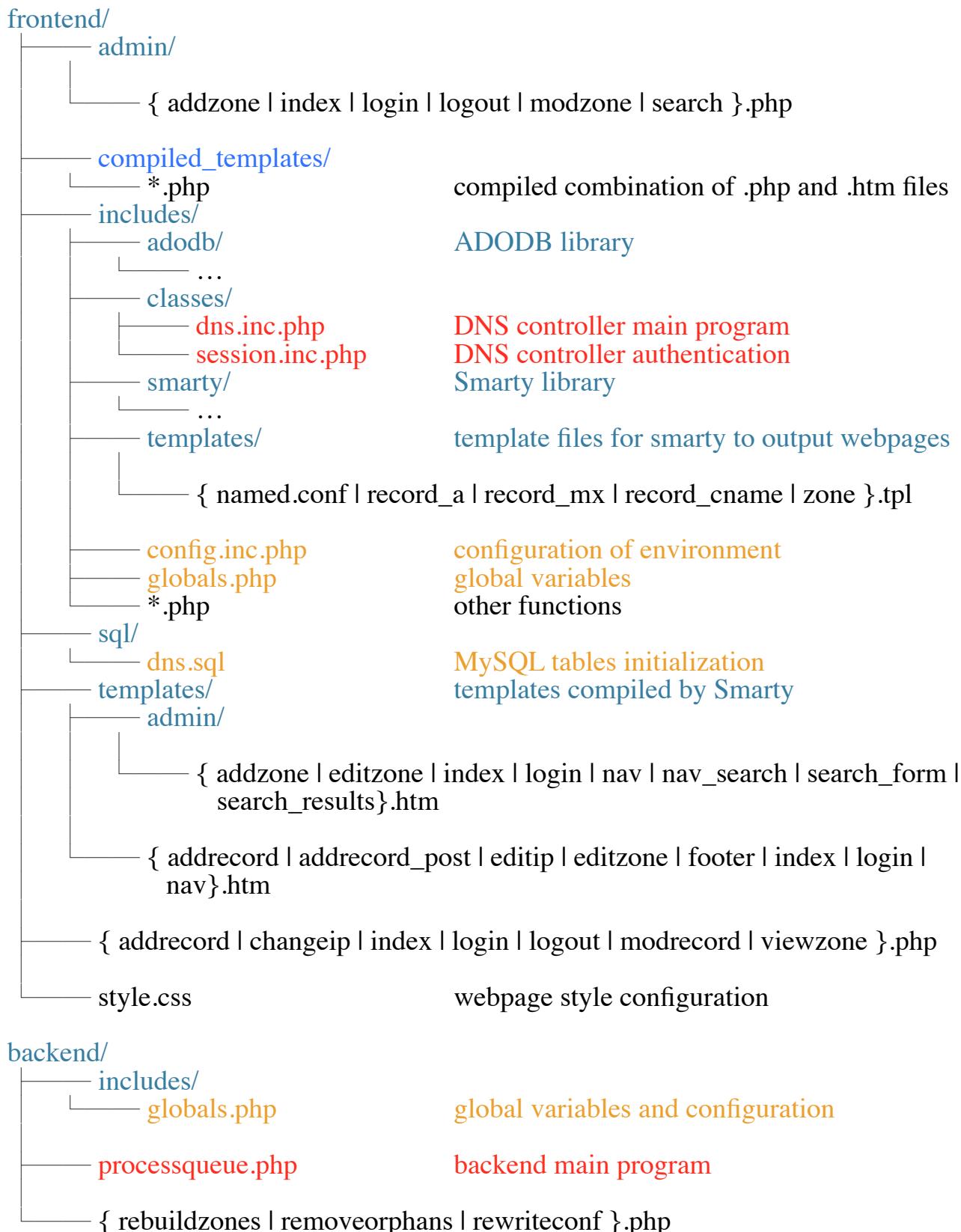


DNS Webpage Controller

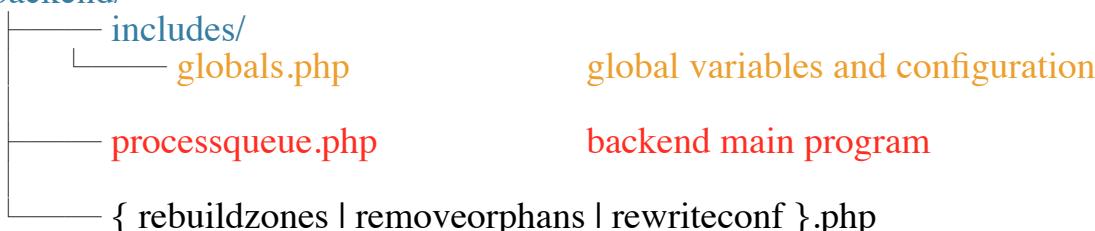
1. Project Implementation Layout

1.1. Reference : <https://github.com/jmazzi/dns-control>

1.2. Source code structure :



backend/



1.3. Main program configuration and initialization

a. configuration : /frontend/includes/config.inc.php

```

/* database config */
$db_host = ""; // database server name
$db_user = ""; // database username
$db_pass = ""; // database user password
$db_name = ""; // database name

/* DNS configuration filepath */
$base_url = ""; // DNS webpage url
$base_path = ""; // frontend path
$zone_path = ""; // bind zonefile path
$conf_file = ""; // bind config path
$site_name = "";

/* default forward dns */
$dns1 = "";
$dns2 = "";
$dnshostmaster = "";

/* set offline mode */
$offline_mode = "";

```

b. initialization : /frontend/includes/globals.inc.php

```

/* load configuration */
require("config.inc.php");
. . . // other libraries

/* MySQL implementation */
. . . // ADODB config
$db = NewADOConnection('mysql');
$db->Connect($db_host, $db_user, $db_pass, $db_name);

/* Smarty implementation */
$tpl_path = $base_path . "/includes/templates";
$tpl = new Smarty();
. . . // other configuration for Smarty

/* class DNS implementation */
$dns = new DNS($db, $zone_path, $conf_file, $tpl_path);
$dns->dns1 = $dns1;
$dns->dns2 = $dns2;
$dns->dnshostmaster = $dnshostmaster;

```

c. initialization : /backend/includes/globals.inc.php

```

/* load configuration from frontend */
require("/frontend/includes/globals.inc.php");
. . .
/* MySQL implementation */
$db = NewADOConnection('mysql');
$db->Connect($db_host, $db_user, $db_pass, $db_name);
. . .
/* class DNS implementation */
$dns = new DNS($db, $zone_path, $conf_file, $tpl_path);
$dns->dns1 = $dns1;
$dns->dns2 = $dns2;
$dns->dnshostmaster = $dnshostmaster;

```

1.4. Main program layout :

a. class DNS : /frontend/includes/classes/dns.inc.php

```

DNS() : constructor
variables : $db = "";           // MySQL object
            $path = "";        // path to named files
            $entries = "";      // global named.conf options
            $error = "";        // error message
            $tpl = array();     // template array from frontend/includes/templates
zone management : addZone, reloadZone, removeZone, delZone, writeZone, isZone,
                  zoneInfo, rebuildZones, updateZonePass
record management : addRecord, modRecord, delRecord, getRecords, recordInfo
process lock : isLock, createLock, delLock
process queue : processAddqueue, processModqueue, processDelqueue
domain manegement : domainId, isDomain
ip manegement : updateIp, isIp
error handler : raiseError

```

b. class Session : /frontend/includes/classes/session.inc.php

```

constructor : Session() : { session_start() };
variables : $db = "";           // MySQL object
            $tpl = "";        // Smarty object
            $username = "";    // `domain` in dns.domains table (MySQL)
            $userid = "";      // `domainid` in dns.domains table (MySQL)
            $password = "";    // `password` in dns.domains table (MySQL)
            $var_name = "";
user login : auth, isAuth, login
administrator login : authAdmin, isAdmin, adminLogin
deconstructor : destroy
other : numUsers, register, unregister

```

2. Packages Installation and Properties

2.1. PHP : webpage

Installation :

```
$ sudo apt-get install php5
$ sudo apt-get install php5-cli          // PHP client
$ sudo apt-get install php5-mysql         // MySQL modules
$ sudo apt-get install php5-adodb         // ADODO modules
$ sudo apt-get install php5-mcrypt        // encryption, decryption
```

Configuration files :

```
/etc/php5/apache2/php.ini
/etc/php5/apache2/conf.d/
```

Usage :

```
$ php [php_filename].php
```

Reference : <https://www.digitalocean.com/community/tutorials/how-to-install-linux-apache-mysql-php-lamp-stack-on-ubuntu-16-04>

2.2. MySQL : database

Installation :

```
$ sudo apt-get install mysql-server          // main MySQL server
$ sudo apt-get install mysql-client-core-5.5 // enable to manage MySQL
```

Usage :

```
$ mysql -h [host] -u [user] -p
$ mysql [database] < [dumpfile]           // import .sql file
```

Interactive mode :

```
mysql> SHOW DATABASES;
mysql> USE [database];
mysql> SHOW TABLES;
mysql> CREATE TABLE [table]
        ([item] [type] [.. .other parameters],
        [ . . . other items],
        . . .,
        PRIMARY KEY ([item]),
        KEY ([item]) );
mysql> DESCRIBE [table];
mysql> INSERT INTO ` [table]`(`[item1]`, `[item2]`, . . .)
        VALUE ('[value1]', '[value2]', . . .);
mysql> SELECT [item1], [item2], . . . FROM [table] WHERE [conditions];
```

Reference : <http://dev.mysql.com/doc/refman/5.5/en/tutorial.html>

<http://dev.mysql.com/doc/mysql-apt-repo-quick-guide/en/#apt-repo-fresh-install>

<https://www.digitalocean.com/community/tutorials/how-to-install-linux-apache-mysql-php-lamp-stack-on-ubuntu-16-04>

2.3. ADODB : PHP + MySQL intergration

Library directory :

```
/frontend/includes/adodb/
```

2.4. Smarty : PHP + HTML webpage compiler

Library directory :

```
/frontend/includes/smarty/
```

Configuration file :

```
/frontend/includes/smarty/Config_File.class.php
```

reference : http://www.chueh.org.tw/電腦教學/PHP教學/unit_113.htm

2.5. Bind9 : DNS management

Installation :

```
$ sudo apt-get install bind9
```

Usage :

```
$ sudo service bind9 start
$ sudo service bind9 restart
$ sudo service bind9 stop
```

Configuration files :

```
/etc/bind/named.conf.local // user configuration file
/etc/bind/                  // other configuration files
```

Reference : <http://dev.mysql.com/doc/mysql-apt-repo-quick-guide/en/#apt-repo-fresh-install>

2.6. Apache2 : webpage server

Installation :

```
$ sudo apt-get install apache2
$ sudo apt-get install apache2-mod-auth-mysql // modules for mysql
$ sudo apt-get install apache2-mod-php5      // modules for php
```

Usage :

```
$ sudo service apache2 start
$ sudo service apache2 restart
$ sudo service apache2 stop
```

Test commands :

```
$ sudo netstat -tlnp
$ sudo curl -v [domain]
```

Configuration files :

/etc/apache2/apache2.conf	// main config file
/etc/apache2/ports.conf	// ports configuration
/etc/apache2/httpd.conf	// user configuration
/etc/apache2/conf.d/	// other configuration
/etc/apache2/sites-enabled/	// virtual host configuration
/etc/apache2/mods-enabled/	// modules configuration

3. Configuring Steps (green words represent my changes)

3.1. Setup MySQL database

```
$ sudo service mysql start
$ mysql
. . . // add a new user with name "root" and password "root"
$ mysql -h localhost -u root -p
mysql> CREATE DATABASE dns;
mysql> quit;
$ mysql -h localhost -u root -p < frontend/sql/dns.sql
$ mysql -h localhost -u root -p
mysql> INSERT INTO `admins` ( `userid` , `username` , `password` ) VALUES ( '' ,
'root' , MD5( 'root' ) );
```

3.2. Create new folder in /etc/bind

```
$ sudo mkdir dns-control
$ sudo chmod 777 dns-control
```

3.3. Place frontend/ to proper directory (optional, renamed as dns-control)

```
$ sudo mv [original frontend path] /var/www/dns-control
```

3.4. Change access mode of /var/www/dns-control/compiled_templates

```
$ sudo chmod 777 /var/www/dns-control/compiled_templates
```

3.5. Edit /var/www/dns-control/includes/config.inc.php

```
$db_host = "localhost";           // database server name
$db_user = "root";                // database username
$db_pass = "root";                // database user password
$db_name = "dns";                 // database name

$base_url = "localhost:8088";      // DNS webpage url
$base_path = "/var/www/dns-control"; // frontend path
$zone_path = "/etc/bind/dns-control"; // bind zonefile path
$conf_file = "/etc/bind/named.conf.local"; // bind config path
$site_name = "DNS Controller";

$dns1 = 'testdns1.hrnoc.net.';
$dns2 = 'testdns2.hrnoc.net.';
$dnshostmaster = 'hostmaster.hrnoc.net.';
$offline_mode = "false";
```

3.6. Edit /var/www/dns-control/includes/templates/named.conf.tpl

```
// delete all contents
```

3.7. Place /backend to proper directory (optional)

```
$ mv [original backend directory] ~/dns-control/backend
```

3.8. Edit /backend/includes/globals.inc.php

```
$ vim globals.inc.php
. . .
require("/var/www/dns-control/includes/config.inc.php");
. . .
```

3.9. Change access mode of all php files in /backend

```
$ chmod 755 /backend/*.php
```

3.10. Setup processqueue.php to run on a cron as often as 1 minute.

```
$ crontab -e
. . .
*/1 * * * php processqueue.php
```

3.11. Setup Apache2

```
$ cd /etc/apache2
$ sudo vim ports.conf
. . .
NameVirtualHost *:8088
Listen 8088
. . .
$ sudo vim httpd.conf
ServerAdmin b03902089@ntu.edu.tw
ServerName localhost
$ sudo vim sites-enabled/000-default
<VirtualHost *:8088>
    ServerAdmin b03902089@ntu.edu.tw
    DocumentRoot /var/www/dns-control

    <Directory />
        Options FollowSymLinks
        AllowOverride None
    </Directory>
    <Directory /var/www/dns-control>
        Options Indexes FollowSymLinks MultiViews
        AllowOverride None
        Order allow,deny
        allow from all
    </Directory>

    DirectoryIndex index.html index.php index.htm
    UseCanonicalName Off
. . .
</VirtualHost>
```

```
$ sudo service apache2 restart
$ sudo netstat -tlnp
$ sudo curl -v localhost
```

```
[qhan@localhost: ~] 1
$ sudo service apache2 restart
[sudo] password for qhan:
 * Restarting web server apache2
 ... waiting
 [ OK ]
```

```
[qhan@localhost: /etc/php5/apache2] 28
$ sudo netstat -tlnp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address          Foreign Address        State      PID/Program name
tcp      0      0 127.0.0.1:3306           0.0.0.0:*
LISTEN   1699/mysqld
tcp      0      0 0.0.0.0:111            0.0.0.0:*
LISTEN   1243/rpcbind
tcp      0      0 127.0.0.1:53             0.0.0.0:*
LISTEN   2520/dnsmasq
tcp      0      0 192.168.122.1:53          0.0.0.0:*
LISTEN   2067/dnsmasq
tcp      0      0 0.0.0.0:22              0.0.0.0:*
LISTEN   701/sshd
tcp      0      0 127.0.0.1:631            0.0.0.0:*
LISTEN   921/cupsd
tcp      0      0 0.0.0.0:8088            0.0.0.0:*
LISTEN   2069/apache2
tcp      0      0 0.0.0.0:59032           0.0.0.0:*
LISTEN   1800/rpc.mountd
tcp      0      0 0.0.0.0:55355           0.0.0.0:*
LISTEN   1800/rpc.mountd
tcp      0      0 0.0.0.0:2049            0.0.0.0:*
LISTEN   -
tcp      0      0 0.0.0.0:41091           0.0.0.0:*
LISTEN   1279/rpc.statd
tcp      0      0 0.0.0.0:57127           0.0.0.0:*
LISTEN   1800/rpc.mountd
tcp      0      0 0.0.0.0:47911           0.0.0.0:*
LISTEN   -
tcp6     0      0 ::::49578             ::::*
LISTEN   1800/rpc.mountd
tcp6     0      0 ::::53258             ::::*
LISTEN   1800/rpc.mountd
tcp6     0      0 ::::40108             ::::*
LISTEN   1279/rpc.statd
tcp6     0      0 ::::58095             ::::*
LISTEN   1800/rpc.mountd
tcp6     0      0 ::::111               ::::*
LISTEN   1243/rpcbind
tcp6     0      0 ::::22                ::::*
LISTEN   701/sshd
tcp6     0      0 ::::1:631              ::::*
LISTEN   921/cupsd
tcp6     0      0 ::::34360             ::::*
LISTEN   -
tcp6     0      0 ::::2049              ::::*
LISTEN   -
```

```
[qhan@localhost: /etc/php5/apache2] 27
$ curl -v localhost:8088
* About to connect() to localhost port 8088 (#0)
*   Trying 127.0.0.1... connected
> GET / HTTP/1.1
> User-Agent: curl/7.22.0 (i686-pc-linux-gnu) libcurl/7.22.0 OpenSSL/1.0.1 zlib/1.2.3.4 libidn/1.23 librtmp/2.3
> Host: localhost:8088
> Accept: */*
>
< HTTP/1.1 302 Found
< Date: Wed, 15 Jun 2016 04:08:19 GMT
< Server: Apache/2.2.22 (Ubuntu)
< X-Powered-By: PHP/5.3.10-1ubuntu3.23
< Set-Cookie: PHPSESSID=46e43sdati6jnalc6bvr7hamti; path=/
< Expires: Thu, 19 Nov 1981 08:52:00 GMT
< Cache-Control: no-store, no-cache, must-revalidate, post-check=0, pre-check=0
< Pragma: no-cache
< Location: login.php
< Vary: Accept-Encoding
< Content-Length: 0
< Content-Type: text/html
<
* Connection #0 to host localhost left intact
* Closing connection #0
```

3.12.Turn on PHP error message

```
cd /etc/php5/apache2
sudo vim php.ini
. . .
display_errors = On
. . .
```

3.13.Login to DNS Controller admin mode and add a new domain

The screenshots show the following sequence of actions:

- Login Screen:** The first screenshot shows the "DNS Webpage Controller Administration" login form. The "Username" field contains "root" and the "Password" field contains "****". A "login" button is visible below the fields.
- Domain List Screen:** The second screenshot shows the "Domains" screen after a successful login. It displays a message "Zone Added" and "Viewing Domains: 0". Below this, there's a "Goto" link and a footer powered by "Qhan © DNS Version 1.0.1".
- Add Zone Screen:** The third screenshot shows the "Add Zone" form. The "Domain" field contains "fuck.com", the "IP" field contains "1.0.2.8", and the "Password" field contains "fuck". A "Submit" button is at the bottom right.
- Domain List Screen (After Add):** The fourth screenshot shows the "Domains" screen again, but now it says "Viewing Domains: 1". It lists the domain "fuck.com" with IP "fuck" and provides "Edit" and "Delete" links. The footer remains the same.

3.14.Login to DNS Controller and start edit records

The image consists of three vertically stacked screenshots of the "DNS Webpage Controller" application running in Mozilla Firefox on a Mac OS X desktop.

Screenshot 1: Login Form

This screenshot shows the login page. The URL is `localhost:8088/login.php`. The form contains:

- Domain: `fuck.com`
- Password: `****`
- A `login` button

At the bottom, it says "Powered by [Qhan](#) © DNS Version 1.0.1".

Screenshot 2: Viewing DNS Record

This screenshot shows the main dashboard after logging in. The URL is `localhost:8088/index.php`. It displays the following DNS records for the domain `fuck.com`:

- A RECORDS**

*	1.0.2.8	Edit	Delete
mail	1.0.2.8	Edit	Delete
www	1.0.2.8	Edit	Delete
- CNAME RECORDS**
- MX RECORDS**

10	mail.fuck.com.	Edit	Delete
----	----------------	----------------------	------------------------

At the bottom, it says "Powered by [Qhan](#) © DNS Version 1.0.1".

Screenshot 3: Add Record

This screenshot shows the "Add Record" page. The URL is `localhost:8088/addrecord.php`. It contains three forms:

- A Record**: Name of Record (ex: www) `shit`, Address (IP of your server) `1.0.2.9`, [Submit](#) button.
- CNAME Record**: Name of Record (ex: forums), Address (ex: `www.yourdomain.com`)
- MX Record**: Priority , Address , [Submit](#) button.

At the bottom, it says "Powered by [Qhan](#) © DNS Version 1.0.1".

DNS Webpage Controller - Mozilla Firefox

DNS Webpage Controller x DNS Webpage Controller x +

localhost:8088/index.php | Search | Jun 15 17:34:51 QhanMac

Google Gmail YouTube Facebook myNTU NTU Mail Yahoo coding ntu tools games animations other

Home | Add Record | Raw Zone | Logout

Viewing DNS Record: fuck.com : IP 1.0.2.8

[Change Main IP](#)

A RECORDS

*	1.0.2.8	Edit	Delete
mail	1.0.2.8	Edit	Delete
shit	1.0.2.9	Edit	Delete
www	1.0.2.8	Edit	Delete

CNAME RECORDS

MX RECORDS

10	mail.fuck.com.	Edit	Delete
----	----------------	----------------------	------------------------

Powered by [Qhan](#) © DNS Version 1.0.1

DNS Webpage Controller - Mozilla Firefox

DNS Webpage Controller x DNS Webpage Controller x +

localhost:8088/addrecord.php | Search | Jun 15 17:39:02 QhanMac

Google Gmail YouTube Facebook myNTU NTU Mail Yahoo coding ntu tools games animations other

Home | Add Record | Raw Zone | Logout

Add Record:

A Record

Name of Record (ex: www)	Address (IP of your server)
wtf	1.0.2.256

CNAME Record

Name of Record (ex: forums)	Address (ex: www.yourdomain.com)
-----------------------------	----------------------------------

MX Record

Priority	Address
----------	---------

Powered by [Qhan](#) © DNS Version 1.0.1

DNS Webpage Controller - Mozilla Firefox

DNS Webpage Controller x DNS Webpage Controller x +

localhost:8088/index.php?failed=1&msg=Invalid+IP | Search | Jun 15 17:39:04 QhanMac

Google Gmail YouTube Facebook myNTU NTU Mail Yahoo coding ntu tools games animations other

Home | Add Record | Raw Zone | Logout

Invalid IP

Viewing DNS Record: fuck.com : IP 1.0.2.8

[Change Main IP](#)

A RECORDS

*	1.0.2.8	Edit	Delete
mail	1.0.2.8	Edit	Delete
shit	1.0.2.9	Edit	Delete
www	1.0.2.8	Edit	Delete

CNAME RECORDS

MX RECORDS

10	mail.fuck.com.	Edit	Delete
----	----------------	----------------------	------------------------

Powered by [Qhan](#) © DNS Version 1.0.1