Ip routing:
ip routing means sending packets from one network to other network.there are lot of ways to send packets from one networks to another networks.finding best path is another main thing in the routing.and the router do it by calculating a lot of things
basically there are three types of routing

1)static routing
2)default routing
3)dynamic routing

default route:

when a router does now know what is the next destination path of information baout the next router then the router have to configure at the default mode

how to do it in a cisco device:
1)first give the ip of the routers
2)two network ip local will be different network
3)and the two router extarnal network will be in the same network
4) give the ip to the pc
5) give command from router 1
ip route 0.0.0.0 0.0.0.0 <next router ip>
and router 2
ip route 0.0.0.0 0.0.0.0 <next router ip>

so there are different network now we add the two router with a the serial interface to do that we have to add a device two different device.

1)first giving ip to the router1 lan and also the serial interface ip

```
Router>enable

Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#do show ip interface brief
Interface IP-Address OK? Method Status Protocol
GigabitEthernet0/0 unassigned YES unset administratively down down
GigabitEthernet0/1 unassigned YES unset administratively down down
GigabitEthernet0/2 unassigned YES unset administratively down down
Serial0/3/0 10.0.0.1 YES manual administratively down down
Serial0/3/1 unassigned YES unset administratively down down
Vlan1 unassigned YES unset administratively down down
Router(config)#interface GigabitEthernet0/0
Router(config-if)#ip address 192.168.0.1 255.255.255.0
Router(config-if)#no shutdown


Router(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


Router(config-if)#exit
Router(config)#do 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
Serial0/3/0 10.0.0.1 YES manual administratively down down
Serial0/3/1 unassigned YES unset administratively down down
Vlan1 unassigned YES unset administratively down down
Router(config)#interface Serial0/3/0
Router(config-if)#ip address 10.0.0.1 255.0.0.0
Router(config-if)#no shutdown


%LINK-5-CHANGED: Interface Serial0/3/0, changed state to down
Router(config-if)#
```

2) giving ip to the second router nad the serial interface

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R2
R2(config)#do show ip interface brief
Interface IP-Address OK? Method Status Protocol
GigabitEthernet0/0 unassigned YES unset administratively down down
GigabitEthernet0/1 unassigned YES unset administratively down down
GigabitEthernet0/2 unassigned YES unset administratively down down
Serial0/3/0 unassigned YES unset administratively down down
Serial0/3/1 unassigned YES unset administratively down down
Vlan1 unassigned YES unset administratively down down
R2(config)#interface GigabitEthernet0/0
R2(config-if)#ip address 192.168.1.1 255.255.255.0
R2(config-if)#no shutdown

R2(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

R2(config-if)#exit
R2(config)#interface Serial0/3/1
R2(config-if)#ip address 10.0.0.2 255.0.0.0
R2(config-if)#no shutdown

R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/3/1, changed state to up

R2(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/3/1, changed state to up
```

give the pc ip within the same lan and test it

after that we have to add the two network with the routing command

go to the first router and then type the

ip route <network of the other lan> <subnet of the other lan> <entry point of that lan>

1) go to the router R1

Router>enable

Router#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 0.0.0.0 0.0.0.0 192.168.0.2
Router(config)#

then go to the second router:

R2#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#ip route 0.0.0.0 0.0.0.0 192.168.0.1
R2(config)#

done