1. Configure OSPF area as shown in the topologies diagrams
    a. If router is ABR – Loopback should be placed in the Backbone Area

2. Configure the VLAN10 as following:
    a. Ensure that R3 is always elected the Designated Router for the segment between R1, R2, R3, R4.
    b. Ensure that R1 is always elected the Backup Designated Router for the segment between R1, R2, R3, R4.
    c. Ensure that R2 and R4 will never have a chance to become a DR or BDR

3. Ensure that other devices running OSPF on the segment between R14 and R17 cannot intercept the OSPF communication between R14 and R17, but there is DR/BDR election.

4. Advertise following subnets:
    a. Advertise VLAN 2 into OSPF on R2
    b. Advertise VLAN 12 into OSPF on R12
    c. Do not use the `network` or `ip ospf` statements to accomplish this.

5. Configure the network to exactly match the output below and nothing more:

```
R15#show ip ospf database | include Net Link States \(Area 0\)

  Summary Net Link States (Area 0)

R15#
```

6. To minimize downtime in the event of a failure, configure the network as following:
    - R15 can detect a loss of the circuit to R16 within 1 second
        - Don't modify OSPF timers on R16
    - R15 can detect a loss of the circuit to R17 within 1 second.
        - R17 is not able to run any UDP protocols

7. You are concerned about false routing information being injected into OSPF domain.
    - Authenticate the adjacency between R10, R11 and R12 using the clear-text password CISCO
        - Use the minimum number of configuration commands as you can
    - To verify the legitimacy of routing information, configure all area 0 adjacencies to be authenticated with a secure hash value of the password CISCO.
    - Configure R13 to stop generating log messages when an OSPF type 6 LSA is received.

8. Your company has recently acquired another company and will be merging your network with the other network in the near future.

    - First of all, be sure that all routers in the OSPF domain have /32 loopback routes in RIB
- The other company's network currently contains 4.000 OSPF routes.
- To ensure that problems do not arise when the two networks are merged, configure R3 and R4 so that their routing tables can support the 4.000 routes from the new company's network plus the existing unicast routes that will exist in your network.

9. R3 and R4 should generate default route into OSPF domain. This route must be visible on all OSPF devices
    - R3 should be the preferred router
    - Don't change the "metric" to accomplish this task

10. Routes with type "External" are not allowed to be visible in area 4