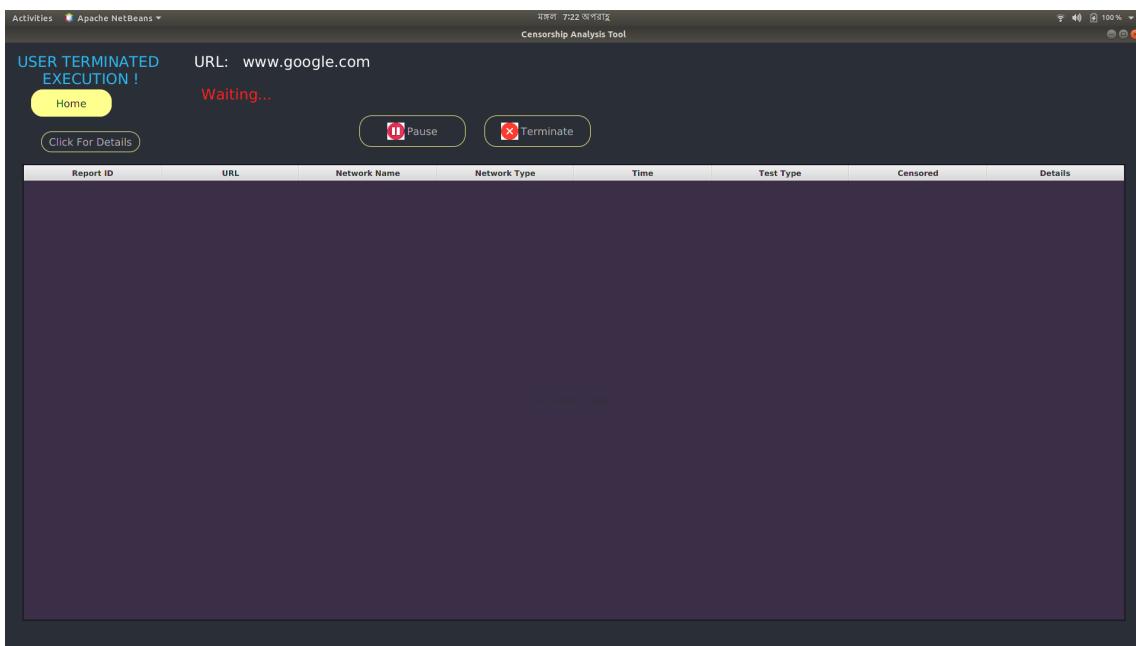


Figure 26: After clicking terminate button

ISP Censorship Analyzer

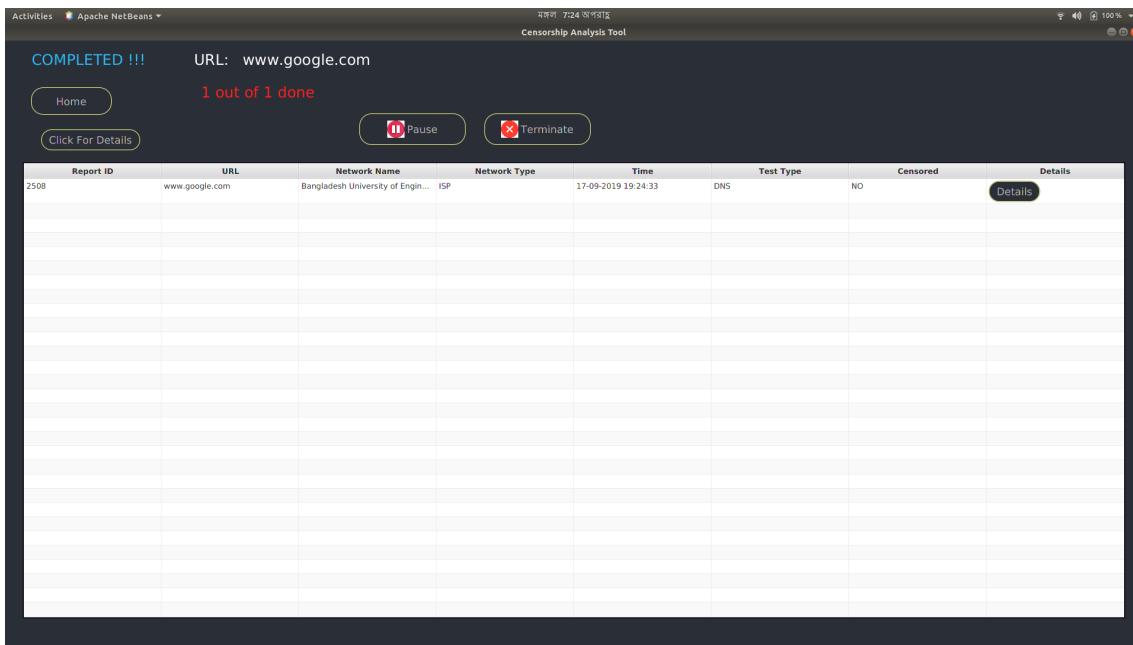


Figure 27: After completion of 1 test

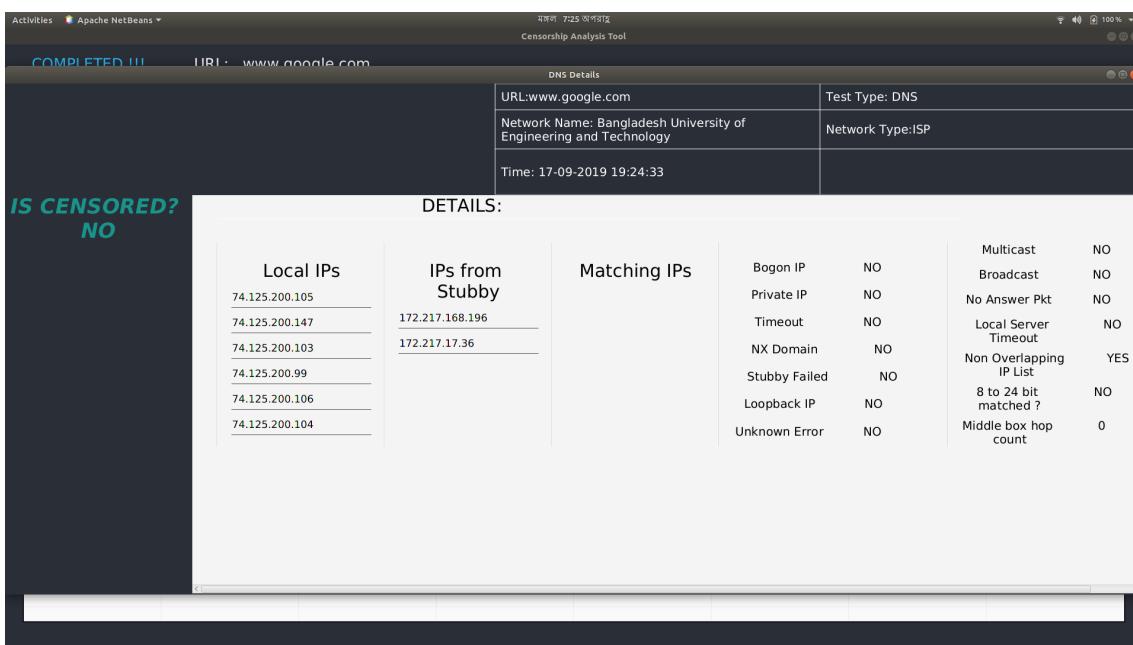


Figure 28: After clicking details button

ISP Censorship Analyzer

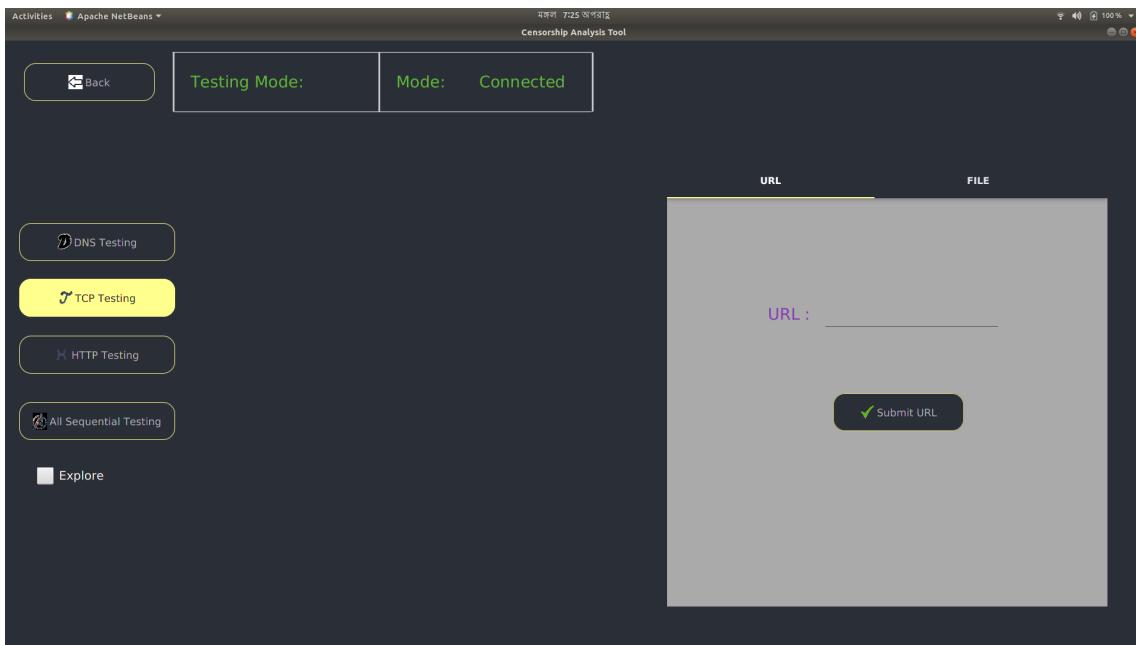


Figure 29: TCP Testing button is selected

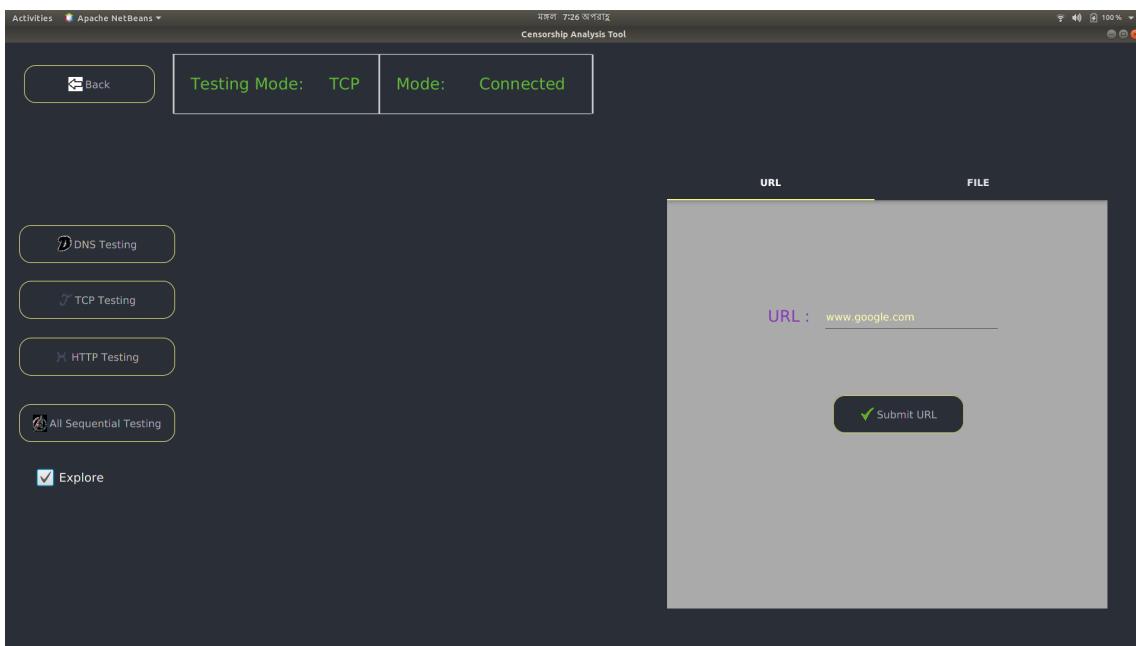


Figure 30: TCP Testing input are given

ISP Censorship Analyzer

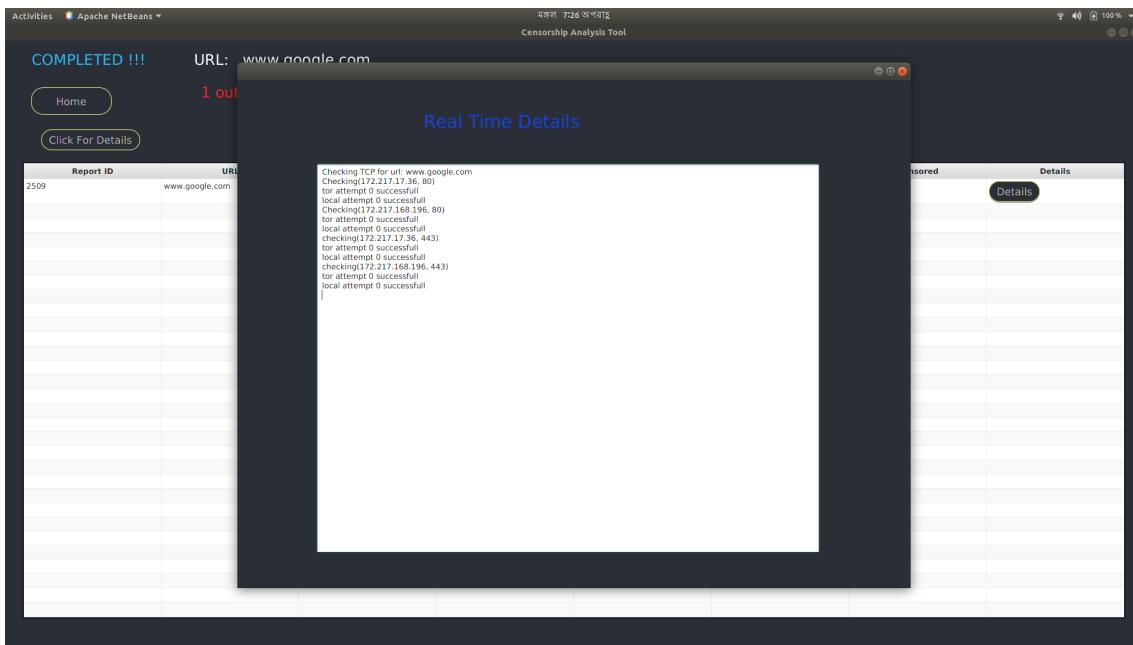


Figure 31: After Click for Details button clicking real time data are shown

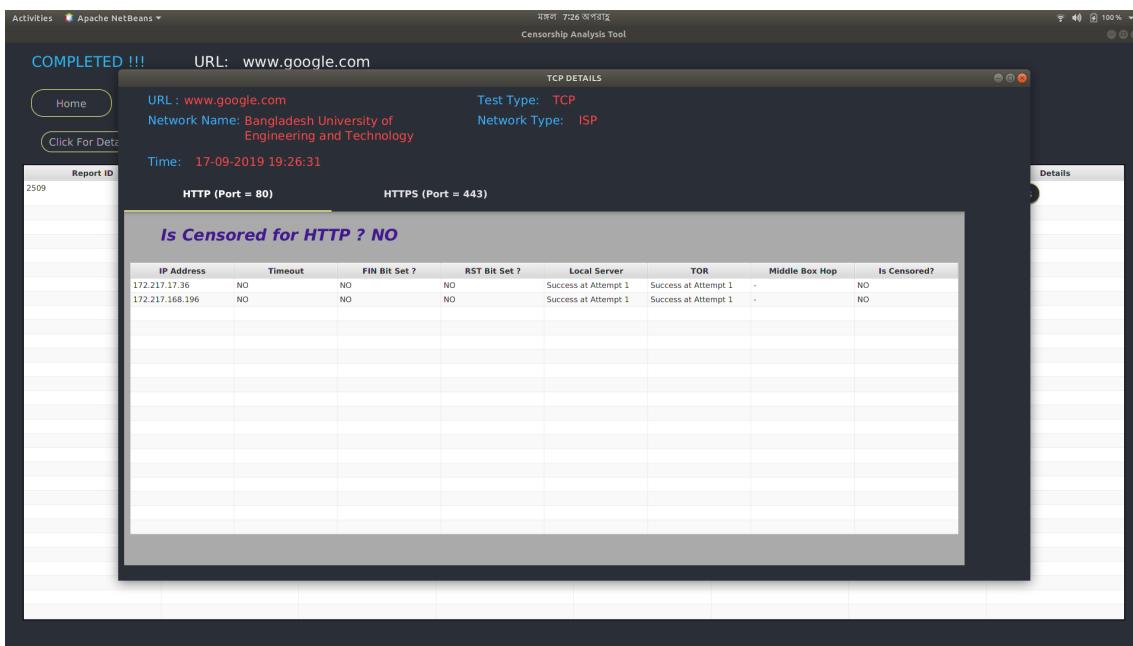


Figure 32: HTTP port 80 details

ISP Censorship Analyzer

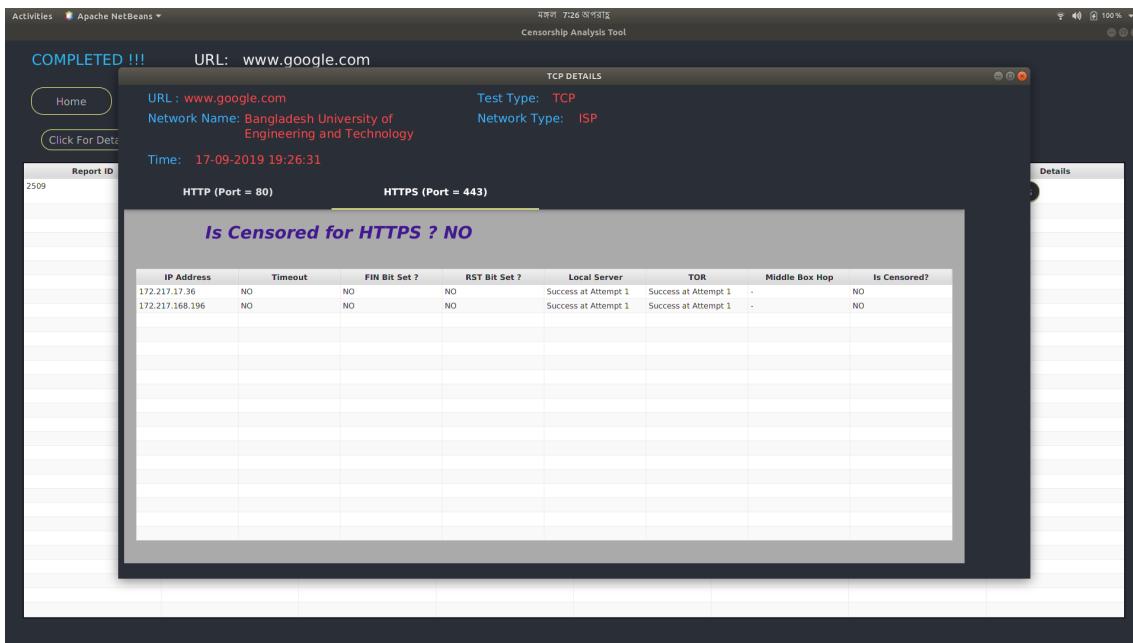


Figure 33: HTTPS port 435 details

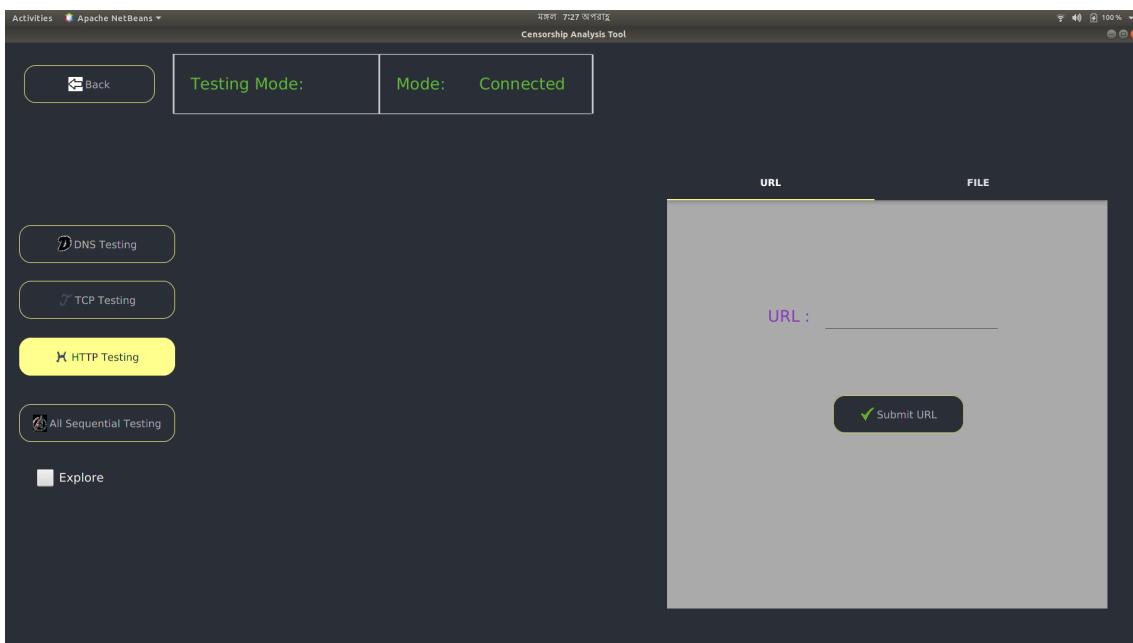


Figure 34: HTTP Test button is clicked

ISP Censorship Analyzer

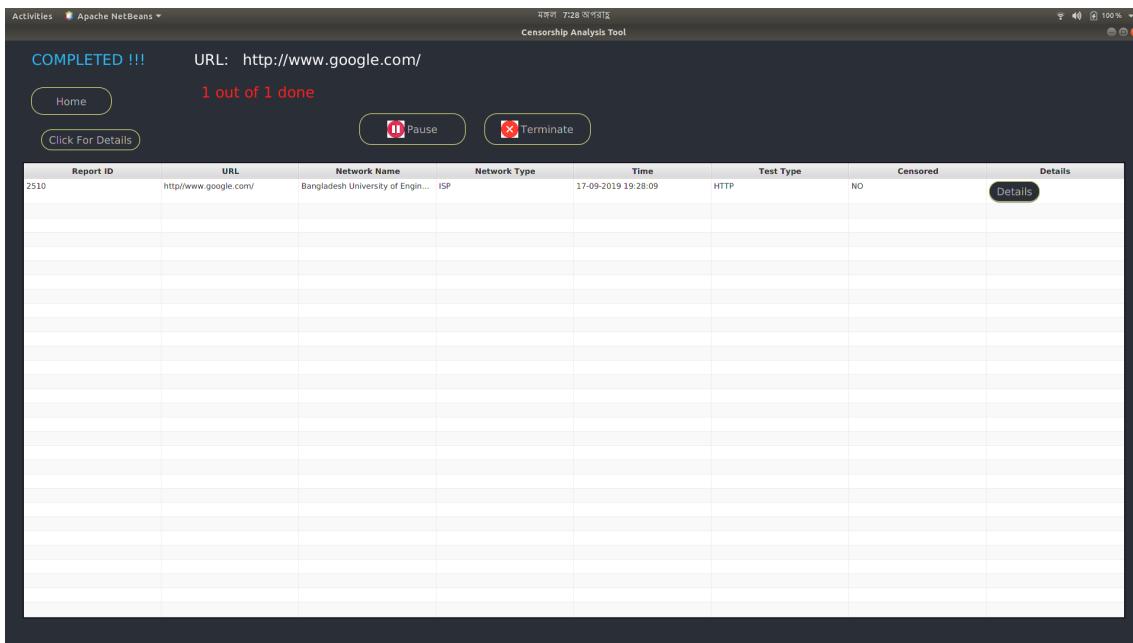


Figure 35: HTTP Test done for 1 url



Figure 36: HTTP port 80 details for HTTP test

ISP Censorship Analyzer

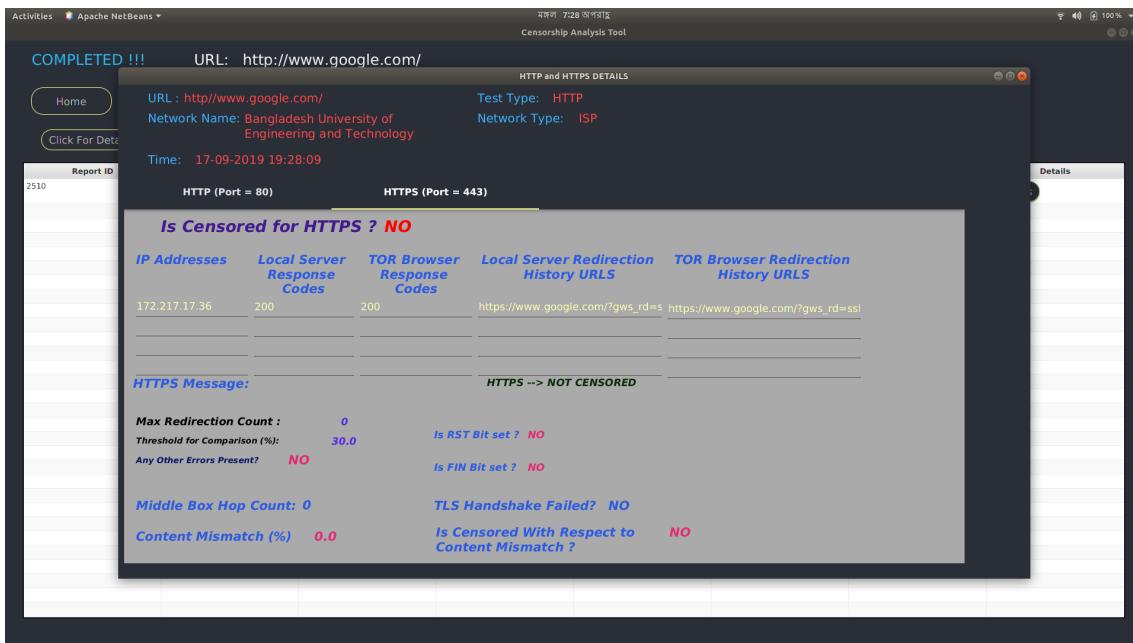


Figure 37: HTTPS port 435 details for HTTP test

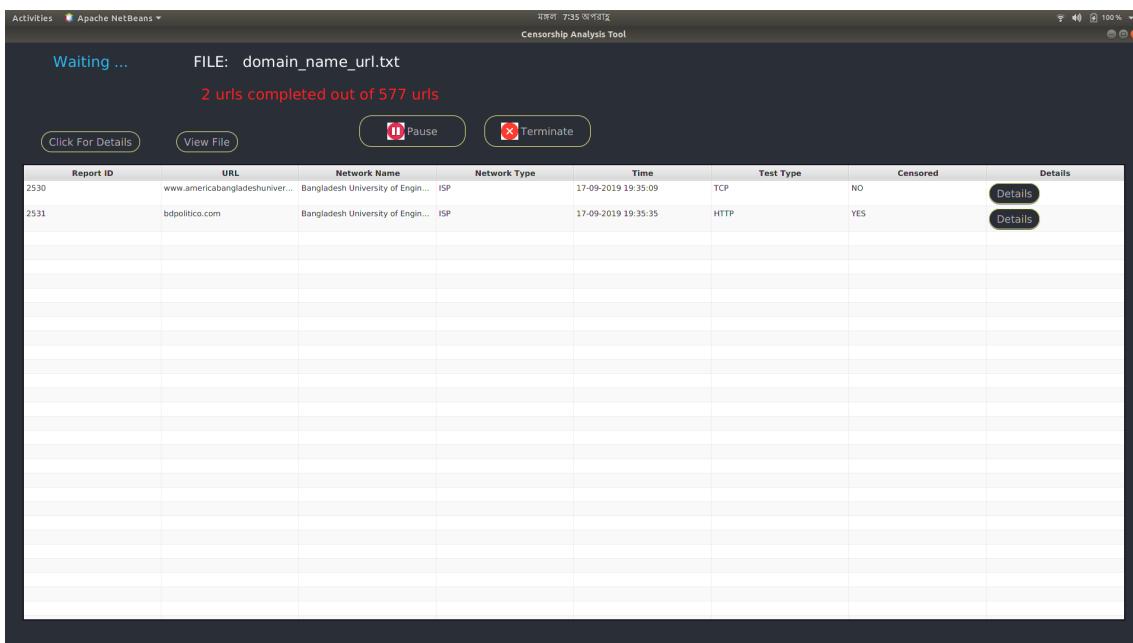


Figure 38: A testing of file with urls started

ISP Censorship Analyzer

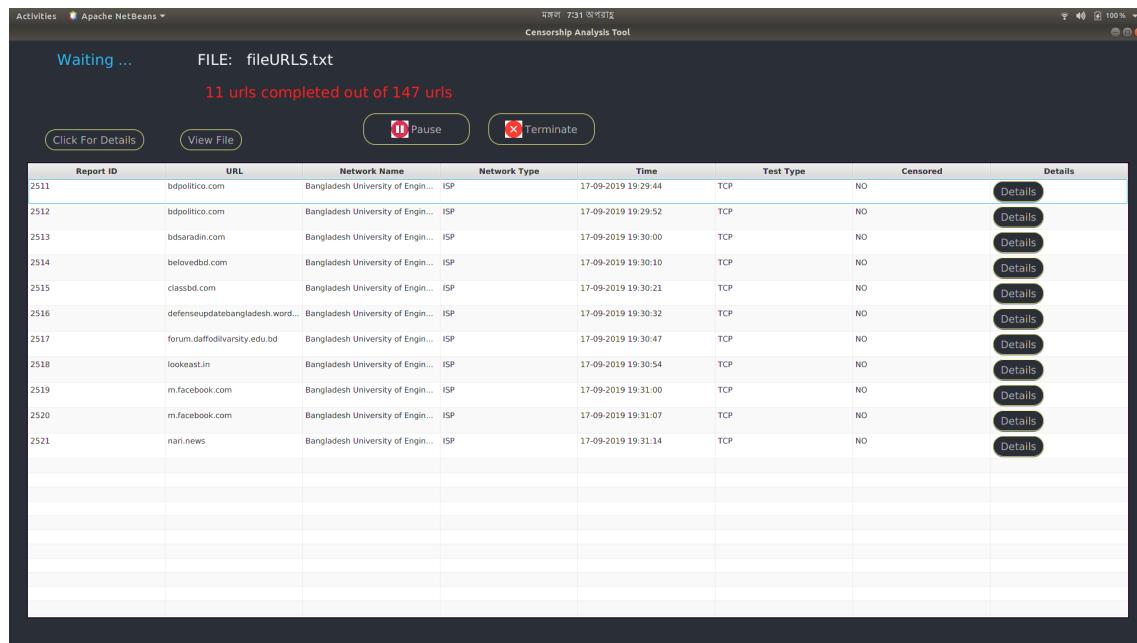


Figure 39: The testing of file with urls is going on

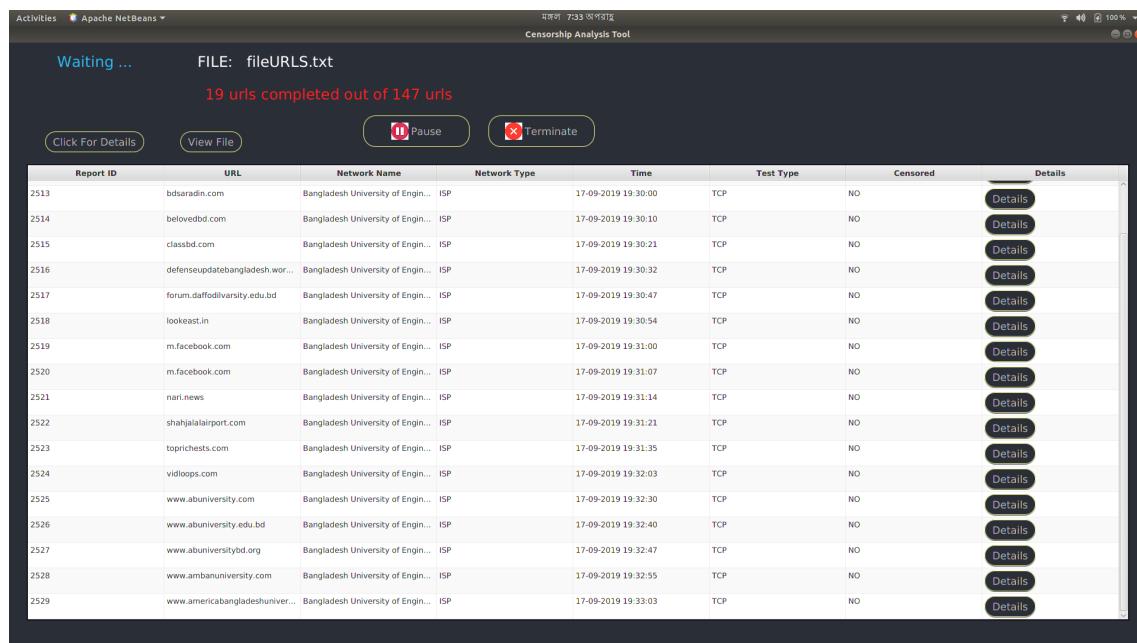


Figure 40: The testing is going on

ISP Censorship Analyzer

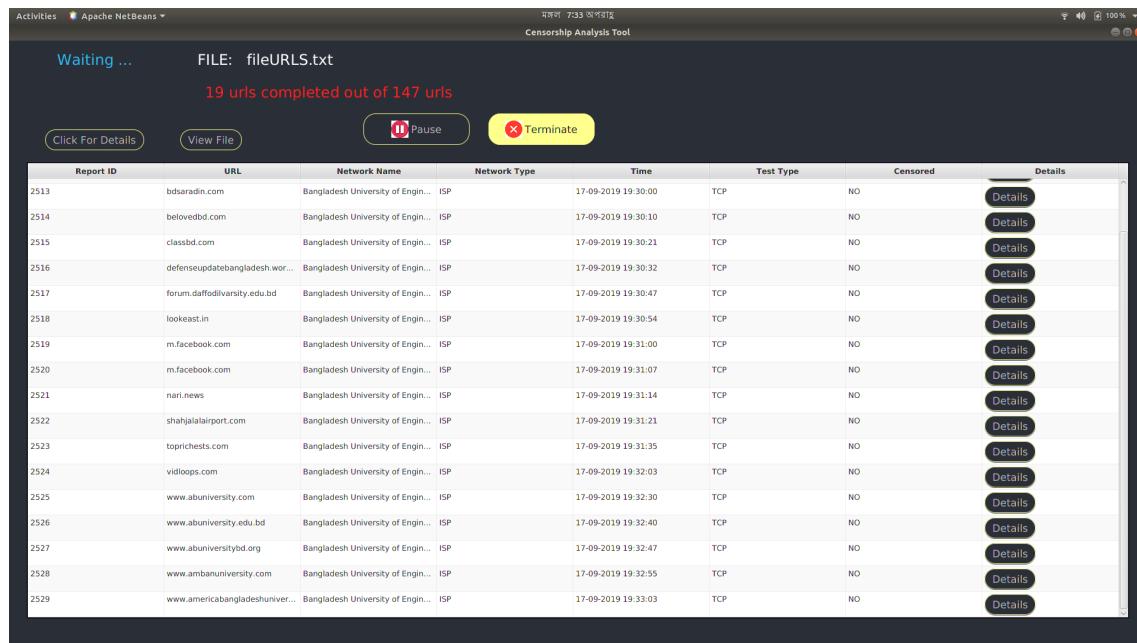


Figure 41: Terminating the test

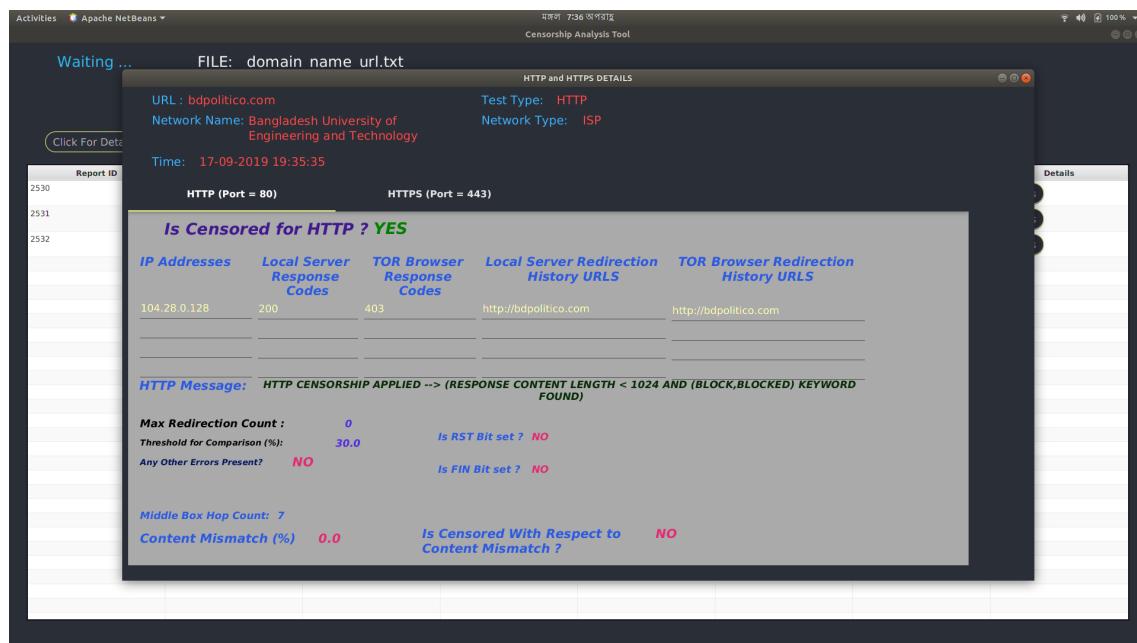


Figure 42: HTTP port 80 data are seen

ISP Censorship Analyzer

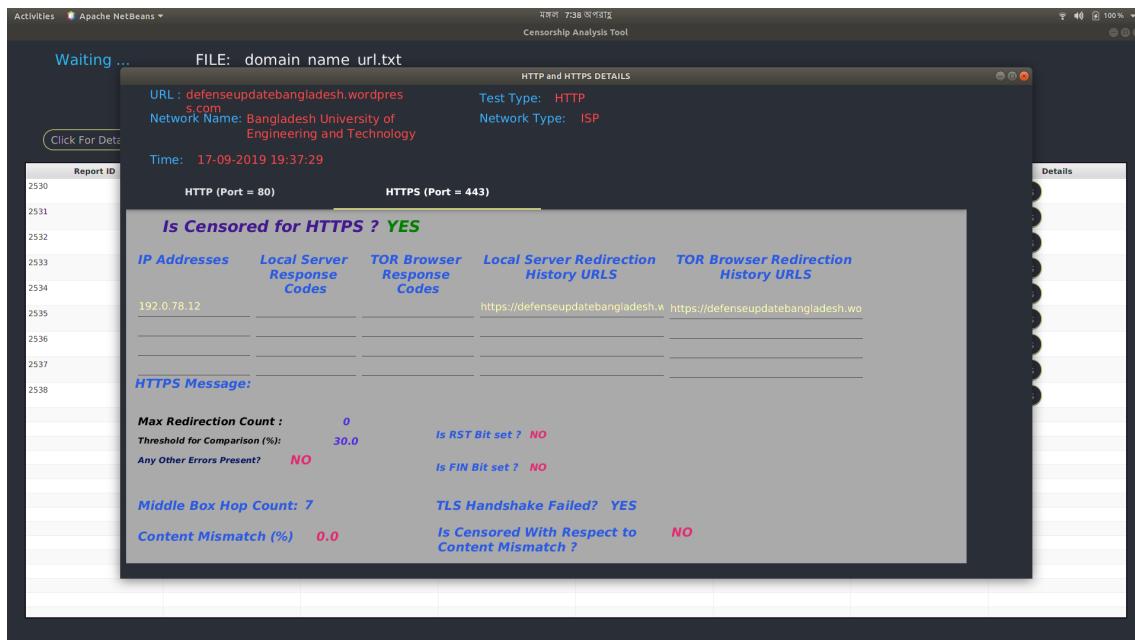


Figure 43: HTTPS port 435 data are seen

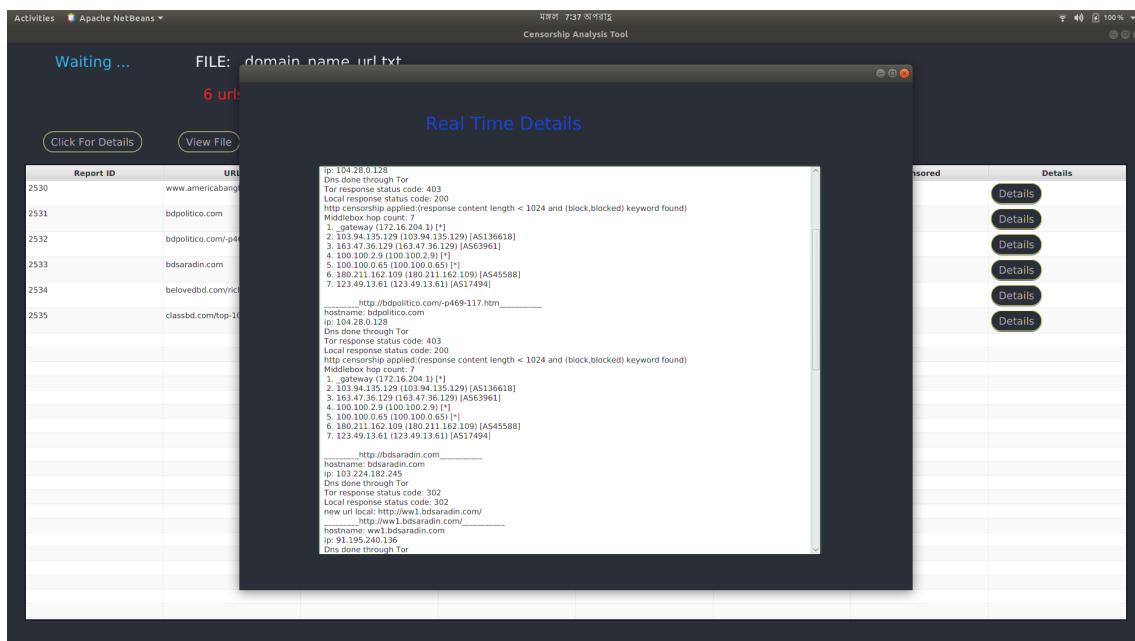


Figure 44: HTTP real time operations

ISP Censorship Analyzer

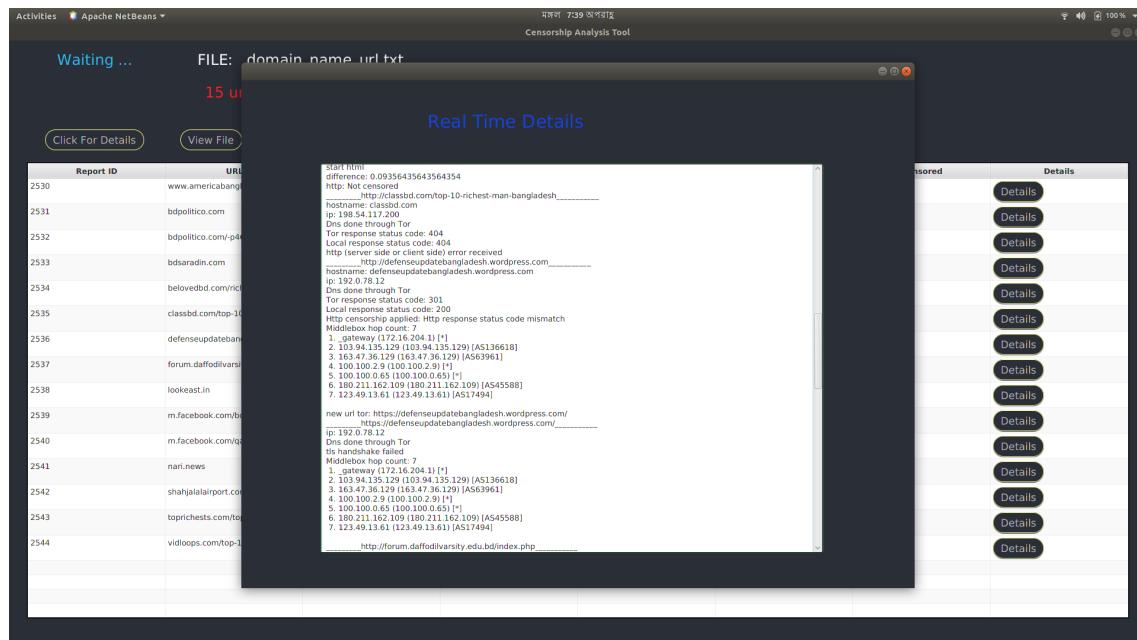


Figure 45: HTTP real time operations are going on

Report ID	URL	Network Name	Network Type	Time	Test Type	Censored	Details
2530	www.americabangladeshuni...	Bangladesh University of Engin...	ISP	2019-09-17 19:35:09	TCP	NO	Details
2531	bdpolitico.com	Bangladesh University of Engin...	ISP	2019-09-17 19:35:35	HTTP	YES	Details
2532	bdpolitico.com/p469-117.htm	Bangladesh University of Engin...	ISP	2019-09-17 19:36:04	HTTP	YES	Details
2533	bdssaradin.com	Bangladesh University of Engin...	ISP	2019-09-17 19:36:14	HTTP	NO	Details
2534	belovedbd.com/richest-ma...	Bangladesh University of Engin...	ISP	2019-09-17 19:36:21	HTTP	NO	Details
2535	classbd.com/top-10-richest-ma...	Bangladesh University of Engin...	ISP	2019-09-17 19:36:25	HTTP	NO	Details
2536	defenseupdatebangladesh.wor...	Bangladesh University of Engin...	ISP	2019-09-17 19:37:29	HTTP	YES	Details
2537	forum.daffodilvarsity.edu.bd/in...	Bangladesh University of Engin...	ISP	2019-09-17 19:37:42	HTTP	NO	Details
2538	lookeast.in	Bangladesh University of Engin...	ISP	2019-09-17 19:37:59	HTTP	NO	Details
2539	m.facebook.com/bdpolitico1	Bangladesh University of Engin...	ISP	2019-09-17 19:38:09	HTTP	YES	Details
2540	m.facebook.com/qamrulpage	Bangladesh University of Engin...	ISP	2019-09-17 19:38:17	HTTP	NO	Details
2541	nari.news	Bangladesh University of Engin...	ISP	2019-09-17 19:38:28	HTTP	NO	Details
2542	shahjalalairport.com	Bangladesh University of Engin...	ISP	2019-09-17 19:38:42	HTTP	NO	Details
2543	toprichests.com/top-10-richest-pe...	Bangladesh University of Engin...	ISP	2019-09-17 19:38:57	HTTP	NO	Details
2544	vidloops.com/top-10-richest-pe...	Bangladesh University of Engin...	ISP	2019-09-17 19:39:09	HTTP	YES	Details
2545	www.abuniversity.com	Bangladesh University of Engin...	ISP	2019-09-17 19:39:19	HTTP	NO	Details
2546	www.abuniversity.edu.bd	Bangladesh University of Engin...	ISP	2019-09-17 19:39:22	HTTP	NO	Details

Figure 46: 19 URLs completed out of 577

ISP Censorship Analyzer

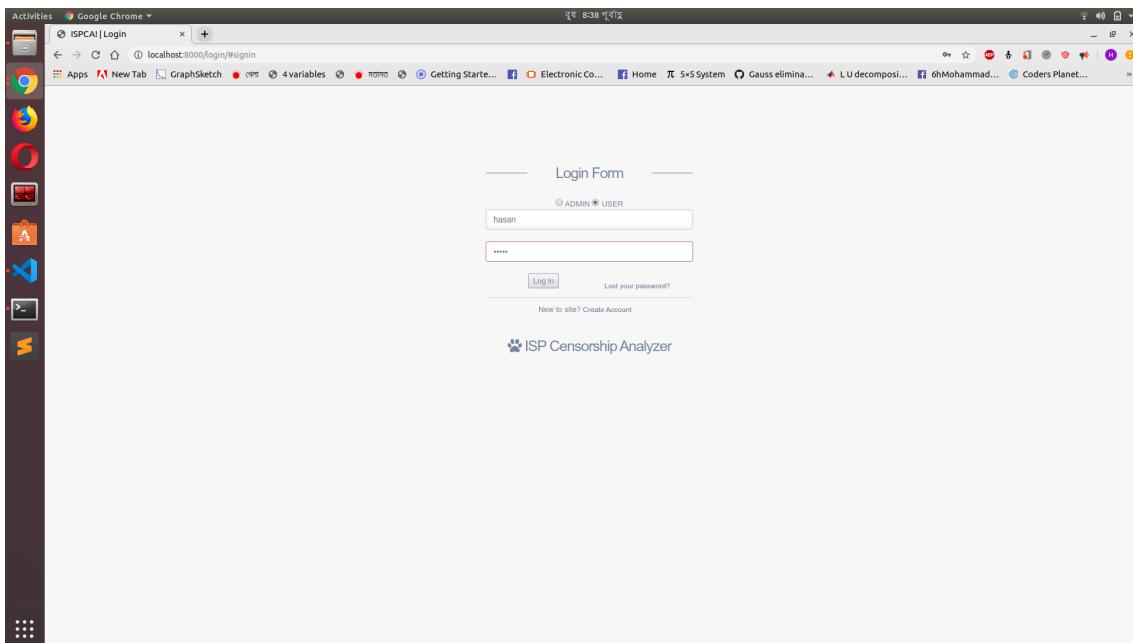


Figure 47: Insert Compulsory field for login

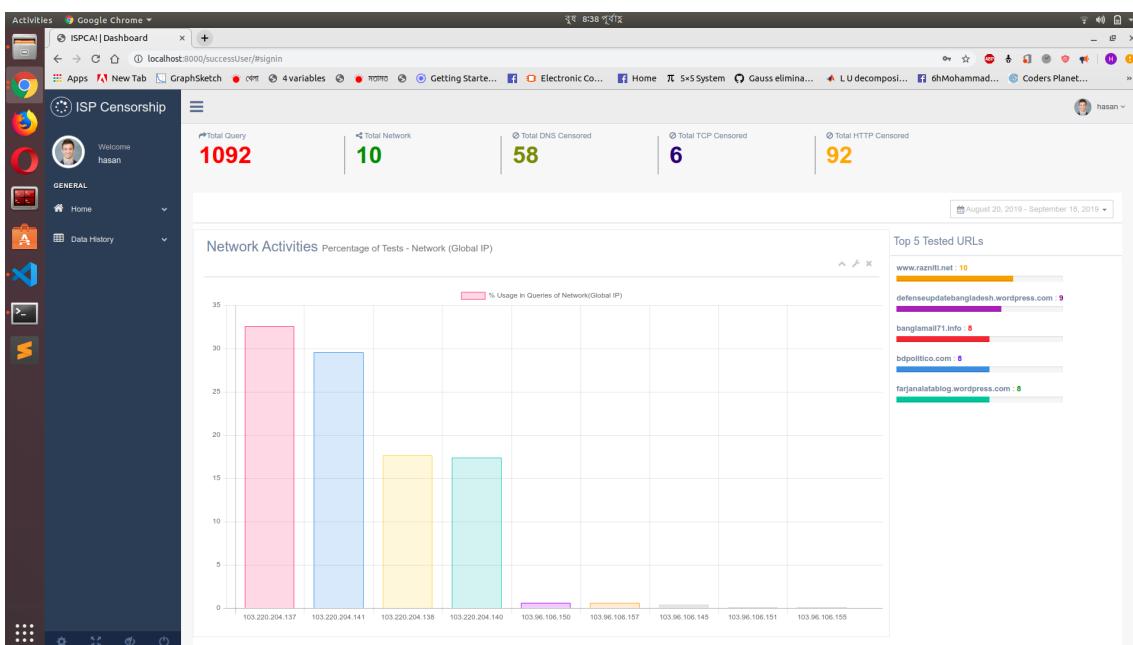


Figure 48: Home page of user first part

ISP Censorship Analyzer

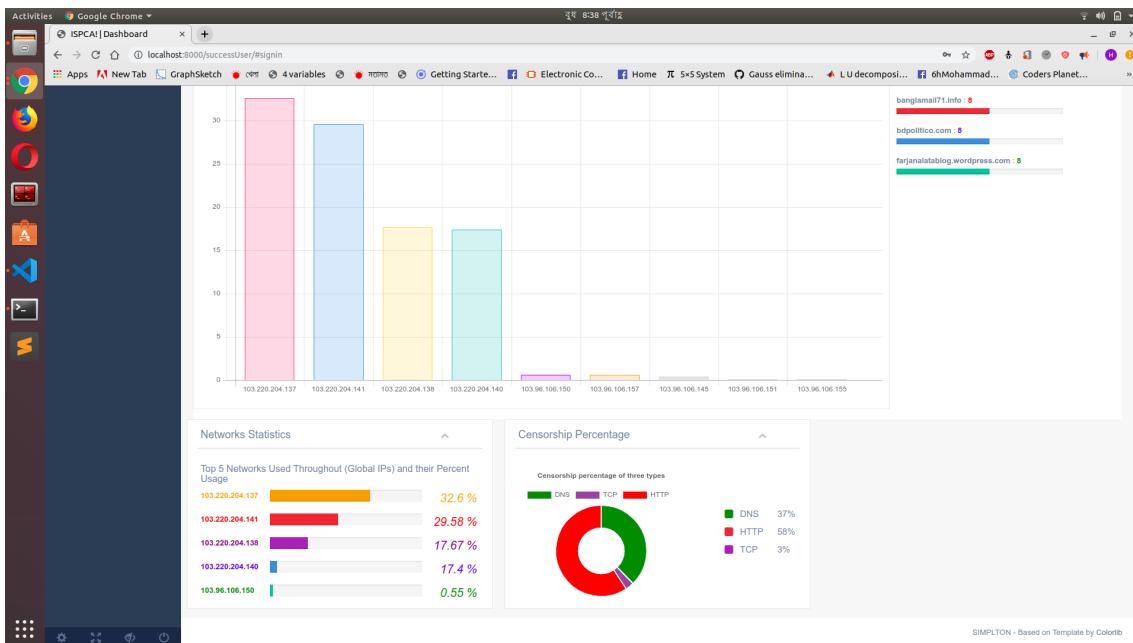


Figure 49: Insert Compulsory field for registration

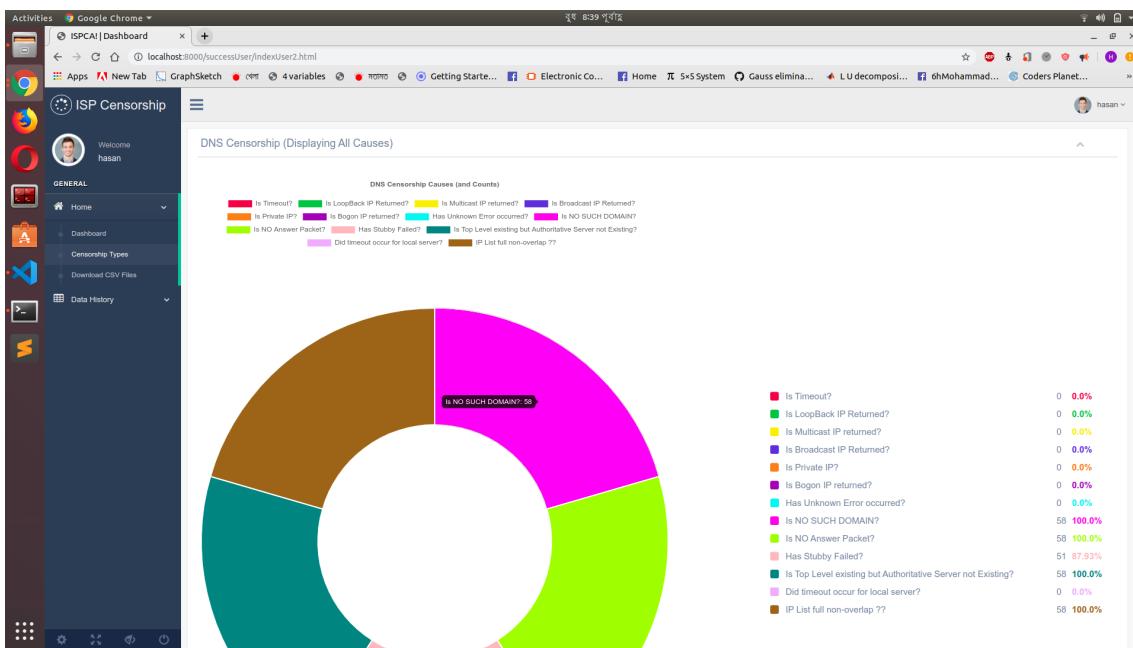


Figure 50: Showing top 5 all censorship type percentage of user

ISP Censorship Analyzer

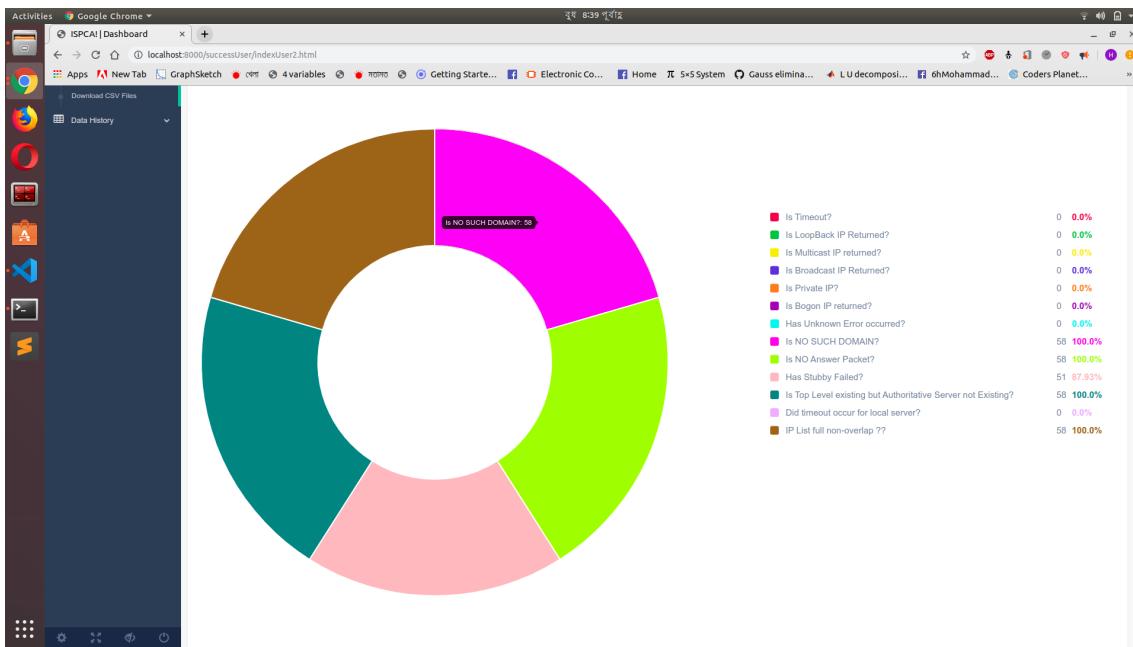


Figure 51: Showing top 5 DNS censorship type percentage of user

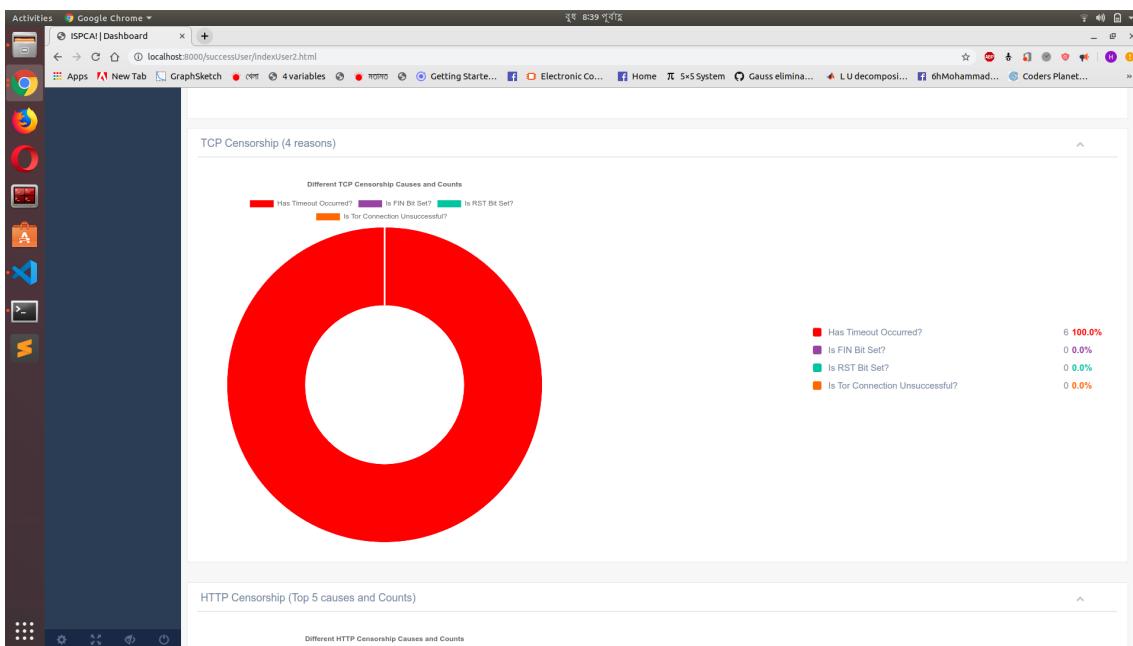


Figure 52: Showing top 5 TCP censorship type percentage of user

ISP Censorship Analyzer

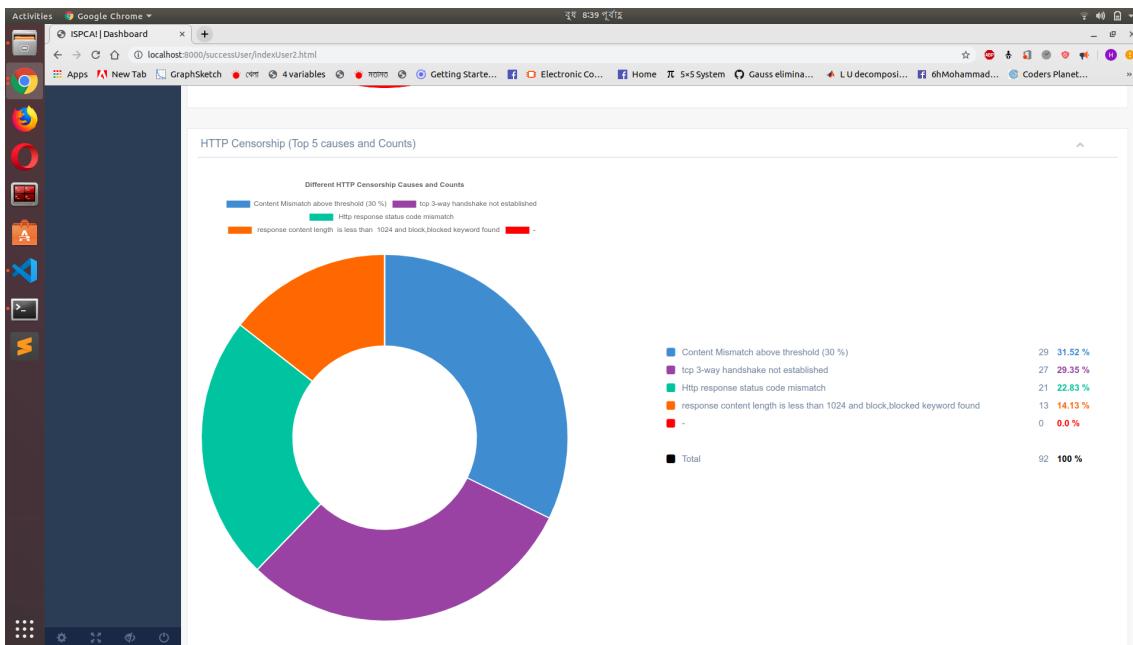


Figure 53: Showing top 5 HTTP censorship type percentage of user

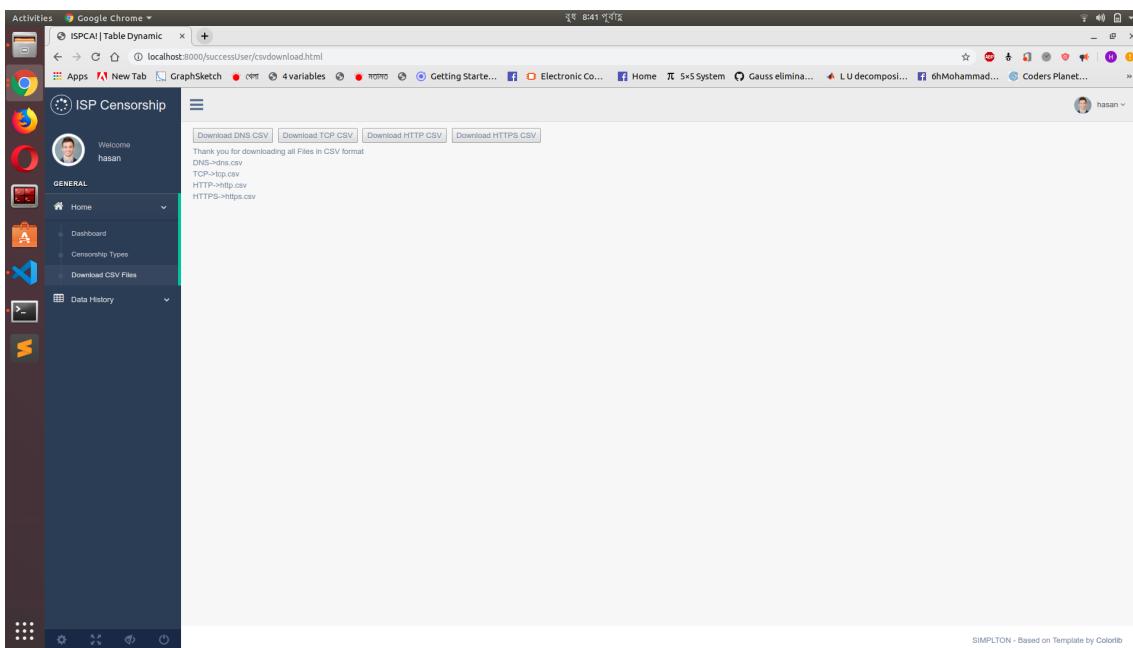


Figure 54: Downloading information as CSV file for all type censorship

ISP Censorship Analyzer

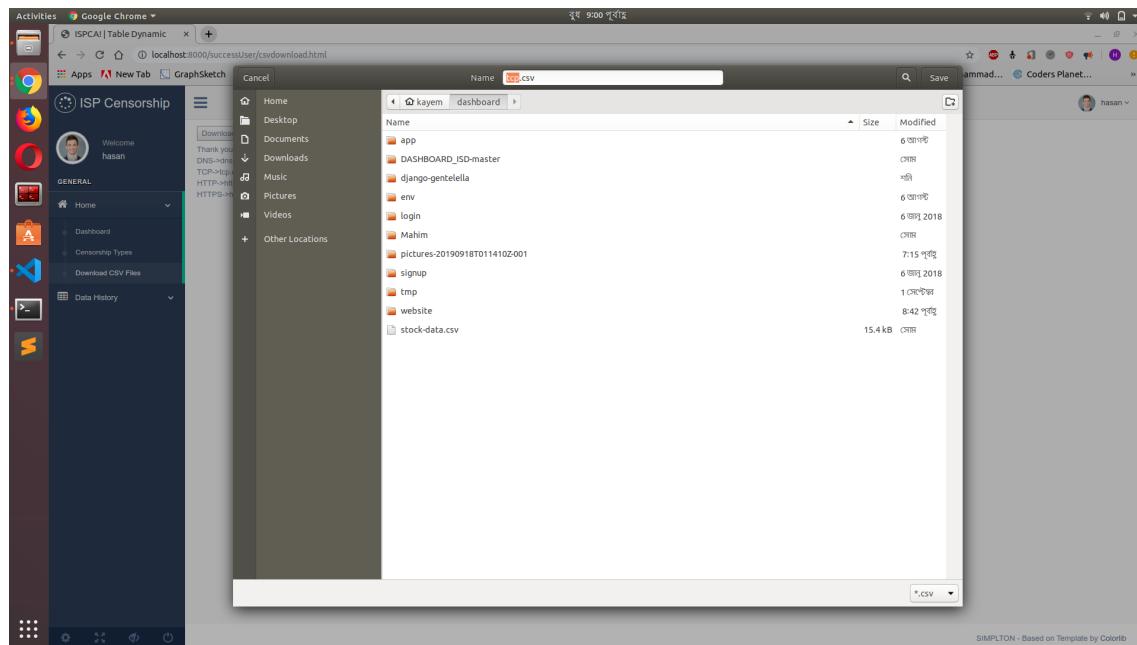


Figure 55: Downloading information as CSV file for DNS type censorship

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	
1	carrier_nat_type	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2	carrier_nat_type	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
3	NA	01/09/2019 01:28	xvideos.cc	DNS	0	103.96.106	3 MD Mani l	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4	NA	01/09/2019 01:28	m.facebook	DNS	0	103.96.106	3 MD Mani l	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5	NA	01/09/2019 01:28	www.razin	DNS	0	103.96.106	3 MD Mani l	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	
6	NA	12/09/2019 01:18	bdcnccico	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7	NA	12/09/2019 01:18	www.bdcnccico	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8	NA	12/09/2019 01:18	bdsaradbn	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9	NA	12/09/2019 01:18	bdarabdn	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10	NA	12/09/2019 01:19	classbst	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11	NA	12/09/2019 01:19	defensgroup	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12	NA	12/09/2019 01:19	www.defensgroup	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
13	NA	12/09/2019 01:20	www.bnse	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
14	NA	12/09/2019 01:21	www.bitco	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	
15	NA	12/09/2019 01:21	www.gen	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	
16	NA	12/09/2019 01:21	www.gem	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	
17	NA	12/09/2019 01:21	www.jmbs	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	
18	NA	12/09/2019 01:21	www.news	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	
19	NA	12/09/2019 01:21	www.news	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	
20	NA	12/09/2019 01:21	www.onlin	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	
21	NA	12/09/2019 01:21	www.purbo	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	
22	NA	12/09/2019 01:21	www.purbo	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	
23	NA	12/09/2019 01:20	www.raner	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	
24	NA	12/09/2019 01:26	www.rosh	DNS	1	103.220.2c	3 None	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0	1	0	
25	NA	12/09/2019 01:26	www.som	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	1	1	0	1	0	1	1	0	0	
26	NA	12/09/2019 01:28	bd-inf	DNS	1	103.220.2c	3 None	0	0	0	0	0	0	0	0	1	1	1	0	1	1	0	1	0	
27	NA	12/09/2019 01:29	www.bdcnccico	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1	0	0	
28	NA	12/09/2019 01:34	revelm	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	1	1	1	1	0	1	1	0	0	
29	NA	12/09/2019 01:36	royalunive	DNS	1	103.220.2c	3 None	0	0	0	0	0	0	0	0	1	1	1	1	0	1	1	0	0	
30	NA	12/09/2019 01:36	royalunive	DNS	1	103.220.2c	3 None	0	0	0	0	0	0	0	0	1	1	1	1	0	1	1	0	0	
31	NA	12/09/2019 01:40	www.tedra	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	1	1	1	1	0	1	1	0	0	
32	NA	12/09/2019 01:40	www.tedra	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	1	1	1	1	0	1	1	0	0	
33	NA	12/09/2019 01:40	www.fasal	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	1	1	1	1	0	1	1	0	0	
34	NA	12/09/2019 01:41	www.Hilt	DNS	1	103.220.2c	3 None	0	0	0	0	0	0	0	0	1	1	1	1	0	1	1	0	0	
35	NA	12/09/2019 01:44	protf	DNS	1	103.220.2c	3 None	0	0	0	0	0	0	0	0	1	1	1	1	0	1	1	0	0	
36	NA	12/09/2019 01:44	protf	DNS	1	103.220.2c	3 None	0	0	0	0	0	0	0	0	1	1	1	1	0	1	1	0	0	
37	NA	12/09/2019 01:44	royalunive	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	1	0	
38	NA	12/09/2019 01:24	www.bdcnccico	DNS	0	NA	3 NA	0	0	0	0	0	0	0	0	1	1	1	1	0	1	1	0	0	
39	NA	12/09/2019 01:20	toprichest	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
40	NA	12/09/2019 01:20	vidloop	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
41	NA	12/09/2019 01:20	www.aburn	DNS	0	103.220.2c	3 None	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 56: Downloaded DNS file as CSV format

ISP Censorship Analyzer

The screenshot shows the ISP Censorship Analyzer interface. On the left, a sidebar menu includes 'GENERAL' (Home, Data History), 'DNS' (TCP, HTTP, HTTPS), and 'SHELL'. The main dashboard title is 'Dashboard' with the sub-instruction 'All Reports are dynamically handled'. Below this, a 'Report All entry' section lists 14 items related to DNS errors. A table displays 5 rows of DNS censorship data:

URL	Network Name	Network Type	Time	Test Type	Censored?	No of attempts
ansarbd webnode.com	None	WIFI	12-09-2019 01:22:52	DNS	NO	
ansarukhilafah.wordpress.com	None	WIFI	12-09-2019 01:22:54	DNS	NO	
appnationconference.com	None	WIFI	12-09-2019 01:22:56	DNS	NO	
attahreedmedia.wordpress.com	None	WIFI	12-09-2019 01:23:00	DNS	NO	
banglajmail71.info	None	WIFI	12-09-2019 01:23:03	DNS	NO	

Figure 57: All data of DNS type censorship

The screenshot shows the ISP Censorship Analyzer interface. The sidebar menu is identical to Figure 57. The main dashboard title is 'Dashboard' with the sub-instruction 'All Reports are dynamically handled'. Below this, a 'Report All entry' section lists 7 items related to TCP errors. A table displays 9 rows of TCP censorship data:

URL	Network Name	Network Type	Time	Test Type	Censored?	IP Address	middle box hop count	port
ansarbd webnode.com	None	WIFI	12-09-2019 00:50:14	TCP	NO			
ansarbd webnode.com	None	WIFI	12-09-2019 00:50:14	TCP	NO			
ansarukhilafah.wordpress.com	None	WIFI	12-09-2019 00:51:21	TCP	YES			
ansarukhilafah.wordpress.com	None	WIFI	12-09-2019 00:51:21	TCP	YES			
appnationconference.com	None	WIFI	12-09-2019 00:51:37	TCP	NO			
appnationconference.com	None	WIFI	12-09-2019 00:51:37	TCP	NO			
attahreedmedia.wordpress.com	None	WIFI	12-09-2019 00:52:47	TCP	YES			
attahreedmedia.wordpress.com	None	WIFI	12-09-2019 00:52:47	TCP	YES			
banglajmail71.info	None	WIFI	12-09-2019 00:53:03	TCP	NO			
banglajmail71.info	None	WIFI	12-09-2019	TCP	NO			

Figure 58: All data of TCP type censorship

ISP Censorship Analyzer

The screenshot shows the ISP Censorship Analyzer interface in Google Chrome. The left sidebar has a dark theme with icons for Home, Data History (selected), DNS, TCP, HTTP (selected), and HTTPS. The main dashboard title is "Dashboard" with the sub-instruction "All Reports are dynamically handled". Below this is a section titled "Report All entry" with "HTTP Reports". A table lists 12 items under "is different wrt threshold". The table has columns: Network Name, Network Type, Time, Test Type, and Censor. The last row shows "ansarukhilafah.wordpress.com" with "None WiFi 12-09-2019 18:53:48 HTTP YES".

	Network Name	Network Type	Time	Test Type	Censor
1.is different wrt threshold					
2.is fn bit set					
3.is max redirection reached					
4.is_other_error					
5.is_rst_bit_set					
6.redirection_history_local					
7.redirection_history_tor					
8.content_difference					
9.http_response_code_local					
10.http_response_code_tor					
11.middle_box_hop_count					
12.is_tls_handshake_failed					
URL:					
① 16honeys.com/download/video/2108076447/angelica_du_dhaka-babe-riding-reverse-cowgirl					
② 18dreams.net/download/video/2108076447/angelica_du_dhaka-babe-riding-reverse-cowgirl					
③ amarwap.co/utube					
④ amarwap.co/utube					
⑤ ansarbd.webnode.com					
⑥ ansarbd.webnode.com					
⑦ ansarukhilafah.wordpress.com					
⑧ ansarukhilafah.wordpress.com					

Figure 59: All data of HTTP type censorship

The screenshot shows the ISP Censorship Analyzer interface in Google Chrome. The left sidebar has a dark theme with icons for Home, Data History (selected), DNS, TCP, HTTP, and HTTPS. The main dashboard title is "Dashboard" with the sub-instruction "All Reports are dynamically handled". Below this is a section titled "Report All entry" with "HTTPS Reports". A table lists 12 items under "is different wrt threshold". The table has columns: Network Name, Network Type, Time, Test Type, and Censor. The last row shows "ansarukhilafah.wordpress.com" with "None WiFi 15/09/2019 14:00:00 HTTP YES".

	Network Name	Network Type	Time	Test Type	Censor
1.is different wrt threshold					
2.is fn bit set					
3.is max redirection reached					
4.is_other_error					
5.is_rst_bit_set					
6.redirection_history_local					
7.redirection_history_tor					
8.content_difference					
9.http_response_code_local					
10.http_response_code_tor					
11.middle_box_hop_count					
12.is_tls_handshake_failed					
URL:					
① 16honeys.com/download/video/2108076447/angelica_du_dhaka-babe-riding-reverse-cowgirl					
② 18dreams.net/download/video/2108076447/angelica_du_dhaka-babe-riding-reverse-cowgirl					
③ amarwap.co/utube					
④ amarwap.co/utube					
⑤ ansarbd.webnode.com					
⑥ ansarbd.webnode.com					
⑦ ansarukhilafah.wordpress.com					
⑧ ansarukhilafah.wordpress.com					

Figure 60: All data of HTTPS type censorship