Pseudocode for *final.py*

```
def build(self):

    # Set up hosts

    Set up host 1
    Set up host 2
    Set up host 3
    Set up host 4  (untrusted host)
    Set up host 5  (server)

    # Set up switches

    Set up switch 1        (Floor 1)
    Set up switch 2        (Floor 2)
    Set up switch 3        (Floor 3)
    Set up switch 4        (Core Switch)
    Set up switch 5        (Data Center Switch)

    # Link each host to their directly related switch first

    Link (switch 1, host 1)
    Link (switch 2, host 2)
    Link (switch 3, host 3)
    Link (switch 4, host 4)
    Link (switch 5, host 5)

    # Link Switches and Core Switches
    Link (switch 1, switch 4)
    Link (switch 2, switch 4)
    Link (switch 3, switch 4)
    Link (switch 4, switch 4)
```

Explanation: In this script, we simply set up each node in this network and joined them piece by piece to build the topology constructed within the lab.

Pseudocode for *final_controller.py*

```
def do_final (self, packet, packet_in, port_on_switch, switch_id):

        # Set-up all basic elements from lab 3
        # Add time-out timers
        # Add protocol finding methods

        # For each switch, present the logical operations it will perform

        For switch 4:

                If IPv4 & ICMP, then:

                        Based on the destination IP, allow the packet to send to their locations by
                        testing against the destination IP.

                If IPv4 & TCP, then:

                        Based on the destination IP, allow the packet to send to their locations by
                        testing against the destination IP.

                If neither, then:

                        Flood packet

        If switch 1:

                If receiving packet (from Host 1)
                        Send to out port of switch 1

                If receiving packet (from Switch 4)
                        Send to in port for host 1
        Else If switch 2:

                If receiving packet (from Host 2)
                        Send to out port of switch 2

                If receiving packet (from Switch 4)
                        Send to in port for host 2
```

Else If switch 3:

    If receiving packet (from Host 3)
        Send to out port of switch 3

    If receiving packet (from Switch 3)
        Send to in port for host 3

Else If switch 5:

    If receiving packet (from Server)
        Send to out port of switch 5

    If receiving packet (from Switch 5)
        Send to Server

Else:
    Flood

Explanation: In this script, we simply check packets at switch 4 because that is the core switch to/from where all packets go. From there, we redirect to the individuals witches to send to their respective hosts.