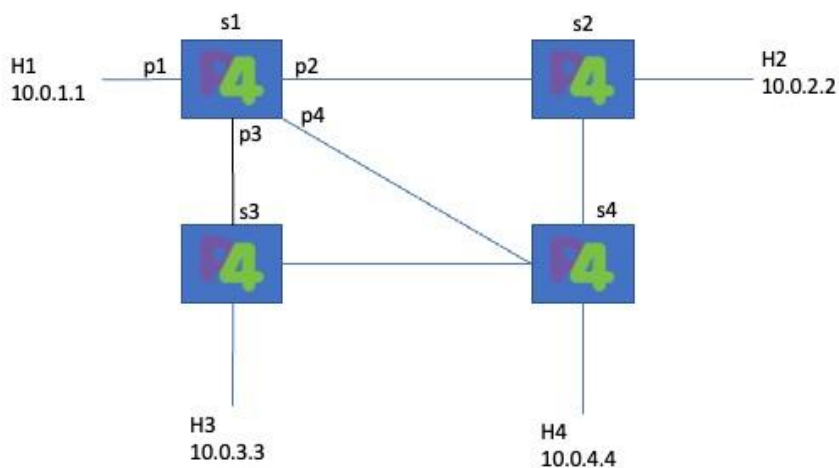


Task 2 – Load Balancer

In this activity, you will be responsible for developing a load balancer using the P4 language. The load balancer must be able to balance TCP/IP flows equally between the switch's output interfaces. There are some requirements that must be followed:

- a flow is characterized by 5 fields: source IP, destination IP, source port, destination port and protocol;
- packets belonging to the same flow must be forwarded through the same output interface to avoid reordering at the destination;
- assume that h1 will be sending packets and hosts h2, h3 and h4 are receiving;
- switch s1 must apply the hash function and decide whether the packet will be sent through port 2, port 3 or port 4.

The topology to be used is shown in the figure below.



To implement this work, you will need to use a supported hash function like `extern`. Externs are functions that do not belong to the P4 language, but to the target where the P4 code will execute. In this case, our target is `v1model`. So the hash function to use is supported by `v1model`. The hash function works like this:

```
hash(result, algo, base, data, max);
```

Where:

- `result`: variable where the result of the hash function will be stored;
- `algo`: hash algorithm to use;
- `base`: lower limit of the values to be computed;
- `data`: the input data for the hash function;
- `max`: maximum value – 1.