

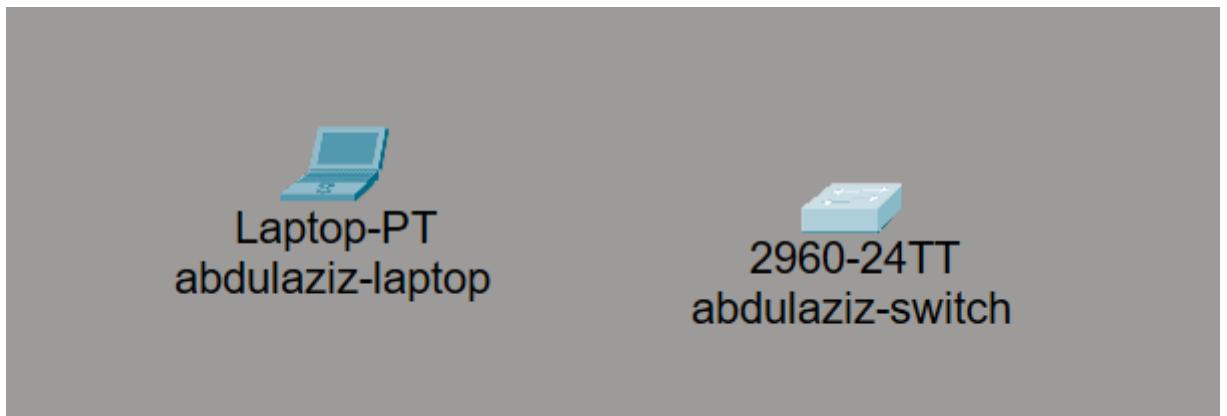
Practice 1 – Basics of working with the interface of Cisco equipment. Remote connection to network equipment.

Student name: Bakhramov Abdulaziz

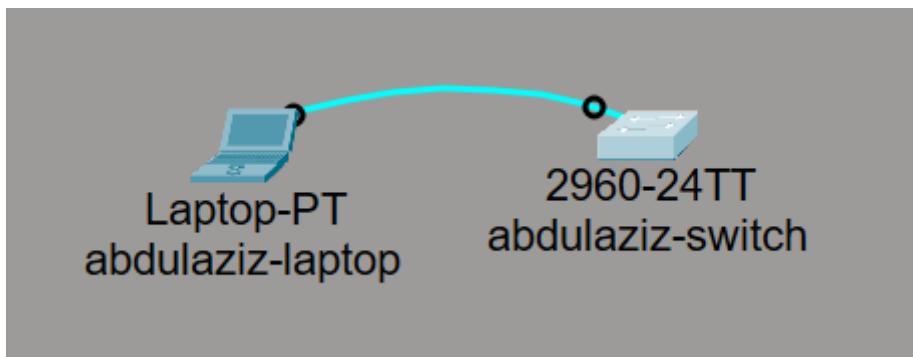
Student ID: 24B031692

Group: Mon 11:00-13:00

1. Drag a PC and a Cisco 2960 switch onto the workspace.



2. Connect Laptop (RS-232) to Switch (Console) using console cable



3. Accessing Switch via Terminal

The screenshot shows a terminal window titled "Terminal" with the following content:

```
Motherboard serial number      : FOC1009SRIZ
Power supply serial number    : AZS1007032H
Model revision number         : B0
Motherboard revision number   : B0
Model number                  : WS-C2960-24TT-L
System serial number          : FOC1010X104
Top Assembly Part Number     : 800-27221-02
Top Assembly Revision Number : A0
Version ID                   : V02
CLEI Code Number              : COM3L00BRA
Hardware Board Revision Number: 0x01

Switch Ports Model           SW Version        SW Image
----- ----- -----
*   1 26   WS-C2960-24TT-L  15.0(2)SE4       C2960-LANBASEK9-M

Cisco IOS Software, C2960 Software (C2960-LANBASEK9-M), Version 15.0(2)SE4, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2013 by Cisco Systems, Inc.
Compiled Wed 26-Jun-13 02:49 by mnguyen

Press RETURN to get started!

Switch>
Switch>enable
Switch#clear
% Incomplete command.
Switch#|
```

Top

4. Setup hostname and banner

The screenshot shows a terminal window titled "Terminal" with the following content:

```
Motherboard revision number   : B0
Model number                  : WS-C2960-24TT-L
System serial number          : FOC1010X104
Top Assembly Part Number     : 800-27221-02
Top Assembly Revision Number : A0
Version ID                   : V02
CLEI Code Number              : COM3L00BRA
Hardware Board Revision Number: 0x01

Switch Ports Model           SW Version        SW Image
----- ----- -----
*   1 26   WS-C2960-24TT-L  15.0(2)SE4       C2960-LANBASEK9-M

Cisco IOS Software, C2960 Software (C2960-LANBASEK9-M), Version 15.0(2)SE4, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2013 by Cisco Systems, Inc.
Compiled Wed 26-Jun-13 02:49 by mnguyen

Press RETURN to get started!

Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname AbdulazizSwitch
AbdulazizSwitch(config)#banner motd @ This is Abdulaziz's Switch. Unauthorized access is
prohibited! @
AbdulazizSwitch(config)#
```

Top

5. Set password and secret

The screenshot shows a terminal window titled "Terminal" with the following configuration commands:

```
Enter configuration commands, one per line. End with CNTL/Z.
AbdulazizSwitch(config)#enable password 1234
AbdulazizSwitch(config)#enable secret 123
AbdulazizSwitch(config)#^Z
AbdulazizSwitch#
%SYS-5-CONFIG_I: Configured from console by console

AbdulazizSwitch#show runni
AbdulazizSwitch#show running-config
Building configuration...

Current configuration : 1238 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname AbdulazizSwitch
!
enable secret 5 $1$mERr$3HhIgMGBA/9qNmgzccuxv0
enable password 1234
!
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
--More-- |
```

6. Password encryption

The screenshot shows a terminal window titled "Terminal" with the following configuration commands:

```
AbdulazizSwitch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
AbdulazizSwitch(config)#service pass
AbdulazizSwitch(config)#service password-encryption
AbdulazizSwitch(config)#^Z
AbdulazizSwitch#
%SYS-5-CONFIG_I: Configured from console by console
^Z
AbdulazizSwitch#show running-config
Building configuration...

Current configuration : 1243 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname AbdulazizSwitch
!
enable secret 5 $1$mERr$3HhIgMGBA/9qNmgzccuxv0
enable password 7 08701E1D5D
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
--More-- |
```

7. Set up authorization to connect to the console.

The screenshot shows a terminal window titled "Terminal" with the following configuration commands:

```
%SYS-5-CONFIG_I: Configured from console by console
^Z
AbdulazizSwitch#show running-config
Building configuration...

Current configuration : 1243 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname AbdulazizSwitch
!
enable secret 5 $1$mERr$3HhIgMGBA/9qNmgzccuxv0
enable password 7 08701E1D5D
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!

AbdulazizSwitch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
AbdulazizSwitch(config)#line console 0
AbdulazizSwitch(config-line)#password 1234
AbdulazizSwitch(config-line)#login
AbdulazizSwitch(config-line)#!
```

8. Set up a user account

The screenshot shows a terminal window titled "Terminal" with the following configuration commands:

```
AbdulazizSwitch(config-line)#username Bakhramov privilege 15 password 123
AbdulazizSwitch(config)#line vty 0 4
AbdulazizSwitch(config-line)#login local
AbdulazizSwitch(config-line)#transport input telnet
AbdulazizSwitch(config-line)#^Z
AbdulazizSwitch#
%SYS-5-CONFIG_I: Configured from console by console

AbdulazizSwitch#show running-config
Building configuration...

Current configuration : 1357 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname AbdulazizSwitch
!
enable secret 5 $1$mERr$3HhIgMGBA/9qNmgzccuxv0
enable password 7 08701E1D5D
!
!
!
!
username Bakhramov privilege 15 password 7 08701E1D
!
!
!
spanning-tree mode pvst
--More--
```

9. Configuring IP Address for Remote Access

The screenshot shows a terminal window titled "Terminal" with the following configuration commands:

```
Current configuration : 1357 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname AbdulazizSwitch
!
enable secret 5 $1$mERr$3HhIgMGBA/9qNmgzccuxv0
enable password 7 08701E1D5D
!
!
!
username Bakhramov privilege 15 password 7 08701E1D
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id

AbdulazizSwitch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
AbdulazizSwitch(config)#interface Vlan1
AbdulazizSwitch(config-if)#ip address 192.168.0.5 255.255.255.0
AbdulazizSwitch(config-if)#no shutdown

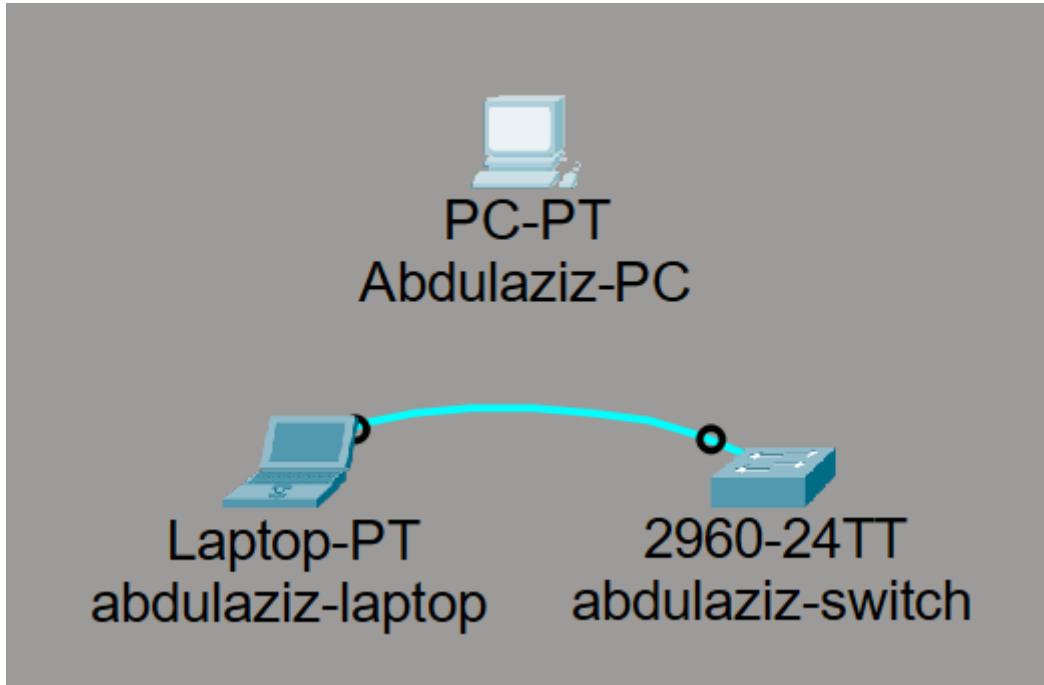
AbdulazizSwitch(config-if)#
%LINK-3-UPDOWN: Interface Vlan1, changed state to down
```

10. Saving startup config

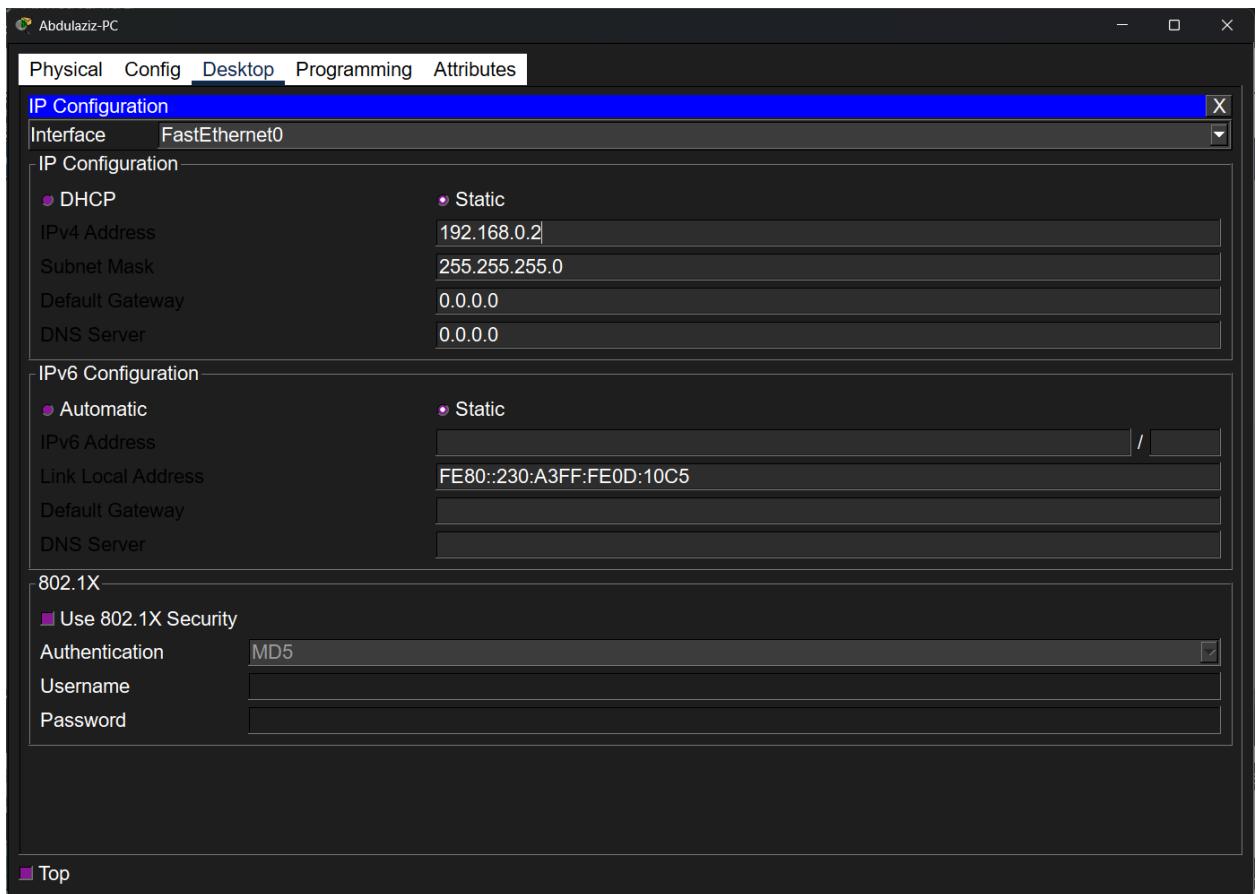
The screenshot shows a terminal window titled "Terminal" with the following commands to save the configuration:

```
^Z
AbdulazizSwitch#show startup-config
startup-config is not present
AbdulazizSwitch#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
AbdulazizSwitch#show startup-config
Using 1370 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname AbdulazizSwitch
!
enable secret 5 $1$mERr$3HhIgMGBA/9qNmgzccuxv0
enable password 7 08701E1D5D
!
!
!
username Bakhramov privilege 15 password 7 08701E1D
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
--More--
```

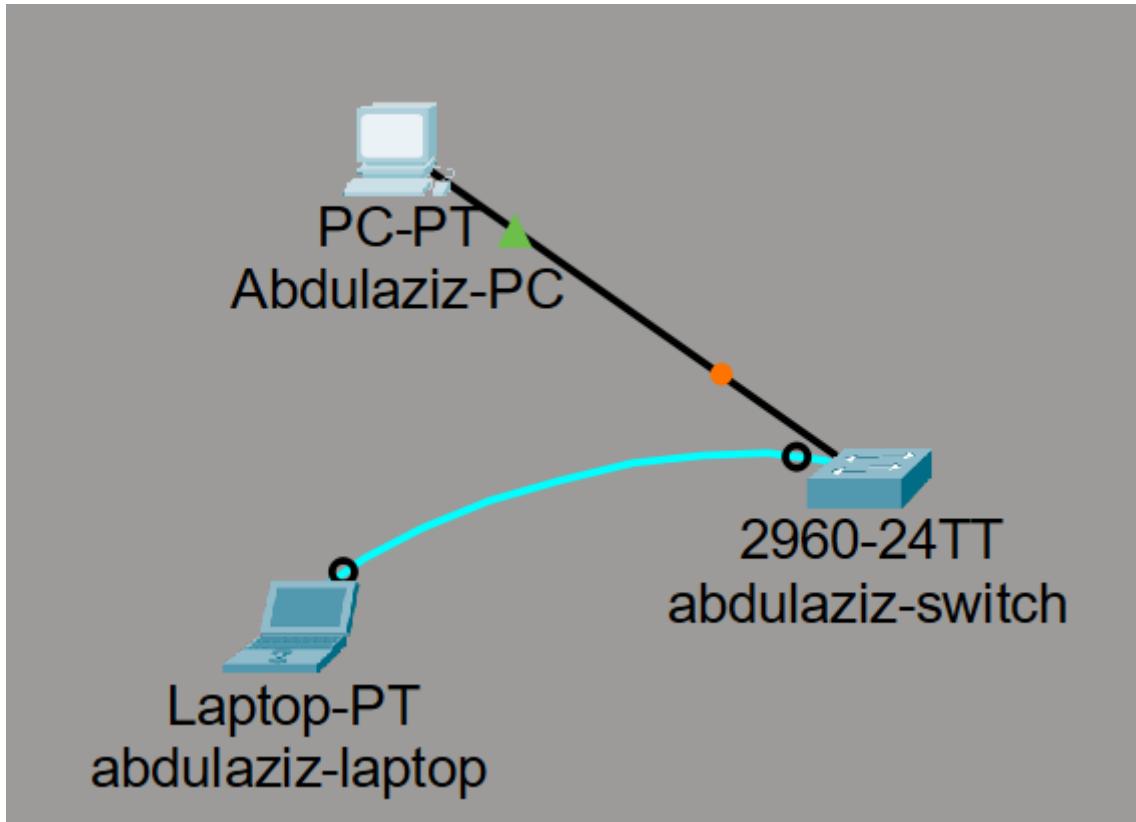
11. PC added



12. Set up PC ip address



13. Connected Copper-Cable



14. Ping command

```
Abdulaziz-PC
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.0.5

Pinging 192.168.0.5 with 32 bytes of data:

Request timed out.
Reply from 192.168.0.5: bytes=32 time<1ms TTL=255
Reply from 192.168.0.5: bytes=32 time<1ms TTL=255
Reply from 192.168.0.5: bytes=32 time<1ms TTL=255

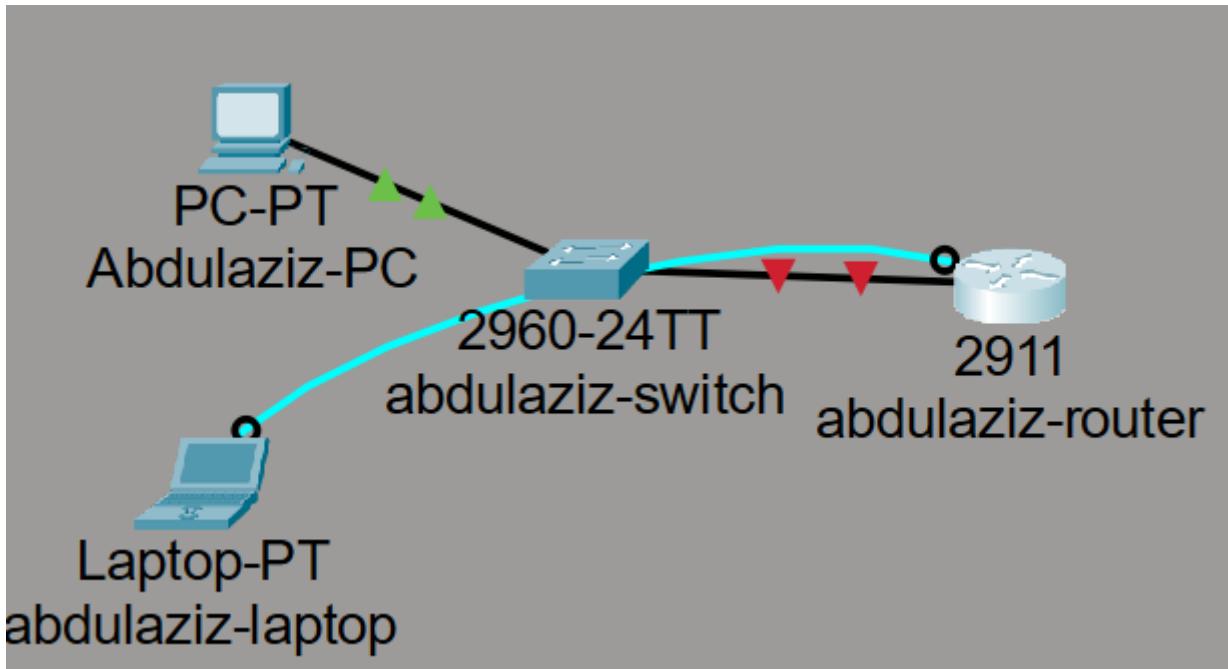
Ping statistics for 192.168.0.5:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

15. Telnet connection

```
User Access Verification  
Username: Bakhramov  
Password:  
% Login invalid  
  
Username: Bakhramov  
Password:  
% Login invalid  
  
Username: Ba  
% Username: timeout expired!  
[Connection to 192.168.0.5 closed by foreign host]  
C:\>telnet 192.168.0.5  
Trying 192.168.0.5 ...Open This is Abdulaziz's Switch. Unauthorized access is prohibited!  
  
User Access Verification  
Username: Bakhramov  
Password:  
% Login invalid  
  
Username: Bakhramov  
Password:  
% Login invalid  
  
Username: Bakhramov  
Password:  
AbdulazizSwitch#
```

16. Router added



17. Basic router configuration

The screenshot shows a terminal window titled "Terminal" with the following text output:

```
abdulaziz-laptop
Physical Config Desktop Programming Attributes
Terminal
export@cisco.com.

Cisco CISCO2911/K9 (revision 1.0) with 491520K/32768K bytes of memory.
Processor board ID FTX152400KS
3 Gigabit Ethernet interfaces
DRAM configuration is 64 bits wide with parity disabled.
255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: 
Press RETURN to get started!

Router>no
Translating "no"...domain server (255.255.255.255)
% Unknown command or computer name, or unable to find computer address

Router>enable
Router#conf
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname AbdulazizRouter
AbdulazizRouter(config)#enable password 24B031692
AbdulazizRouter(config)#banner motd @ This is Abdulaziz's Router. Unauthorized access is prohibited!
@
AbdulazizRouter(config)#
Top
```

18. Console line configuration

The screenshot shows a terminal window titled "Terminal" with the following text output:

```
abdulaziz-laptop
Physical Config Desktop Programming Attributes
Terminal
--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: 
Press RETURN to get started!

Router>no
Translating "no"...domain server (255.255.255.255)
% Unknown command or computer name, or unable to find computer address

Router>enable
Router#conf
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname AbdulazizRouter
AbdulazizRouter(config)#enable password 24B031692
AbdulazizRouter(config)#banner motd @ This is Abdulaziz's Router. Unauthorized access is prohibited!
@
AbdulazizRouter(config)#
AbdulazizRouter(config)#service password-encryption
AbdulazizRouter(config)#enable secret enc24B031692
AbdulazizRouter(config)#
AbdulazizRouter(config)#line console 0
AbdulazizRouter(config-line)#password consolePass
AbdulazizRouter(config-line)#login
AbdulazizRouter(config-line)#exit
AbdulazizRouter(config)#
Top
```

19. Creating user account

The screenshot shows a terminal window titled "Terminal" with the following text:

```
--- System Configuration Dialog ---  
Would you like to enter the initial configuration dialog? [yes/no]:  
Press RETURN to get started!  
  
Router>no  
Translating "no"...domain server (255.255.255.255)  
% Unknown command or computer name, or unable to find computer address  
  
Router>enable  
Router#conf  
Router#configure terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)#hostname AbdulazizRouter  
AbdulazizRouter(config)#enable password 24B031692  
AbdulazizRouter(config)#banner motd @ This is Abdulaziz's Router. Unauthorized access is prohibited!  
@  
AbdulazizRouter(config)#|  
AbdulazizRouter(config)#service password-encryption  
AbdulazizRouter(config)#enable secret enc24B031692  
AbdulazizRouter(config)#  
AbdulazizRouter(config)#line console 0  
AbdulazizRouter(config-line)#password consolePass  
AbdulazizRouter(config-line)#login  
AbdulazizRouter(config-line)#exit  
AbdulazizRouter(config)#username Bakhramov privilege 15 password 123  
AbdulazizRouter(config)#
```

20. Configuring IP Address on Router Interface

The screenshot shows a terminal window titled "Terminal" with the following text:

```
GigabitEthernet0/2      unassigned      YES unset  administratively down down  
Vlan1                  unassigned      YES unset  administratively down down  
AbdulazizRouter#interface GigabitEthernet0/0  
          ^  
% Invalid input detected at '^' marker.  
  
AbdulazizRouter#interface G  
AbdulazizRouter#interface GigabitEthernet0/0  
          ^  
% Invalid input detected at '^' marker.  
  
AbdulazizRouter#interface GigabitEthernet0/2  
          ^  
% Invalid input detected at '^' marker.  
  
AbdulazizRouter#interface GigabitEthernet0/0  
          ^  
% Invalid input detected at '^' marker.  
  
AbdulazizRouter#configure terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
AbdulazizRouter(config)#interface GigabitEthernet0/0  
AbdulazizRouter(config-if)#ip address 192.168.0.1 255.255.255.0  
AbdulazizRouter(config-if)#no shutdown  
  
AbdulazizRouter(config-if)#  
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up  
  
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up  
AbdulazizRouter(config-if)#exit
```

21. Configuring Remote Access (Telnet)

The screenshot shows a terminal window titled "Terminal" with the following configuration session:

```
AbdulazizRouter#interface G
AbdulazizRouter#interface GigabitEthernet0/0
^
% Invalid input detected at '^' marker.

AbdulazizRouter#interface GigabitEthernet0/2
^
% Invalid input detected at '^' marker.

AbdulazizRouter#interface GigabitEthernet0/0
^
% Invalid input detected at '^' marker.

AbdulazizRouter#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
AbdulazizRouter(config)#interface GigabitEthernet0/0
AbdulazizRouter(config-if)#ip address 192.168.0.1 255.255.255.0
AbdulazizRouter(config-if)#no shutdown

AbdulazizRouter(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

AbdulazizRouter(config-if)#exit
AbdulazizRouter(config)#line vty 0 4
AbdulazizRouter(config-line)#login local
AbdulazizRouter(config-line)#transport input telnet
AbdulazizRouter(config-line)#exit
AbdulazizRouter(config)#

[Top] [Рабочий стол 2]
```

22. Verify the configurations

The screenshot shows a terminal window titled "Terminal" with the following output of the "show running-config" command:

```
AbdulazizRouter(config-line)#login local
AbdulazizRouter(config-line)#transport input telnet
AbdulazizRouter(config-line)#exit
AbdulazizRouter(config)#
%SYS-5-CONFIG_I: Configured from console by console

AbdulazizRouter#show running-config
Building configuration...

Current configuration : 1007 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname AbdulazizRouter
!
!
!
enable secret 5 $1$mERr$yn/p0NU/LN2Fa4lxj0GYG.
enable password 7 0873186C594A54414B59
!
!
!
!
ip cef
--More-- |
```

23. Verify interface status and IP addresses

The screenshot shows a terminal window titled "Terminal" with a blue header bar. The window contains the following text:

```
Current configuration : 1007 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname AbdulazizRouter
!
!
!
enable secret 5 $1$mERr$Syn/p0NU/LN2Fa4lxj0GYG.
enable password 7 0873186C594A54414B59
!
!
!
ip cef
no ipv6 cef
!

AbdulazizRouter#show ip interface brief
Interface          IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0  192.168.0.1    YES manual up        up
GigabitEthernet0/1  unassigned     YES unset administratively down down
GigabitEthernet0/2  unassigned     YES unset administratively down down
Vlan1              unassigned     YES unset administratively down down
AbdulazizRouter#
```

At the bottom left of the terminal window, there is a small purple square icon followed by the word "Top".

24. Saving router configurations

The screenshot shows a terminal window titled "Terminal" with a blue header bar. The window contains the following text:

```
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname AbdulazizRouter
!
!
!
enable secret 5 $1$mERr$Syn/p0NU/LN2Fa4lxj0GYG.
enable password 7 0873186C594A54414B59
!
!
!
ip cef
no ipv6 cef
!

AbdulazizRouter#show ip interface brief
Interface          IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0  192.168.0.1    YES manual up        up
GigabitEthernet0/1  unassigned     YES unset administratively down down
GigabitEthernet0/2  unassigned     YES unset administratively down down
Vlan1              unassigned     YES unset administratively down down
AbdulazizRouter#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
AbdulazizRouter#
```

At the bottom left of the terminal window, there is a small purple square icon followed by the word "Top".

25. Testing Router

The screenshot shows a terminal window titled "Command Prompt" running on a Windows operating system. The window title bar includes the text "Abdulaziz-PC". The menu bar at the top has tabs: Physical, Config, Desktop, Programming, and Attributes. The "Config" tab is currently selected. The main area of the window displays the following command-line session:

```
Physical Config Desktop Programming Attributes
Command Prompt
Password:
% Login invalid

Username: Bakhrakov
Password:
AbdulazizSwitch#exit

[Connection to 192.168.0.5 closed by foreign host]
C:\>ping 192.168.0.1

Pinging 192.168.0.1 with 32 bytes of data:

Reply from 192.168.0.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>telnet 192.168.0.1
Trying 192.168.0.1 ...Open This is Abdulaziz's Router. Unauthorized access is prohibited!

User Access Verification

Username: Bakhrakov
Password:
AbdulazizRouter#
```

A small "Top" button is visible at the bottom left of the window.

Questions:

1. To move from User Mode to Privileged Mode, you must enter the "enable" command
2. The "enable password" command stores the password in clear, readable text. The "enable secret" command is a more secure option that encrypts the password, and it has a higher priority than the standard enable password
3. To configure an IP address on the VLAN1 interface, you must enter the interface configuration mode, assign the IP and subnet mask, and then administratively enable the interface
Switch(config)# interface Vlan1
Switch(config-if)# ip address 192.168.0.5 255.255.255.0
Switch(config-if)# no shutdown
4. The "running-config" is the current configuration stored in RAM, which is lost if the device reboots. The "startup-config" is the configuration stored in NVRAM that is loaded when the device boots up. To save the changes, use the command "copy running-config startup-config" or the short form "write memory" (wr mem).

