1. Configure your host’s routing table using `route` so that the specification below is satisfied. Add a `direct` route for each of the three network interfaces on your host. Add enough `indirect` routes, including possibly a default route, to the routing table so that there is a route to each IP address on the little-internet. Once you are done, examine the routing table on your host using the `netstat -rn` command. Please record and briefly clarify your findings. Also, put a copy of the route commands in the `/etc/rc.local` file, so that they are executed when your host reboots.

**Little-Internet Specification**

If your host number is $x$, and a packet is destined for host $y$, then:

(a) **If** $x = y$ **then** the packet is immediately delivered.

(b) **If** $x < y$ **then** the packet should be forwarded to a host with number $z$ such that $x < z \leq y$.

(c) **If** $x > y$ **then** the packet is forwarded to a host with number $z$ such that $y \leq z < x$. 

_____/15 pts.
2. After configuring your host’s routing tables, use **ping** to determine which IP addresses are accessible from your host. Record your findings in a table on a separate sheet. Each entry of the table should include the date and time, the IP address of the host that was pinged, and a summary of the observations.

_____/5 pts.

3. Use **traceroute** to determine the route taken to a particular IP address, that was accessible from your host, using ping in Part 2. Record your findings including the date and time, the IP address of the host for which traceroute was applied, and a summary of the observations. Does the route taken comply with the little-internet specification?.

_____/5 pts.

4. The **six degrees of separation** myth says that everyone in the world is connected to everyone else by no more than six degrees of separation, i.e., six people in a chain. This was made into a movie, and there is also a nice article by Jon Kleinberg (see links on the course webpage) that discusses this myth with regard to the internet. Based on your results in Part 3, how many hosts on average did you cross when communicating with the destination of your choice?. Record your findings.

_____/5 pts.

For your team’s lab report, hand in this sheet, your observations, and your results with ping and traceroute.