

EEE 051: Introduction to Computer Networks

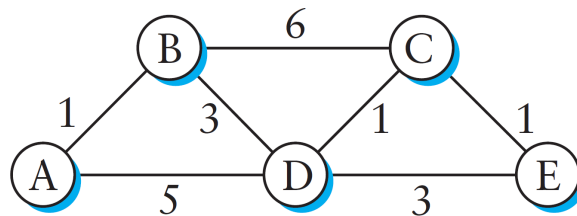
Recitation 10

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1 Dijkstra's Algorithm (OSPF)

Give the steps as in the table from the slides for the forward search algorithm as it builds the routing database for node A in the network shown:



2 Queuing Disciplines

Suppose a router has three input flows and one output. It receives the packets below all at about the same time, in the order listed, during a period in which the output port is busy but all queues are otherwise empty. Give the order in which the packets are transmitted, assuming

Packet	Size	Flow
1	200	1
2	200	1
3	160	2
4	120	2
5	160	2
6	210	3
7	150	3
8	90	3

- (a) First In First Out queuing
- (b) Priority Queuing with Flow 1 as HIGH, Flow 2 as MEDIUM, Flow 3 as LOW
- (c) Round Robin Queuing
- (d) fair queuing

3 Fair Queuing with Skew

Consider a router that is managing three flows, on which packets of constant size arrive at the following wall clock times:

flow A: 1, 3, 5, 6, 8, 9, 11

flow B: 1, 4, 7, 8, 9, 13, 15

flow C: 1, 2, 4, 6, 7, 12

All three flows share the same outbound link, on which the router can transmit one packet per time unit. Assume that there is an infinite amount of buffer space.

- (a) Suppose the router implements fair queuing. For each packet, give the wall clock time when it is transmitted by the router. Arrival time ties are to be resolved in order A, B, C. Note that wall clock time $T = 2$ is FQ-clock time $A_i = 1.333$.