Using Netkit, implement the network shown in the figure and described below (you can use the following items as a checklist).

- Peering LANs are announced in BGP. as1000r1 and as200r1 also announce their internal subnets (in gray).
- The network is structured in a customer-provider hierarchy (higher routers are providers for lower routers). Therefore:
  - All routers except as1r1 and as1000r1 use default-originate to announce only the default route to their customers.
  - as1000r1 filters outgoing BGP announcements to prevent being traversed by traffic among its providers.
- Routers tag BGP announcements with communities in the following way:
  - as1000r1 tags announcements of network 100.0.0.0/8 sent to as10r1 with community 1000:200.
    - Tip: use command `set community communityValue` in a route-map.
  - as1r1 and as100r1 prefer announcements that are tagged with community 1000:200.
    - Tip: use `match community communityName` in a route-map and specify the community to be matched with `ip community-list standard communityName permit communityValue`.
- Note: communities are only visible if you use `show ip bgp prefix`.

**Goals:**
- All routers must be able to reach any IP addresses on the network.
- as100r1 must reach 100.0.0.1 preferably using links A, B, and F.
- as100r1 must be able to reach 200.0.0.1 only using links A, B, and C.
Using Netkit, implement the network shown in the figure and described below (you can use the following items as a checklist).

- Peering LANs are announced in BGP. as4r1 and as5r1 also announce their internal subnets (in gray).
  - The network is structured in a customer-provider hierarchy (higher routers are providers for lower routers). Therefore:
    - as3r1 announces only the default route to its customers, using default-originate.
    - as3r1 filters outgoing BGP announcements to prevent being traversed by traffic among its providers.
  - as3r1 tags BGP announcements with communities. In particular:
    - it tags announcements of network 5.0.0.0/8 sent to as2r1 with community 3:5.
      - Tip: use command set community communityValue in a route-map.
    - as1r1 prefers announcements with community 3:5.
      - Tip: use match community c1Name in a route-map and specify the community to be matched with ip community-list standard c1Name permit communityValue.
  - Note: communities are only visible if you use show ip bgp prefix.

**Goals:**

- All routers must be able to reach any IP addresses on the network.
- No entries in the BGP routing table of as1r1 must use AS path 3 2; no entries on as2r1 must use 3 1.
- as1r1 must reach 5.0.0.5 preferably using links A, C, and E.
Using Netkit, implement the network shown in the figure and described below (you can use the following items as a checklist).

- Peering LANs are announced in BGP. as50r1 also announces its internal subnets (in gray).
- The network is structured in a customer-provider hierarchy (higher routers are providers for lower routers). Therefore:
  - as10r1 and as20r1 do not announce the default route.
  - as30r1 and as40r1 use default-originate to announce only the default route to their customers.
  - as50r1 filters outgoing BGP announcements to prevent being traversed by traffic among its providers.
- as50r1 tags BGP announcements with communities. In particular:
  - it tags announcements of network 5.1.0.0/16 sent to as30r1 with community 50:1 and announcements of network 5.2.0.0/16 sent to as40r1 with community 50:2.
  - Tip: use command set community communityValue in a route-map.
  - as10r1 and as30r1 prefer announcements that are tagged with community 50:2, whereas as20r1 and as40r1 prefer announcements tagged with community 50:1.
  - Tip: use match community c1Name in a route-map and specify the community to be matched with ip community-list standard c1Name permit communityValue.
- Note: communities are only visible if you use show ip bgp prefix.

Goals:
- All routers must be able to reach any IP addresses on the network.
- No entries in the BGP routing table of as30r1 must use AS path 50 40; no entries on as40r1 must use 50 30.
- as30r1 must reach 5.2.0.1 preferably using links A, B, C, and E.
- as40r1 must reach 5.1.0.1 preferably using links C, B, A, and D.
Using Netkit, implement the network shown in the figure and described below (you can use the following items as a checklist).

- Peering LANs are announced in BGP. as1r1 and as2r1 also announce their internal subnets (in gray).
  - The network is structured in a customer-provider hierarchy (higher routers are providers for lower routers). Therefore:
    - All routers except as100r1 and as1r1 use default-originate to announce only the default route to their customers.
    - as1r1 filters outgoing BGP announcements to prevent being traversed by traffic among its providers.
  - as1r1 tags BGP announcements with communities. In particular:
    - It tags announcements of network 1.0.0.0/8 sent to as2r1 with community 1:200.
      - Tip: use command `set community communityValue` in a route-map.
    - as20r1 prefers announcements with community 1:200.
      - Tip: use `match community clName` in a route-map and specify the community to be matched with `ip community-list standard clName permit communityValue`.
  - Note: communities are only visible if you use `show ip bgp prefix`.

**Goals:**
- All routers must be able to reach any IP addresses on the network.
- as10r1 must be able to reach 2.0.0.1 only using links F, E, and D.
- as20r1 must reach 1.0.0.1 preferably using links D and C.