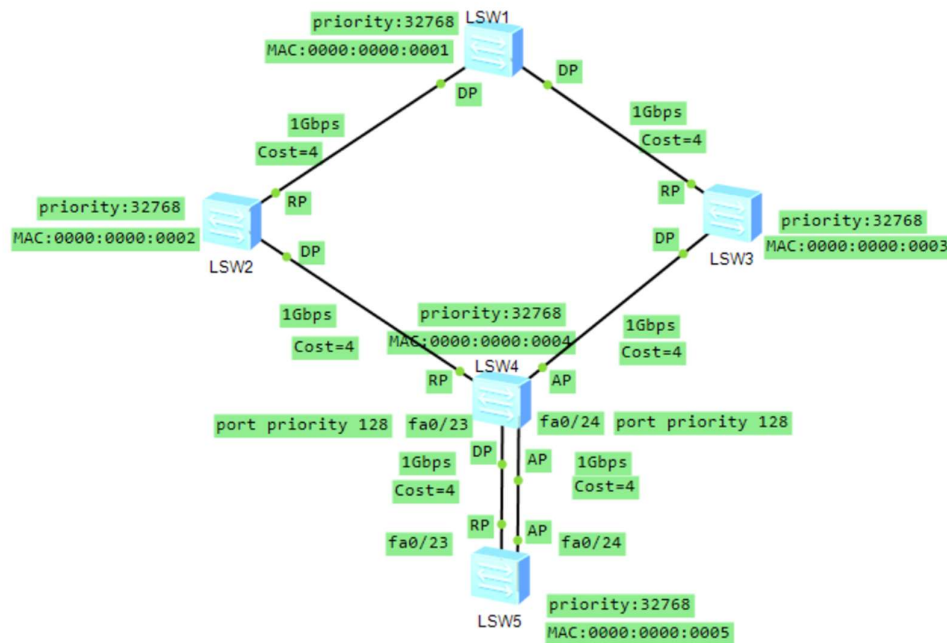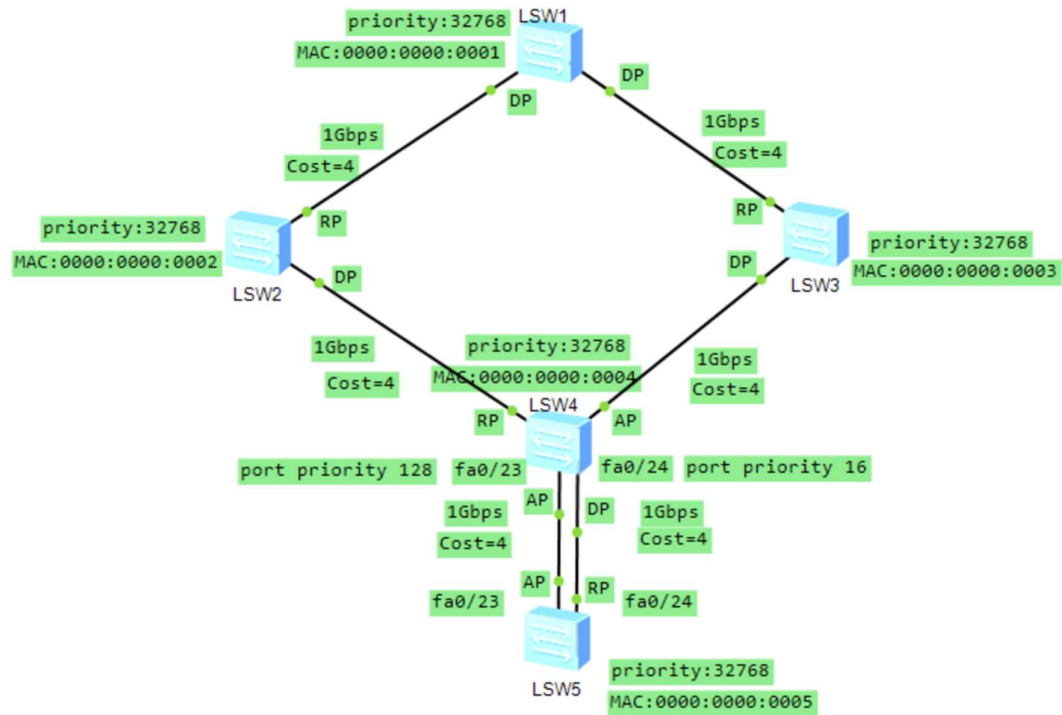SCENARIO 1

REASON:

Switch 1 acts as the Root Bridge due to its lowest MAC address, and therefore all its ports are designated. For Switches 2 and 3, the ports directly connected to the Root Bridge serve as Root Ports because they offer the lowest path cost. On Switch 4, port ge0/0/1 is chosen as the Root Port since both possible paths to the Root Bridge have equal cost, and preference is given to the one via Switch 2, which has a lower MAC address than Switch 3. Consequently, port ge0/0/2 on Switch 4 becomes a Blocked Port, while the port facing it is a Designated Port because Switch 4's MAC address is higher than that of Switch 3. For Switch 5, port fa0/23 is selected as the Root Port due to a lower port number, given that both ports have the same priority. The port opposite to fa0/23 is thus a Designated Port, and fa0/24 becomes a Blocked Port because Switch 5's MAC address is higher than that of Switch 4, making the port on Switch 4 a Designated Port.
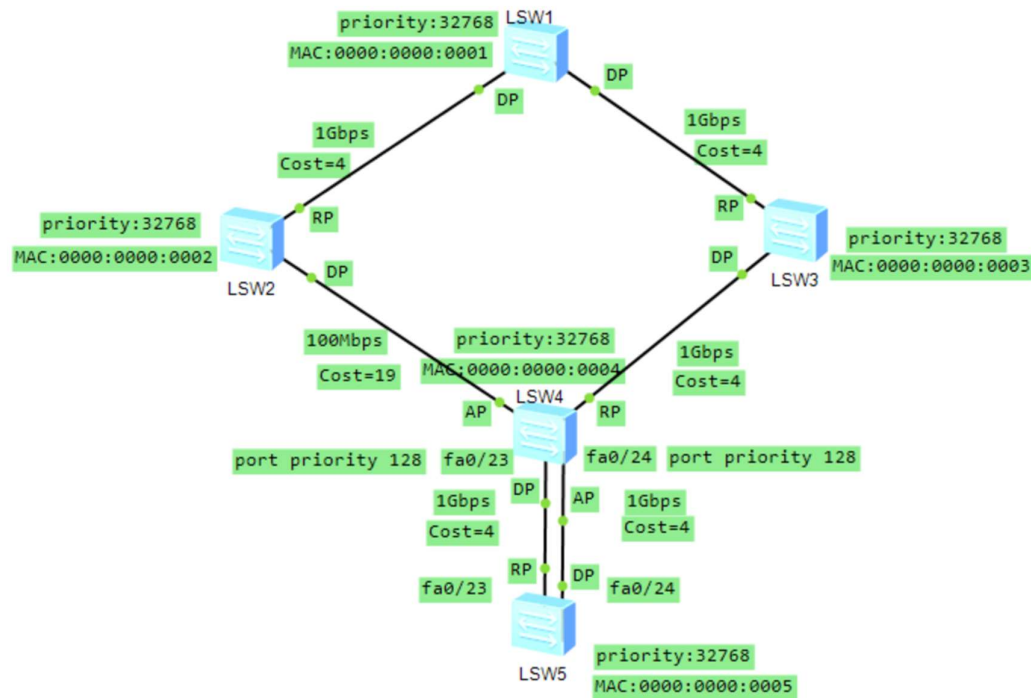
SCENARIO 2

REASON:

The port roles on Switches 1, 2, 3, and 4 remain unchanged from Scenario 1. However, on Switch 5, port fa0/24 is now selected as the Root Port due to its lower port priority of 16 compared to fa0/23, which has a priority of 128. As a result, fa0/23 becomes the Blocked Port.

SCENARIO 3

REASON:

The port roles for Switches 1, 2, 3, and 5 stay the same as in Scenario 1. On Switch 4, however, port ge0/0/2 is now selected as the Root Port since its path cost (8 = 4 + 4) is lower than the alternate path's cost of 23 (19 + 4). As a result, ge0/0/1 on Switch 4 becomes the Blocked Port, while the rest of the configuration remains unchanged.