# Assignment 10 - Routing

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## 1 Question

**Will a BGP router always choose the loop-free route with the shortest AS- path length? Justify your answer**

- Border Gateway Protocol (BGP) contains the subnet data which maintains data to reach all routers in AS. Thus, its an Inter-As routing protocol. There are many reasons that BGP always choose the loop-free route with the shortest AS - path length. Following are few of them :
  - In general, the router contains many paths to any of one prefix.
  - In such cases, BGP applies some elimination rules to catch the one route.
  - Those rules are obtained from ASPATH, which is an inter domain routing. Then after chooses the loop-free route with the shortest AS - path length.

## 2 Question

**Consider the network shown below. Suppose AS3 and AS2 are running OSPF for their intra-AS routing protocol. Suppose AS1 and AS4 are running RIP for their intra-AS routing protocol. Suppose eBGP and iBGP are used for the inter-AS routing protocol. Initially suppose there is no physical link between AS2 and AS4.**

1. **Router 3c learns about prefix x from which routing protocol: OSPF, RIP, eBGP, or iBGP?**
   - Router 3c learns about prefix x from eBGP.
2. **Router 3a learns about x from which routing protocol?**
   - Router 3a learns about x from iBGP.
3. **Router 1c learns about x from which routing protocol?**

- Router 1c learns about x from eBGP.

4. **Router 1d learns about x from which routing protocol?**
   - Router 1d learns about x from iBGP.