Introduction:
A Packet Filtering Firewall is one of the basic protection mechanisms placed on a network. Firewalls could be installed and configured in several ways, depending upon the level of protection needed. In this assignment, you will explore how to configure a firewall. As usual, you will be using Linux as our base operating system, and use `ipchains` to make it act as a firewall.

Prerequisites:
Read about `ipchains` from the following links:
- [http://www.tldp.org/HOWTO/IPCHAINS-HOWTO.html](http://www.tldp.org/HOWTO/IPCHAINS-HOWTO.html)
- [http://www.flounder.net/ipchains/ipchains-howto.html](http://www.flounder.net/ipchains/ipchains-howto.html)

A firewall configuration tool can be found at:

Your Task:
This is a group lab and below is the layout of your groups network and student network:

![Network Diagram](image)

Part A:
Configure the Internal node to meet the following requirements:
- Rules for outgoing traffic:
  - You local machine should be able to communicate with the student network with out any restrictions.
- Rules for incoming traffic:
  - All incoming connections requests should be rejected, with the following exception:
    - Your machine should respond to Ping from network 10.0.0.0 (netmask: 255.255.255.0)
Your machine should accept any incoming SSH, HTTP, FTP requests from Network 10.0.0.0 (netmask: 255.255.0.0)
Your machine should accept any incoming telnet connections from the machine 10.0.0.1 and 10.0.0.110.
All multicast traffic should be allowed
OSPF traffic should be allowed

Part B:
Flush all firewall rules from your internal node and configure your network router to be a firewall with the following requirements:

- Rules for outgoing traffic from internal node:
  - Outgoing SSH, and ICMP traffic should be allowed
  - All multicast traffic should be allowed
  - OSPF traffic should be allowed
  - All other traffic should be blocked

- Rule for incoming traffic to protected server:
  - All incoming SSH, http, SMTP, Ping, and anonymous ftp should be permitted
  - All multicast traffic should be allowed
  - OSPF traffic should be allowed
  - All other incoming traffic should be blocked

Part C:
Answer the following question:
1) In your own words describe how ipchains work?
2) Why does ipchains need kernel support?
3) What is the difference between input, output and forward chains?
4) What is the difference between deny, reject, and accept?
5) What the problem with ipchains in terms of robustness, speed and functionalities?
6) What are the other alternative packages that can be used instead of ipchains in Linux?
7) Any idea why multicast and OSPF traffic should is allowed? What are the drawbacks of allowing multicast traffic?

What to Submit?
1) ipchains rules fro both part A and B. If you used the firewall tool then only submit the rule you changed.
2) Answers for part C