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CSCI 3400

Concept Apps 5

**P3**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Step | N’ | D(t), P(t) | D(u), p(u) | D(v), p(v) | D(w), p(w) | D(y), p(y) | D(Z), p(z) |
| 0 | X | ∞ | ∞ | 3, x | 6, x | 6, x | 8, x |
| 1 | Xv | 7, v | 6, v | 3, x | 6, x | 6, x | 8, x |
| 2 | xvu | 7, v | 6, v | 3, x | 6, x | 6, x | 8, x |
| 3 | Xvuw | 7, v | 6, v | 3, x | 6, x | 6, x | 8, x |
| 4 | xvuwy | 7, v | 6, v | 3, x | 6, x | 6, x | 8, x |
| 5 | Xvuwyt | 7, v | 6, v | 3, x | 6, x | 6, x | 8, x |
| 6 | xvuwytz | 7, v | 6, v | 3, x | 6, x | 6, x | 8, x |

**P4**A:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Step | N’ | D(u), p(u) | D(v), p(v) | D(w), p(w) | D(x), p(x) | D(y), p(y) | D(z), p(z) |
| 0 | T | 2, t | 4, t | ∞ | ∞ | 7, t | ∞ |
| 1 | Tu | 2, t | 4, t | 5, u | ∞ | 7, t | ∞ |
| 2 | Tuv | 2, t | 4, t | 5, u | 7, v | 7, t | ∞ |
| 3 | Tuvw | 2, t | 4, t | 5, u | 7, v | 7, t | ∞ |
| 4 | Tuvwx | 2, t | 4, t | 5, u | 7, v | 7, t | 15, x |
| 5 | Tuvwxy | 2, t | 4, t | 5, u | 7, v | 7, t | 15, x |
| 6 | tuvwxyz | 2, t | 4, t | 5, u | 7, v | 7, t | 15, x |

C:

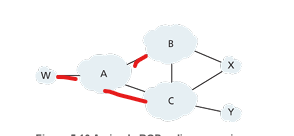
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Step | N’ | D(t), p(t) | D(u), p(u) | D(w), p(w) | D(x), p(x) | D(y), p(y) | D(z), p(z) |
| 0 | V | 4, v | 3, v | 4, v | 3, v | 8, v | ∞ |
| 1 | Vx | 4, v | 3, v | 4, v | 3, v | 8, v | 11, x |
| 2 | Vxu | 4, v | 3, v | 4, v | 3, v | 8, v | 11, x |
| 3 | Vxut | 4, v | 3, v | 4, v | 3, v | 8, v | 11, x |
| 4 | Vxutw | 4, v | 3, v | 4, v | 3, v | 8, v | 11, x |
| 5 | Vxutwy | 4, v | 3, v | 4, v | 3, v | 8, v | 11, x |
| 6 | vxutwyz | 4, v | 3, v | 4, v | 3, v | 8, v | 11, x |

E:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Step | N’ | D(t), p(t) | D(u), p(u) | D(v), p(v) | D(w), p(w) | D(x), p(x) | D(z), p(z) |
| 0 | Y | 7, y | ∞ | 8, y | ∞ | 6, y | 12, y |
| 1 | Yx | 7, y | ∞ | 8, y | 12, x | 6, y | 12, y |
| 2 | Yxt | 7, y | 9, t | 8, y | 12, x | 6, y | 12, y |
| 3 | Yxtv | 7, y | 9, t | 8, y | 12, x | 6, y | 12, y |
| 4 | Yxtvu | 7, y | 9, t | 8, y | 12, x | 6, y | 12, y |
| 5 | Yxtvuw | 7, y | 9, t | 8, y | 12, x | 6, y | 12, y |
| 6 | yxtvuwz | 7, y | 9, t | 8, y | 12, x | 6, y | 12, y |

**P12:**The BGP, Border Gateway Protocol, can detect loops when it propagates and obtains reachability of it’s neighboring autonomous systems. To also prevent looping the router will discard it’s own number if it finds it while verifying the AS numbers.

**P13**Yes, a BGP router will always choose the shortest loop-free AS path. Since routers can have multiple routers to any prefix BGP has an in-AS routing protocol and can apply elimination rules to catch the needed route.

**P17**W contains a single path to AS-A, AS-A forwards the packets to B and C, W receives the links AC/AB  
A picture containing clock

Description automatically generated  
There is no connection between A and C, AS-X has no knowledge of AS-A

**P18**Skype is an example that could consist of 3 peers, denoted as W, X, and Y. Peer 1 or ***W*** would use the application then the data would be sent through AS-A/AS-B to ***X***. ***X*** would then send the data through AS-C to ***Y***.