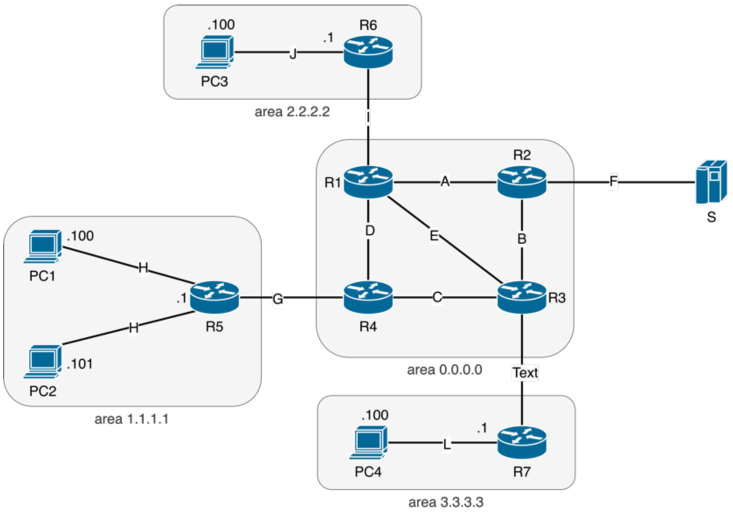
Network Infrastructures Labs 20/21
3-rd Homework



Collision Domain Name	Subnet ID
A	1.0.1.2/31
B	1.0.1.4/31
C	1.0.1.6/31
D	1.0.1.8/31
E	1.0.1.10/31
F	1.0.1.12/31
G	1.0.1.14/31
H	192.168.0.0/26
I	1.0.1.16/31
J	192.168.1.0/24
K	1.0.1.18/31
L	192.168.2.0/26

Given the topology in figure, reproduce it in **Kathara**. You must use the Container names and collision domain names specified in the figure above.
For /31 subnets, the addresses are assigned with the following rule: the lower router number takes the even address, e.g. R1 takes 1.0.1.2 with respect to R2.

X is the last digit of your matricula number.

The points are assigned as follows:

- **+ 0.25 point**: configure every subnet via static */etc/network/interfaces*
- **+ 0.25 point**: configure TAP interface on **R2**. Configure default gateways in order to allow the subnets to go to the internet.
- **+ 0.5 point**: Configure **R5** as DHCP server for subnet *H*. **PC1** And **PC2** are DHCP clients (ignore IP addresses specified in the figure if you do this point).
- **+ 0.5 point**: Configure OSPF on (*and only on*) routers in order to have a fully-routable network. Respect areas given in figure.
- **+ 0.5 point**: Create a user called *exam_user* with password *exam* on S and allow **PC3** to access **S** trough SSH via asymmetric authentication. **(This must be done at startup)**
- **+ 1 point**: Configure SSH remote port forwarding between PC3 and S. Redirect remote port 900X of S on local port 808X of PC3. **(This must be done at startup)**
- **+ 1 point**: Configure VPN between S and R5 as we have seen during lectures, with R5 both as VPN server and CA. Push **H** subnet through the VPN. **S** should be able to ping the two PCs. **(This must be done at startup)**
- **+2 points:** Set up a firewall on R5. The Firewall should allow connection from/to H subnet only if initialized by H subnet, blocking all connections from outside if not previously initialized. This should not interfere with the operation of the VPN. **(This must be done at startup)**
- **+2 points:** Configure S as DNS server for the entire network. Domain is *exam.org*. Every host should have an A record as *hostname.exam.org*, where hostname is e.g. R1. Every host of the network should use S as DNS server. **(This must be done at startup)**
- **+ 3 extra points:** Start apache2 on PC4. Port-map R7(1.0.1.19):800X to PC4:80. One host accessing R7:8000X should see the PC4's Apache welcome page. Test it with *links*. (Hint: search for DNAT with iptables) **(This must be done at startup)**