Fall 2020

Assignment 6 ( 10 points )

*Due Date : Nov 29 11:59 PM*

*Nov 10* [*https://youtu.be/UpYi3W2QR7M*](https://youtu.be/UpYi3W2QR7M)

*Nov 12* [*https://youtu.be/p5\_m2oGaoEw*](https://youtu.be/p5_m2oGaoEw)

*Nov 17* [*https://youtu.be/RfsO1RYASnY*](https://youtu.be/RfsO1RYASnY)

*Nov 21* [*https://youtu.be/MykTbn4bQ8k*](https://youtu.be/MykTbn4bQ8k) *// Assignment demo. Important edits*

*Nov 23* [*https://youtu.be/5yoYGcCOalE*](https://youtu.be/5yoYGcCOalE) *// Troubleshooting*

*Nov 25* [*https://youtu.be/pahquUp\_nv4*](https://youtu.be/pahquUp_nv4) *// Project Demo*

*Office Hours  
https://calendar.google.com/calendar/u/0/selfsched?sstoken=UUZvTW92TXJYVllzfGRlZmF1bHR8MDY0YTFkZDU3NGM2NTM1MmE0YzQzNjIzZjdlMWRlM2M*

## | prerequisites

* Restore the VM to a **vanilla**state.  
    
  *That is restore all VMs and do not select any additional packages or add-ons during the main installation screen. In Ubuntu please remember to add SSH so that you and I can connect to the server.*

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## | csv

To retrieve your CSV please download it from the URL below. Make sure to replace USERNAME with the first part of your **roary001**@fiu.edu email.

i.e http://users.cis.fiu.edu/~ggome002/files/**roary001**.csv

|  |
| --- |
| // csv headers  username,first,last,gender,dob,country,color,fruits,os,shell,permission |

| Scripts  
  
All scripts must be placed on the /root folder. Scripts can not be executed prior to submission.

# Named // Fedora only

**https://www.digitalocean.com/community/tutorials/how-to-configure-bind-as-a-private-network-dns-server-on-centos-7**

\* All IPs must follow the structure below, where XY is your last 2 digits of your PANTHERID

USER1 IN A 10.10.XY.1

USER2 IN A 10.10.XY.2

USER3 IN A 10.10.XY.3

...

USER4 IN A 10.10.XY.255

There are 145 COLORs, therefore each color will use a unique XY + i based on the current color  
  
alice\_blue 10.10.XY.1 -- 10.10.XY.255

antique\_white 10.10.( XY + 1 ).1 -- 10.10.( XY + 1 ).255

aqua 10.10.( XY + 2 ).1 -- 10.10.( XY + 2 ).255

...

yellow\_green 10.10.( XY + 3 ).2 -- 10.10.( XY + 3 ).255

# Replace **COLOR** and **USERNAME** with your own values. Please keep everything in lowercase.

# Install Bind.

$ yum install bind bind-utils -y

# Create the following folders + permissions for later use.

$ chmod 755 /etc/named

$ mkdir /etc/named/zones

# Append to the end of /etc/named.conf The line below.

include "/etc/named/**USERNAME**.conf.local";

# All zones must be of type COLOR.USERNAME.cts4348.fiu.edu.

# Add forward zone as shown below inside the USERNAME.conf.local file.

zone "**COLOR**.**USERNAME**.cts4348.fiu.edu" {

type master;

file "/etc/named/zones/db.**COLOR**.**USERNAME**.cts4348.fiu.edu";

};

# All zone data must contain the following records. Add both SOA and NS records. Follow the example for COLOR.USERNAME.cts4348.fiu.edu

$TTL 604800

@ IN SOA ns1.cts4348.fiu.edu. **USERNAME**.cts4348.fiu.edu. (

3 ; Serial

604800 ; Refresh

86400 ; Retry

2419200 ; Expire

604800 ) ; Negative Cache TTL

; name servers - NS records

IN NS ns1.cts4348.fiu.edu.

IN NS ns2.cts4348.fiu.edu.

USER1 IN A 10.10.31.1

USER2 IN A 10.10.31.2

USER3 IN A 10.10.31.3

...

USER4 IN A 10.10.31.3

## | Static Content // 3pts

* Add all 1k users to DNS as A records.
* Ensure that all users are broken into colors.
* Keep an eye on the IPs. You must have them incremental as shown above.

## | Dynamic Content // 2pts

Create a script named /root/update.sh to perform the following changes.

* Convert all IPs to 192.168.XY.1 -- 192.168.XY.255

# LDAP // CentOS only

# Install openldap.

$ yum install -y openldap openldap-clients openldap-servers

# Make sure to create your own password using your PANTHERID

$ slappasswd -s PANTHERID

{SSHA}IQCUAOY...PEn+luW

# Copy the example DB as shown on the line below

$ cp /usr/share/openldap-servers/DB\_CONFIG.example /var/lib/ldap/DB\_CONFIG

# Start slapd

$ systemctl start slapd

# Import schemas

$ ldapadd -Y EXTERNAL -H ldapi:/// -D "cn=config" -f /etc/openldap/schema/cosine.ldif

$ ldapadd -Y EXTERNAL -H ldapi:/// -D "cn=config" -f /etc/openldap/schema/nis.ldif

$ ldapadd -Y EXTERNAL -H ldapi:/// -D "cn=config" -f /etc/openldap/schema/inetorgperson.ldif

# Configure LDAP admin settings

$ ldapmodify -Y EXTERNAL -H ldapi:///

dn: olcDatabase={2}hdb,cn=config

changetype: modify

replace: olcSuffix

olcSuffix: dc=**USERNAME**,dc=fiu,dc=edu

dn: olcDatabase={2}hdb,cn=config

changetype: modify

replace: olcRootDN

olcRootDN: cn=admin,dc=**USERNAME**,dc=fiu,dc=edu

dn: olcDatabase={2}hdb,cn=config

changetype: modify

replace: olcRootPW

olcRootPW: {SSHA}IQCUAOY...PEn+luW <- REPLACE ME

dn: olcDatabase={1}monitor,cn=config

changetype: modify

replace: olcAccess

olcAccess: {0}to \* by dn.base="gidNumber=0+uidNumber=0,cn=peercred,cn=external,cn=auth" read by dn.base="cn=admin,dc=**USERNAME,**dc=fiu,dc=edu" read by \* none

# Configure LDAP groups and users OU

$ ldapadd -x -D cn=admin,dc=**USERNAME**,dc=fiu,dc=edu -w 1234567

dn: dc=**USERNAME**,dc=fiu,dc=edu

dc: **USERNAME**

objectClass: top

objectClass: domain

dn: ou=people,dc=**USERNAME**,dc=fiu,dc=edu

ou: people

objectClass: top

objectClass: organizationalUnit

dn: ou=group,dc=**USERNAME**,dc=fiu,dc=edu

ou: group

objectClass: top

objectClass: organizationalUnit

# Basic User and Group add example

$ ldapadd -x -D cn=admin,dc=**USERNAME,**dc=fiu,dc=edu -w 1234567

dn: uid=roary001,dc=**USERNAME**,dc=fiu,dc=edu

uid: roary001

objectClass: person

objectClass: top

objectClass: inetOrgPerson

sn: panther

cn: roary

dn: cn=group,dc=**USERNAME**,dc=fiu,dc=edu

objectClass: top

objectClass: posixGroup

gidNumber: 678

# Modify object in LDAP

$ ldapmodify -x -D cn=admin,dc=**USERNAME,**dc=fiu,dc=edu -w 1234567

dn: cn=group,dc=**USERNAME**,dc=fiu,dc=edu

changetype: modify

add: memberuid

memberuid: roary001

|  |
| --- |
| // csv headers  username,first,last,gender,dob,country,color,fruits,os,shell,permission |

dn: uid=username,ou=people,dc=**USERNAME**,dc=fiu,dc=edu  
uid <- username  
cn <- full name ( first + last)   
sn <- last name  
mobile <- gender  
description <- dob  
~~postalcode <- os~~

title <- shell

## | Static Content // 3pts

* Add all 1k users to LDAP with the data outlined above.
* Add all 145 colors as groups to LDAP. All groups need to have a unique gID
* Add the users to the right colors in LDAP

## 

## 

## | Dynamic Content // 2pts

Create a script named /root/update.sh to perform the following changes.

* Remove users from color group that use OS = windows
* Add groups for all permissions on the CSV and populate them with users that use OS = mac