Exercise 1: Circuit in circuit switched networks

S-38.121 Routing in Communications Networks

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1 Demo

2 Consider the hierarchical network in Figure 2

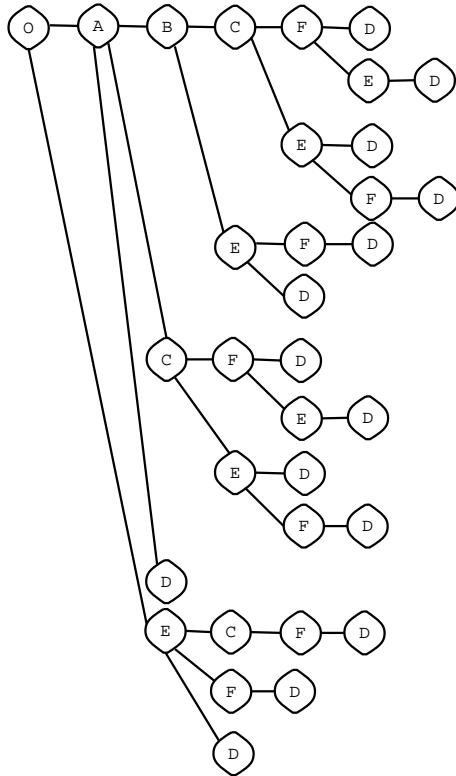## 2.1 a) Asume SOC control in use, and draw the route tree for (O,D) calls

Figure 1: SOC

2.2 b) Asume OOC control in use, and do the same thing. Compare the solutions in a and b. Do any other solutions exist?

The route tree is similar to the previous, but in OOC the routes are the shortest possible routes.
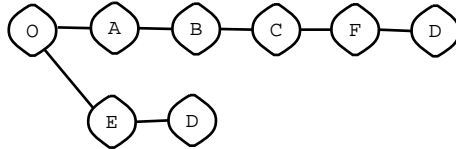

Figure 2: OOC

2.3 c) Construct the augmented route tree corresponding to the full fan rules for a pair of end office.
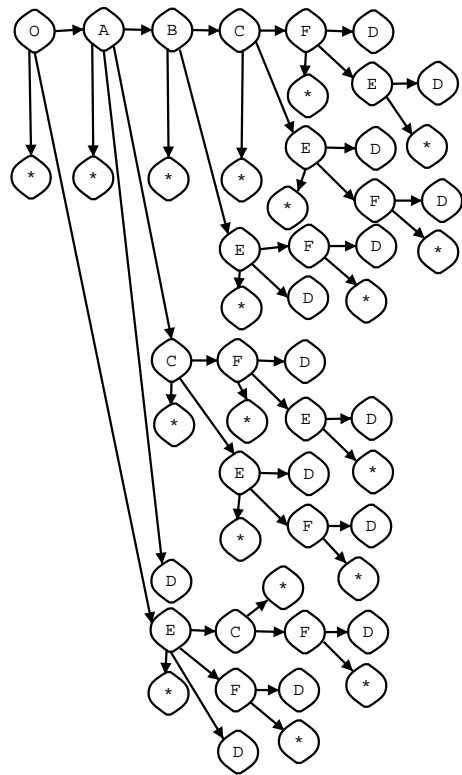

Figure 3: Augmented tree

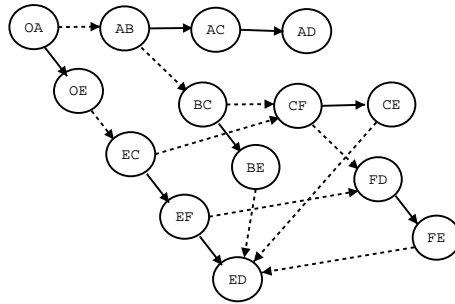## 2.4 d) Construct the influence graph based on the route tree. Does the ring-aroung-the-rosy problem happen?

Figure 4: Influence graph

3 Read the Internet draft *Number Portability in the GSTN: An Overview* Please describe the four main types of schemes that support the implementation of service provider numbering portability.

There are four schemas that provide Service Provider Portability, and the differences between them are the necessary call steps:

- All Call Query

  The Originating Network that receives a call sends a query to the NPDB (Number Portability DataBase), then the NPDB returns the routing number associated with the number called, and then the Originating Network routes the call to the new serving network.

- Query on Release

  The Originating Network that receives a call routes it to the donor network, that notify that the number has been ported and release the call. Then the Originating Network sends a query to the NPDB, and when it gets an answer, the Originating Network routes the call to the new serving network.

- Call Dropback

  The Originating Network that receives a call routes it to the donor network. The donor network detects that the number has been ported and sends a query to a NPDB. When it gets an answer from the NPDB, release the call and provider the routing number to the Originating Network, which uses the routing number to route the call to the new Serving Network.

- Onward Routing

  The Originating Network that receives a call routes it to the donor network. The donor network detects that the number has been ported and sends a query to a NPDB. When it gets an answer from the NPDB, uses this information to route the call to the new Serving Network.