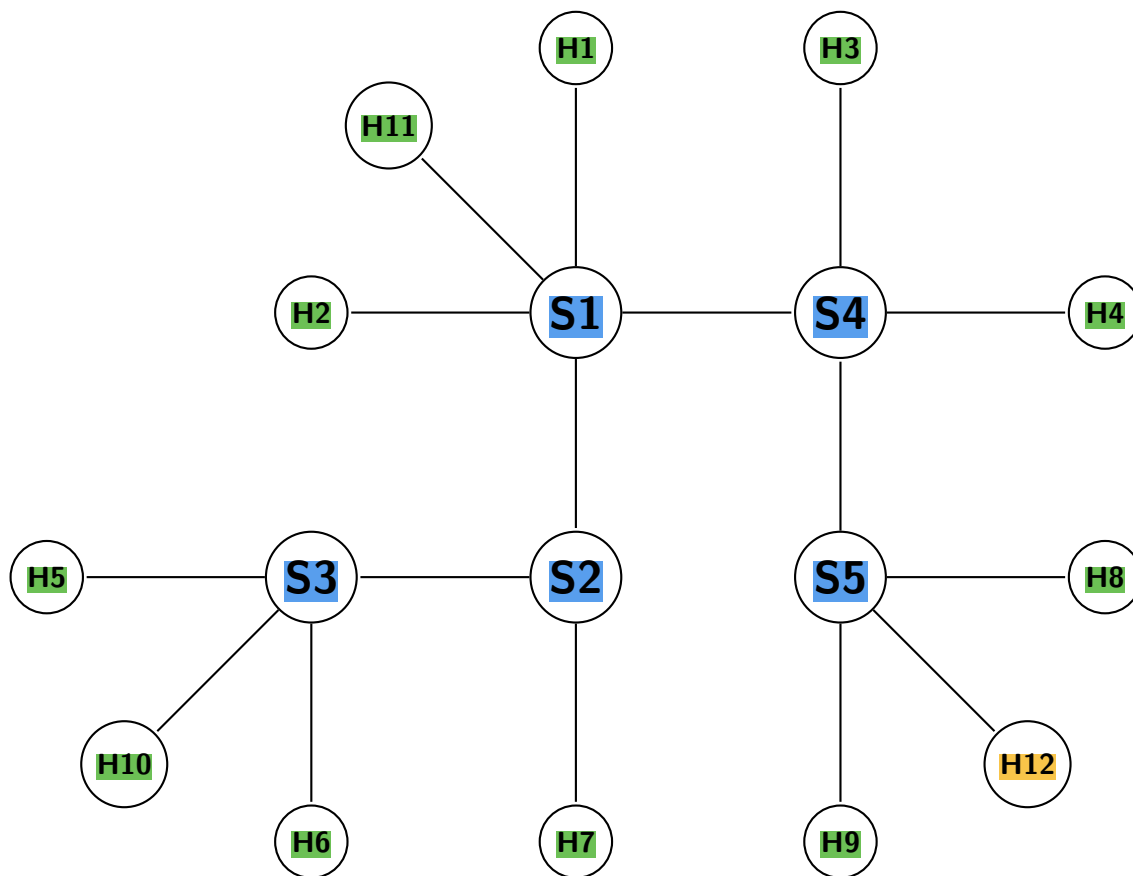


1. Write a computer program (Python) to simulate the following internetwork.

- It has 5 subnets and each host (H1 through H9) is attached to one of these subnets.
- The MTU of each subnet has been given.
- It has 5 routers (S1 through S5).



	Subnet1	Subnet2	Subnet3	Subnet4	Subnet5
Hosts	H1, H2, H11	H5, H6, H10	H7	H3, H4	H8, H9, H12
MTU (in bytes)	1500	500	1000	500	2000

- Writing the program:
 - Assign valid ip addresses, subnet mask (and hence subnet number) to each host in this internetwork.
 - Your program must assign a unique file to each of these hosts and routers. The files associated with routers should manually be configured having filled-up routing(forwarding) tables so that ip packets arriving at the corresponding router forwarded according to the destination ip-address present in the packet. The entries in the forwarding table of a router will typically be as follows:

destination subnet number	call function associated to the appropriate router/host
destination subnet number	call function associated to the appropriate router/host
...	...

- Input to your program:
 - Source Ip address
 - Msg (Expected big msg)
 - Desitination Ip address
- What it suppose to do:
 - Compute the subnet number corresponding to the source ip address
 - Compute the Msg length and compare it with the MTU of the above subnet
 - If Msg length is smaller than MTU, make a ip like packet as follows:

```

-----
source ip address
-----
destination ip address
-----
sequence number
-----
off set
-----
Msg
-----

```

- If Msg length is larger than MTU, make appropriate fragmented ip-packets

```

-----
source ip address
-----
destination ip address
-----

```

sequence number

off set

Fragmented Msg with length

as per the MTU of the current subnet

- Call the default router function with this packet(s) as input
- Router function will compute subnet number of source ip address and destination ip address
- Check if they are same or not: accordingly the default router function will call the host function or the next router function and at the same time prints the received packets.
- The forwarding is continued in this fashion at every router.
- The destination host receive possibly many fragmented packets.
- It reassemble them and prints out the original message and the source ip address