Assignment 6-4 Cisco Configuration Templates

Name: _____

Objective

Look at templates as a way to configure Cisco devices quicker and with more accuracy. Other venders' products also similar tools to automate configuration. Many are now using programming languages as well. The goal is to automate a repetitive task – one you might be asked to do dozens of times in a new installation or major upgrade.

Task 1

Let's look at the configuration of the Main router from the Module 4 assignments.

- The lines in red would be consistent on both routers and switches.
- The lines in blue apply only to routers.
- The lines in green apply to switches.
- The remaining black lines are defaults supplied by the device.
- Note I've removed all extra ! lines.

```
Main#show run
Building configuration...

Current configuration : 1463 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname Main   (Name would need to be added)
!
no logging console
!
enable secret 5 $1$mERr$gzv89F7IwFptX3urMu3zV/    (Needs to be in clear text)
!
ip cef
no ipv6 cef
!
license udi pid CISCO2901/K9 sn FTX152409PC
!
no ip domain-lookup
!
interface GigabitEthernet0/0
 no ip address    (IP, subnet mask, and no shutdown would need to be added)
 duplex auto
 speed auto
!
interface GigabitEthernet0/0.1
 description Link to VLAN 1
 encapsulation dot1Q 1 native
```

```
 ip address 10.0.0.1 255.255.255.0
!
interface GigabitEthernet0/0.100
 description Link to VLAN 100
 encapsulation dot1Q 100
 ip address 10.0.1.1 255.255.255.0
!
interface GigabitEthernet0/0.200
 description Link to VLAN 200
 encapsulation dot1Q 200
 ip address 10.0.2.1 255.255.255.0
!
interface GigabitEthernet0/0.300
 description Link to VLAN 300
 encapsulation dot1Q 300
 ip address 10.0.3.1 255.255.255.0
!
interface GigabitEthernet0/1
 ip address 10.0.5.1 255.255.255.0  (IP, subnet mask, and no shutdown would need to be
added)
 duplex auto
 speed auto
!
interface Vlan1
 no ip address  (IP, subnet mask, and ip default-gateway would need to be added)
 shutdown
!
ip classless
!
ip flow-export version 9
!
banner motd ^C

This is an example of a Message of the Day for the Main router!

^C
!
line con 0
 history size 20
 exec-timeout 30 0
 password 7 08285F4D01160A1B
 login
!
line aux 0   (could be done like Line con 0)
!
line vty 0 4
 exec-timeout 30 0
 password 7 08285F4D01160A1B   (Needs to be in clear text)
 login
line vty 5 15
 exec-timeout 30 0
 password 7 08285F4D01160A1B   (Needs to be in clear text)
```

```
 login
!
end
Main#
```

It seems that with a little editing we could strip this down to a single generic starting config file or possibly one for routers and one for switches.

Task 2

Let's look at wat a generic switch starting configuration file might look like.

The first ! lines are just comment lines to remind us how to use it. They will be ignored by the device.

```
! This is a generic Switch Start-UP configuration. It will work on most Cisco Layer 2 switches.
! The hostname, VLAN, and default gateway need to be configured. See **CHANGE ME**
! Note: If the edits aren't made, no harm is done - that coding is ignored.
! The INFO 341 class passwords are set, timeouts are at 30 minutes.
! The write statement at the end does a copy run start.
!
! 1) Make any edits. There are three (3). See **CHANGE ME**
! 2) Copy the entire thing. These comment lines will be ignored.
! 3) Paste it in the CLI at either Switch> or in Enable mode Switch# (Right-click & choose
Paste)
!
enable
!
config t
!
service password-encryption
!
hostname **CHANGE ME**
!
no logging console
enable secret info341
!
!
!
no ip domain-lookup
!
!
interface Vlan1
 ip address **CHANGE ME**
 no shutdown
 exit
ip default-gateway **CHANGE ME**
!
banner motd #

**********************************************************************

    **** WARNING UNAUTHORIZED ACCESS TO THIS DEVICE IS PROHIBITED ****
```

```
This system is restricted solely to authorized users for legitimate business
purposes only. Any actual or attempted unauthorized access, use or modification
of this system is strictly prohibited. Unauthorized users are subject to company
disciplinary proceedings and/or criminal and civil penalties under state, federal
or other applicable domestic and foreign laws.

The use of this system may be monitored and recorded for administrative and
security reasons. Anyone accessing this system expressly consents to such
monitoring and is advised that if such monitoring revels possible evidence of
criminal activity, we will provide the evidence of such activity to the law
enforcement officials.

All users must comply with our security instructions regarding the protection
of organization information.

**************************************************************************

#
!
!
line con 0
 password ischool
 login
 history size 30
 exec-timeout 30 0
!
line vty 0 15
 exec-timeout 30 0
 password ischool
 login
 history size 30
!
end
!
write
```

Looking at our template.

The !s are include to give the CPU time to finish a command before the next command starts.

The following code allows us to paste our config as soon as the switch starts up and offers the Switch> prompt.

```
enable
!
config t
!
```

Warning! Because our passwords are in clear text, we need to ensure that our template is kept in a secure place.

```
enable secret info341
password ischool
```

The MOTD just reflects the fact that we don't need to type it each time. We might as well make it realistic. Obviously it could be changed as needed.

The **Change Me** items would normally be in the lab instructions or on the network diagrams. If they are not updated, no harm is done when the script runs. The items just need to be configured later.

Finally, because you will be editing your templates, it is a good idea to keep a clean copy somewhere so that you have it when you forget and save your latest changes over your template.

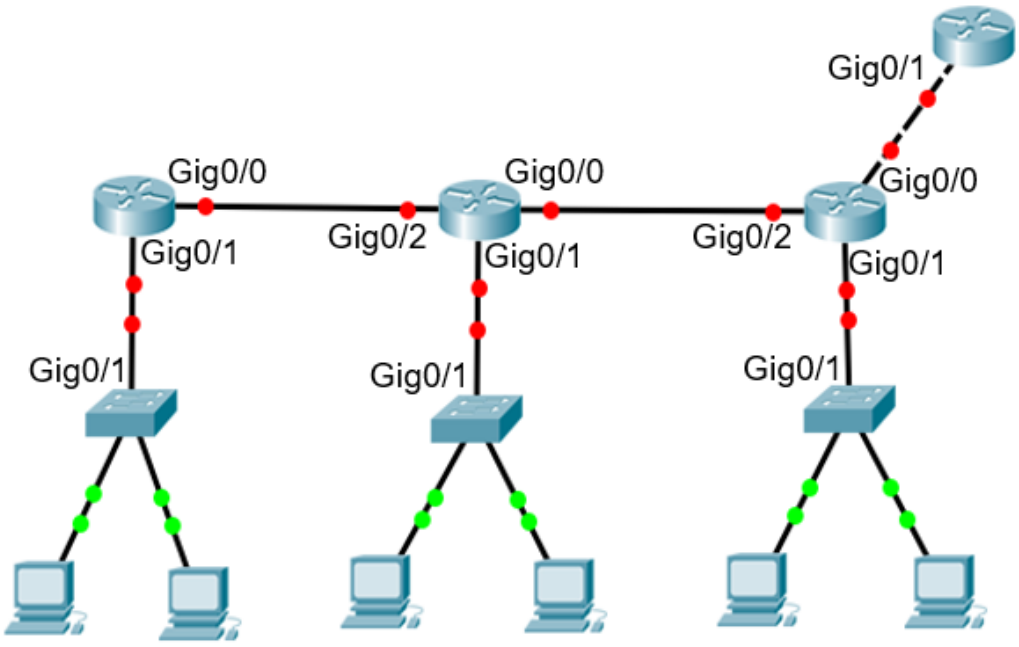
Task 3

Open the two configuration templates included in the assignment with your text editor (like Notepad). Don't use Word because it will add hidden codes that the devices won't understand.

Look them over to see what they do and what they need.

Task 4

Launch Packet Tracer and using four 2911 routers and three 2960 switches create the following topology. Use straight-through cables to make the connections.



Since this section is focused on productivity with templates there is another practice that you can follow to speed up new installations (if you have the choice). Standardize on the 0 interface as if it is outside facing (Gigabit 0/0utside) and the 1 interface as inside (Gigabit0/1nside). There is no difference in the interfaces, but the more consistency you can introduce the fewer connection and configuration mistakes you will make.

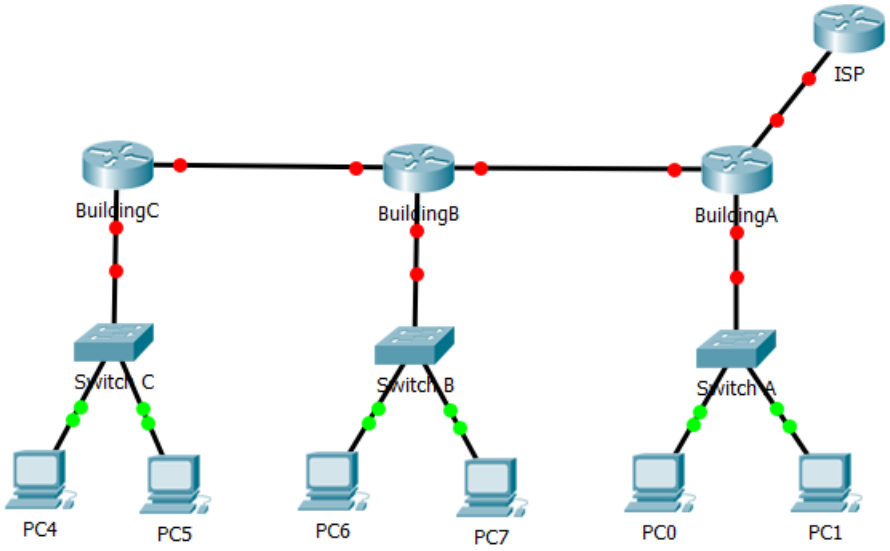
Consistency in a network installation makes it easier for:

- Support employees to learn to become comfortable with the layout.
- Consultants and outsiders to grasp what is going on.
- Operations and auditing employees to identify problems.

Save your Packet Tracer files as ***yourname*6-4-1**.

Task 5

Use the templates and the following information to configure the routers and switches.



Here is the kind of information that you would get.

Hostname	Gigabit0/0	Gigabit0/1	Gigabit0/2	VLAN 1	Def Gateway
ISP		1.2.2.1 /30			
BuildingA	1.2.2.2 /30	10.0.1.1 /24	10.0.0.1 /30		
BuildingB	10.0.0.2 /30	10.0.2.1 /24	10.0.0.5 /30		
BuildingC	10.0.0.6 /30	10 0.3.1 /24	-		
SwitchA				10.0.1.2 /24	10.0.1.1 /24
SwitchB				10.0.2.2 /24	10.0.2.1 /24
SwitchC				10 0.3.2 /24	10 0.3.1 /24
/24 = 255.255.255.0			**/30** = 255.255.255.252		

In this environment, any of the PCs could be used to run a console cable to each of the devices in turn. If you do all the switches or routers first, editing the template between changes should become pretty automatic.

Green connection balls should confirm your router configurations.

Show Run will also confirm your configurations.

The switches should be able to ping their router's interfaces but no further. The routers should be able to ping their switch and any adjacent router but no further.

Task 6

Save your Packet Tracer files as ***yourname*6-4-2**.

We will use them in the next exercise.