Ex.No:14	COMMUNICATION USING HDLC
Date:	

AIM:

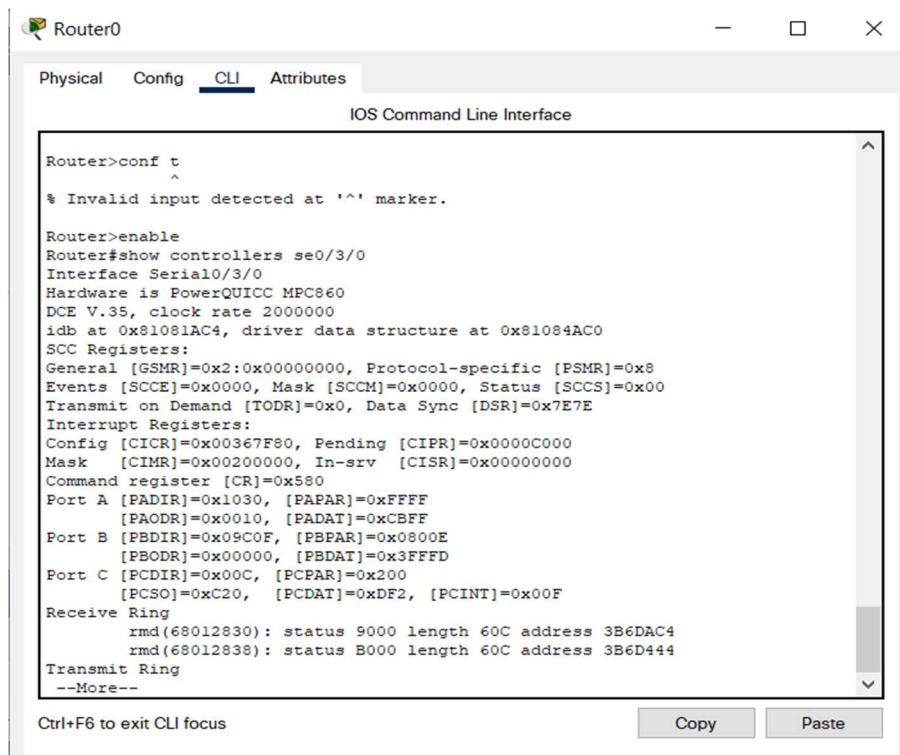To configure HDLC Protocol using routers in Cisco Packet Tracer.

PROCEDURE:

1. Connect the devices as shown in the below figure.
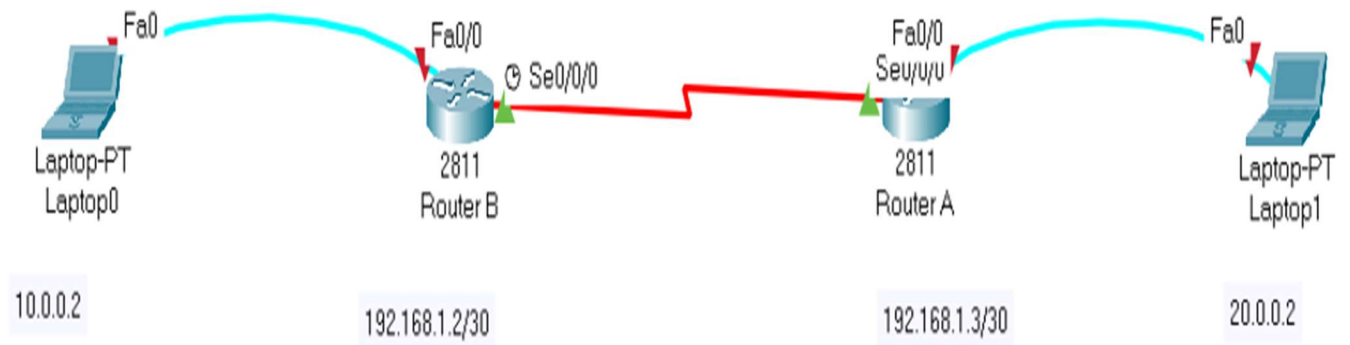
2 . Initial IP configuration.

Device / Interface	IP Address	Connected with
PC0 / Fa0	10.0.0.2 /8	Router0 / Fa0/0
PC1 / Fa0	20.0.0.2 /8	Router1 / Fa0/0
Router0 / Se0/3/0	192.168.1.2 /30	Router1 / Se0/3/0
Router1 / Se0/3/0	192.168.1.3 /30	Router0 / Se0/3/0

3 . Use the connected laptops to find the DCE and DTE routers
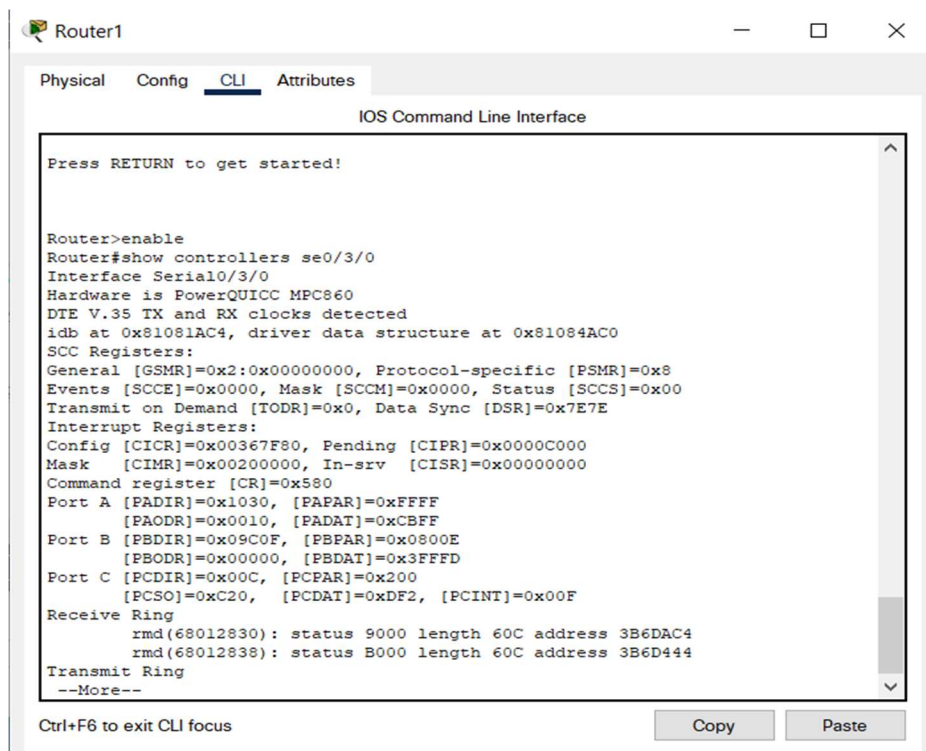

Router0 — IOS Command Line Interface

```
Router>conf t
         ^
% Invalid input detected at '^' marker.

Router>enable
Router#show controllers se0/3/0
Interface Serial0/3/0
Hardware is PowerQUICC MPC860
DCE V.35, clock rate 2000000
idb at 0x81081AC4, driver data structure at 0x81084AC0
SCC Registers:
General [GSMR]=0x2:0x00000000, Protocol-specific [PSMR]=0x8
Events [SCCE]=0x0000, Mask [SCCM]=0x0000, Status [SCCS]=0x00
Transmit on Demand [TODR]=0x0, Data Sync [DSR]=0x7E7E
Interrupt Registers:
Config [CICR]=0x00367F80, Pending [CIPR]=0x0000C000
Mask   [CIMR]=0x00200000, In-srv  [CISR]=0x00000000
Command register [CR]=0x580
Port A [PADIR]=0x1030, [PAPAR]=0xFFFF
       [PAODR]=0x0010, [PADAT]=0xCBFF
Port B [PBDIR]=0x09C0F, [PBPAR]=0x0800E
       [PBODR]=0x00000, [PBDAT]=0x3FFFD
Port C [PCDIR]=0x00C, [PCPAR]=0x200
       [PCSO]=0xC20,  [PCDAT]=0xDF2, [PCINT]=0x00F
Receive Ring
        rmd(68012830): status 9000 length 60C address 3B6DAC4
        rmd(68012838): status B000 length 60C address 3B6D444
Transmit Ring
 --More--
```

Router1 — IOS Command Line Interface

```
Press RETURN to get started!


Router>enable
Router#show controllers se0/3/0
Interface Serial0/3/0
Hardware is PowerQUICC MPC860
DTE V.35 TX and RX clocks detected
idb at 0x81081AC4, driver data structure at 0x81084AC0
SCC Registers:
General [GSMR]=0x2:0x00000000, Protocol-specific [PSMR]=0x8
Events [SCCE]=0x0000, Mask [SCCM]=0x0000, Status [SCCS]=0x00
Transmit on Demand [TODR]=0x0, Data Sync [DSR]=0x7E7E
Interrupt Registers:
Config [CICR]=0x00367F80, Pending [CIPR]=0x0000C000
Mask   [CIMR]=0x00200000, In-srv  [CISR]=0x00000000
Command register [CR]=0x580
Port A [PADIR]=0x1030, [PAPAR]=0xFFFF
       [PAODR]=0x0010, [PADAT]=0xCBFF
Port B [PBDIR]=0x09C0F, [PBPAR]=0x0800E
       [PBODR]=0x00000, [PBDAT]=0x3FFFD
Port C [PCDIR]=0x00C, [PCPAR]=0x200
       [PCSO]=0xC20,  [PCDAT]=0xDF2, [PCINT]=0x00F
Receive Ring
        rmd(68012830): status 9000 length 60C address 3B6DAC4
        rmd(68012838): status B000 length 60C address 3B6D444
Transmit Ring
 --More--
```

4. Configure the routers with the following parameters

Router0 being the DCE, clock rate has to be configured on Router0 serial 0/3/0 interface.
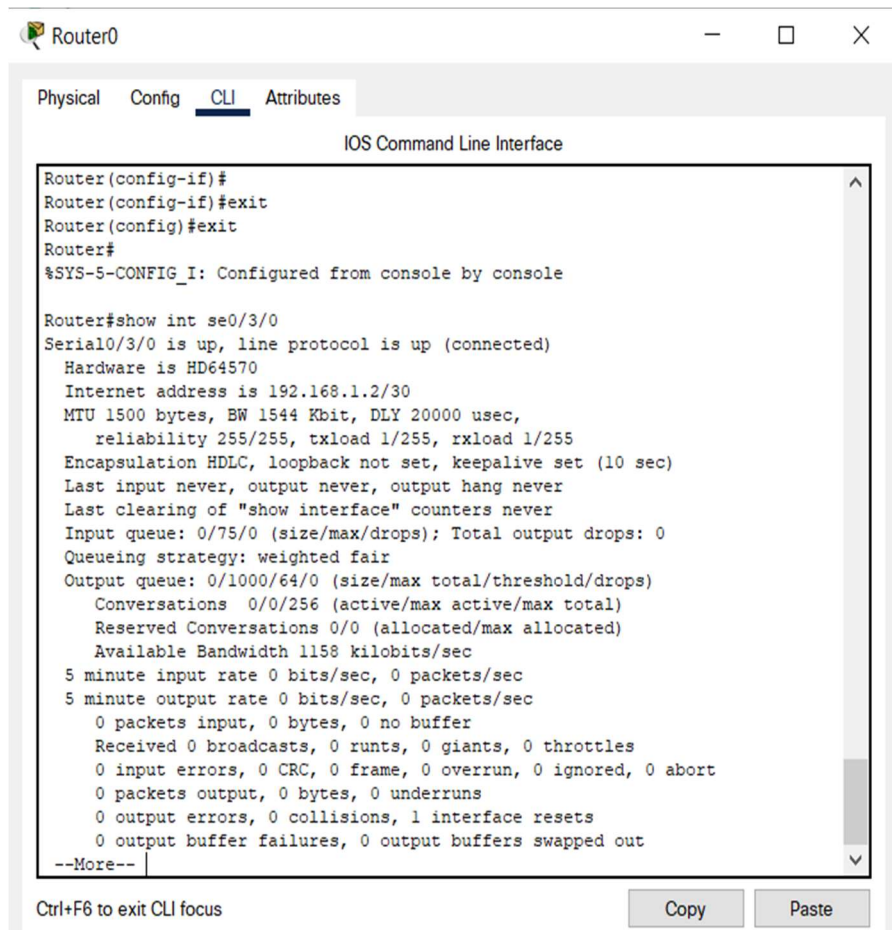

5. Then, configure HDLC encapsulation and IP address on Router0 serial 0/3/0 interface. The **encapsulation hdlc** configures HDLC protocol on the serial interface. Router0 being the DCE side of the serial link, the 192.168.1.3 /30 IP address is configured on Router0 serial 0/3/0 interface. Don't forget to enable the interface with a no shutdown command.

6. The show interfaces serial 0/3/0 confirms that HDLC encapsulation is enabled on the interface : Encapsulation HDLC, loopback not set, keepalive set (10 sec)
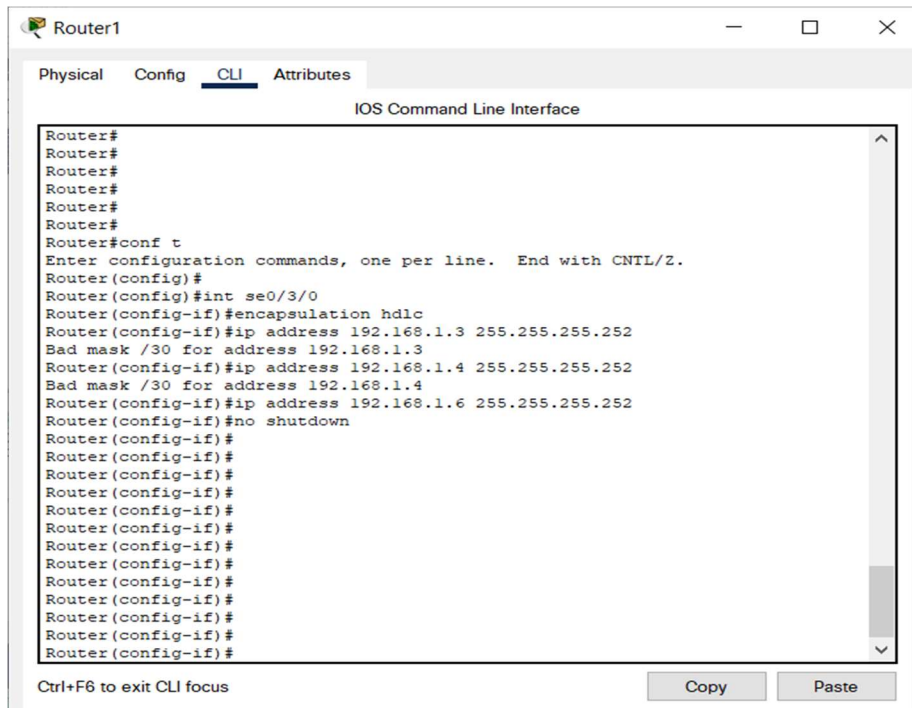

7. Finally, configure HDLC encapsulation and IP address on Router1 serial 0/3/0 interface. The link comes up as both routers are correctly configured.

```
Router1                                               —    □    ✕

Physical   Config   CLI   Attributes
                    IOS Command Line Interface
Router#
Router#
Router#
Router#
Router#
Router#
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#
Router(config)#int se0/3/0
Router(config-if)#encapsulation hdlc
Router(config-if)#ip address 192.168.1.3 255.255.255.252
Bad mask /30 for address 192.168.1.3
Router(config-if)#ip address 192.168.1.4 255.255.255.252
Bad mask /30 for address 192.168.1.4
Router(config-if)#ip address 192.168.1.6 255.255.255.252
Router(config-if)#no shutdown
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#

Ctrl+F6 to exit CLI focus                       Copy        Paste
```

8. NOW CHECK THE CONNECTION BY PINGING EACH OTHER.

First we go to Router0 and ping with Router1:

Router#ping 192.168.1.6

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 198.168.1.6, timeout is 2 seconds:

!!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 26/28/33 ms

Now we go to Router1 and test the network by pinging the Router0 interface.

Router#ping 192.168.1.2

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.1.2, timeout is 2 seconds:

!!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 25/28/32 ms

RESULT :

Hence successfully, configured HDLC Protocol using routers in Cisco Packet Tracer.