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TK1: Distributed Systems - Programming & Algorithms

5. Theory Assignment
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Task 1: Routing with Subscriptions (4.5 P.)

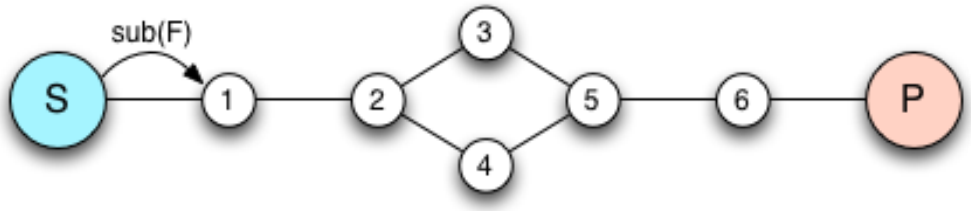

Illustration 1: Router Network

Consider the Router Network in Illustration 1. Apply the algorithm “Routing with Subscriptions”.

1) Subscriber S sends a subscription to router 1 with filter F. Describe the flow of the subscriptions between the routers, i.e. write down all routing tables in each step and paint the graph with the current flowing subscription also in each step.
(Note: you can merge a step if a router sends multiple subscriptions concurrently)

2) Which problem arises and why? Give a solution to avoid this problem.

3) Does an equivalent problem arise if P sends a notification? Give also a solution if this is the case.

Task 2: Addressing (4 P.)

Consider the four different types of Addressing in Publish/Subscribe without Concept-Based Addressing.

1) How can a Subscriber subscribe in each type of Addressing?

2) Assume a Subscriber subscribes on a Publish/Subscribe System. How is the filtering realized in each type of Addressing?

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Task 3: Router Topologies (1.5 P.)

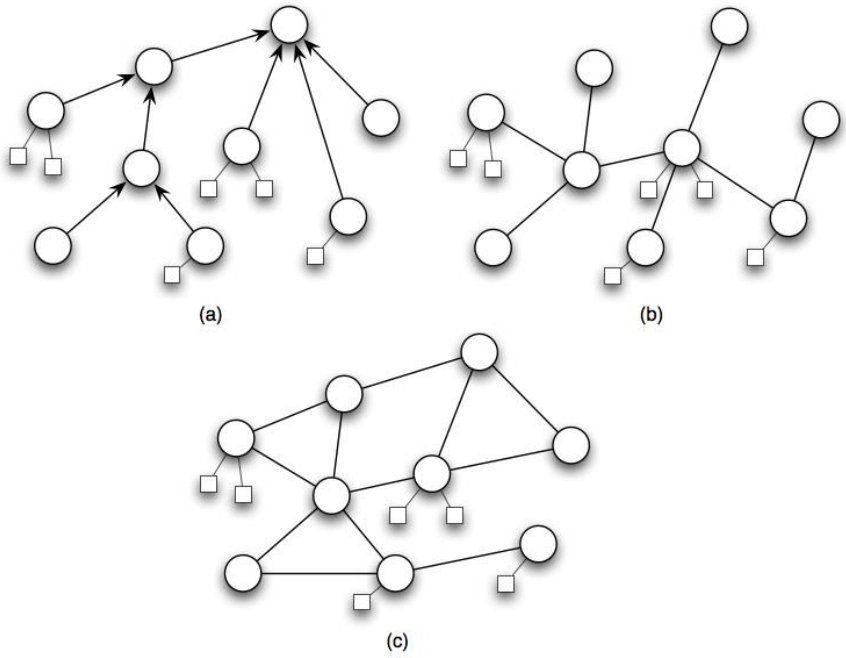

Illustration 2: Different Topologies

Consider and classify the different Topologies in Illustration 2. Give a reason for your decision.