



FACULTY OF ENGINEERING & TECHNOLOGY

DCS-503 Computer Networks

Lecture-25

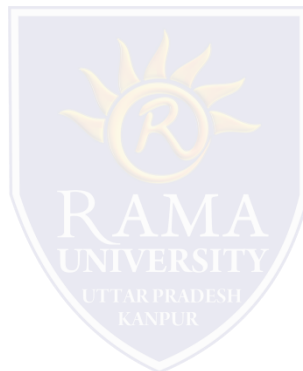
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# OUTLINE

- **QUALITY OF SERVICE**
- **TRAFFIC SHAPING**
- **PACKET SCHEDULING**
- **ADMISSION CONTROL**
- **INTEGRATED SERVICES**

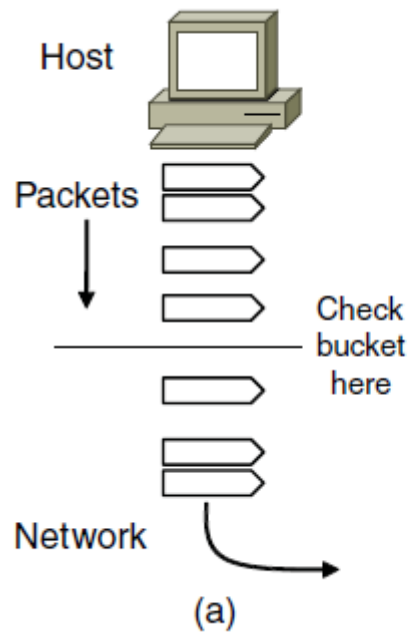


# QUALITY OF SERVICE

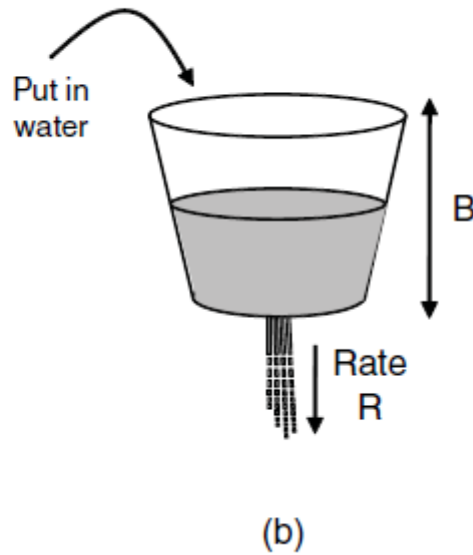
## Application Requirements

Application	Bandwidth	Delay	Jitter	Loss
Email	Low	Low	Low	Medium
File sharing	High	Low	Low	Medium
Web access	Medium	Medium	Low	Medium
Remote login	Low	Medium	Medium	Medium
Audio on demand	Low	Low	High	Low
Video on demand	High	Low	High	Low
Telephony	Low	High	High	Low
Videoconferencing	High	High	High	Low

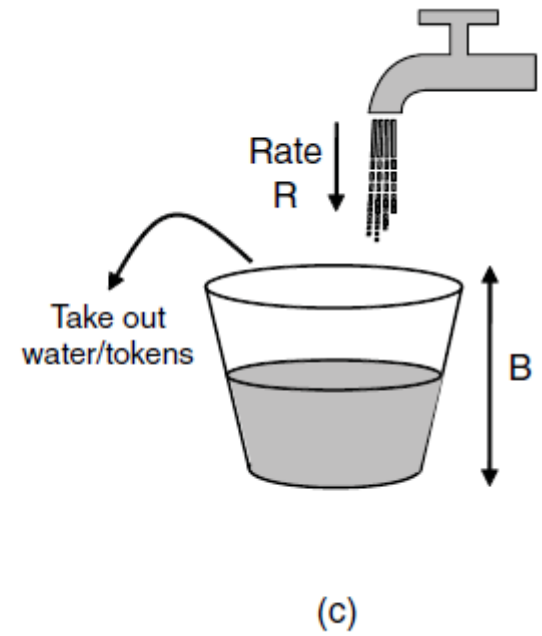
# TRAFFIC SHAPING



(a) Shaping packets.



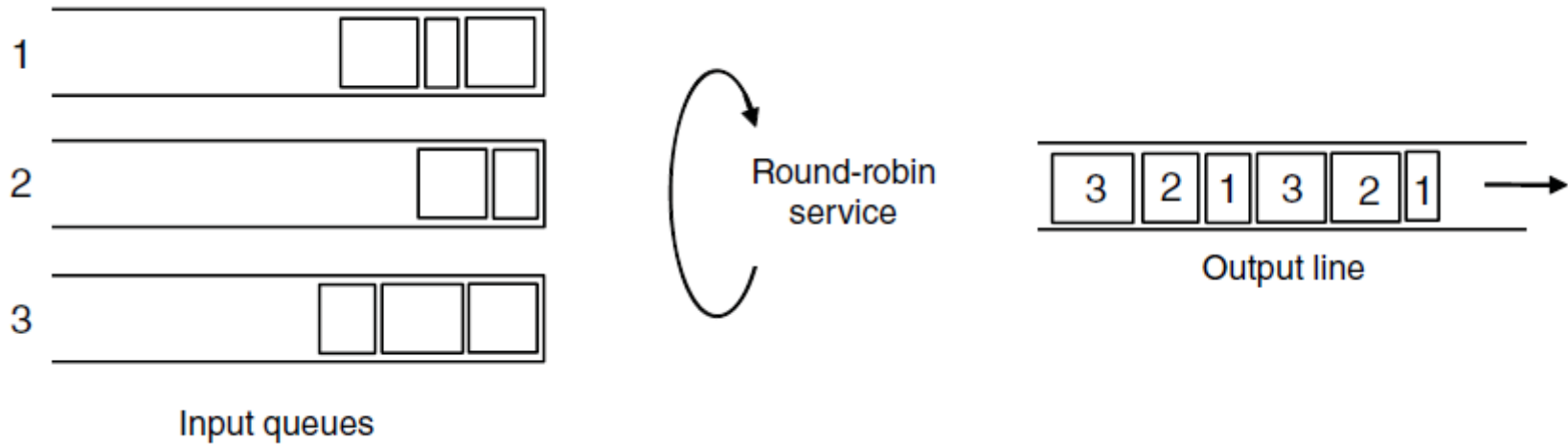
(b) A leaky bucket.



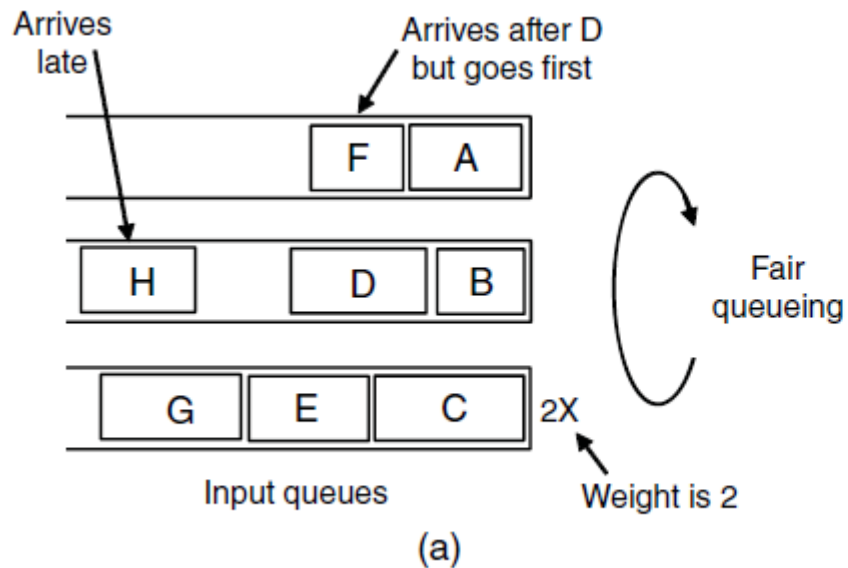
(c) A token bucket

# PACKET SCHEDULING

## Round-robin Fair Queuing



# PACKET SCHEDULING



(a)Weighted Fair Queueing.

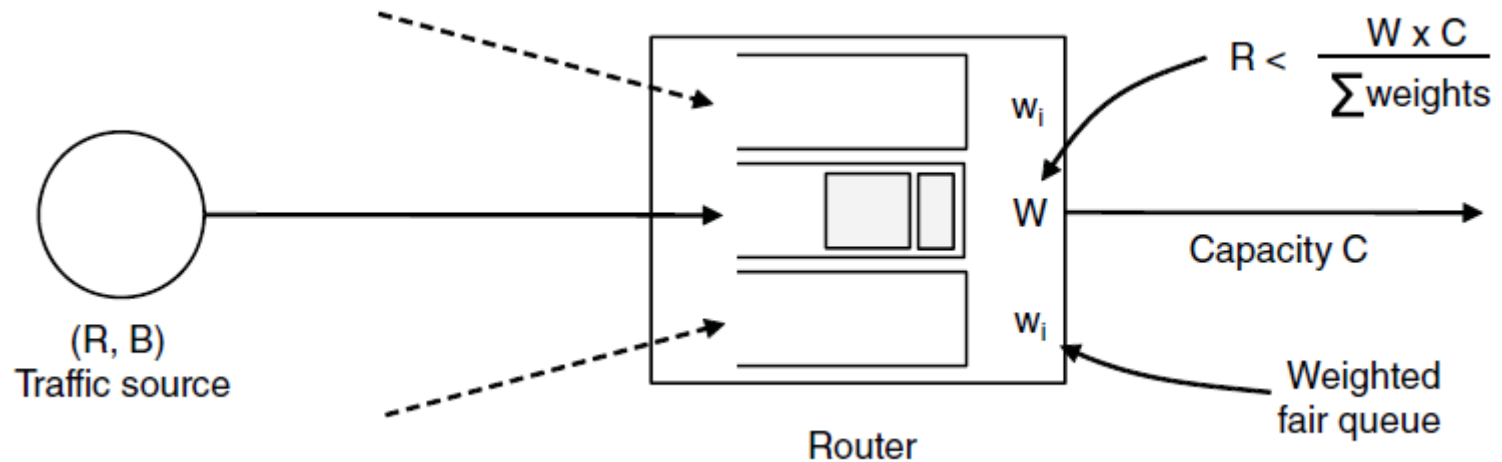
Packet	Arrival time	Length	Finish time	Output order
A	0	8	8	1
B	5	6	11	3
C	5	10	10	2
D	8	9	20	7
E	8	8	14	4
F	10	6	16	5
G	11	10	19	6
H	20	8	28	8

(b)

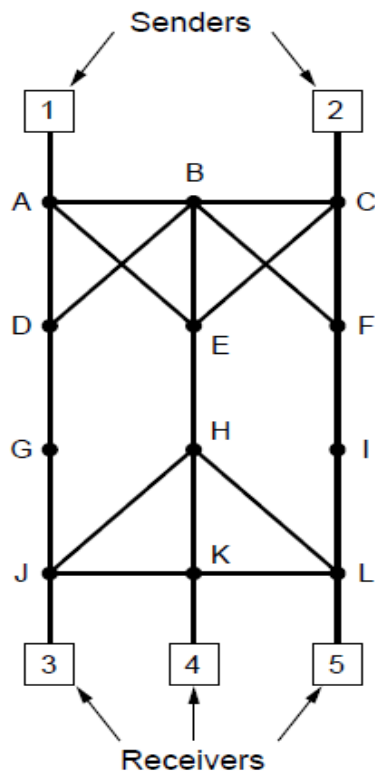
(b)Finishing times for the packets.

# ADMISSION CONTROL

## Bandwidth and delay guarantees with token buckets and WFQ

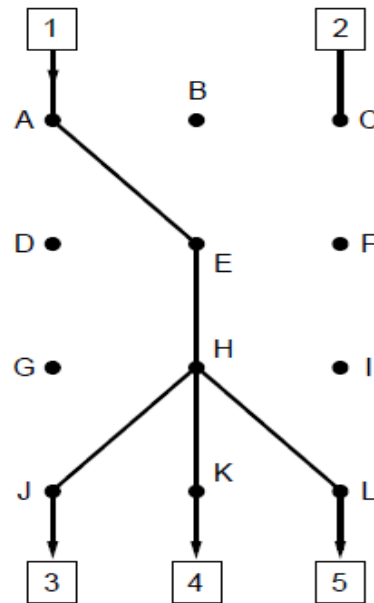


# INTEGRATED SERVICES



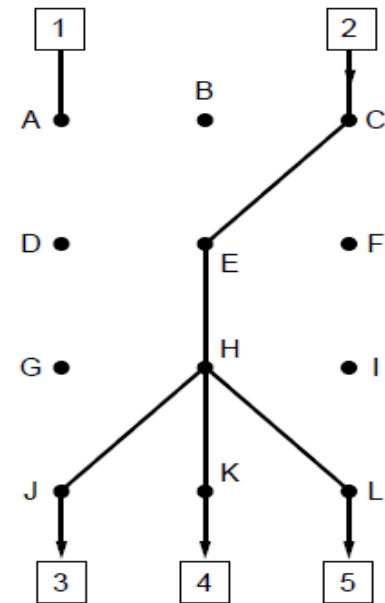
(a)

(a) A network.



(b)

(b) The multicast spanning tree for host 1.



(c)

(c) The multicast spanning tree for host 2.



# Multiple Choice Question

## MUTIPLE CHOICE QUESTIONS:

Sr no	Question	Option A	Option B	OptionC	OptionD
1	Which of the following is not correct in relation to multi-destination routing?	is same as broadcast routing	contains the list of all destinations	data is not sent by packets	there are multiple receivers
2	A subset of a network that includes all the routers but contains no loops is called _____	spanning tree	spider structure	spider tree	special tree
3	Which one of the following algorithm is not used for congestion control?	traffic aware routing	admission control	load shedding	routing information protocol
4	The network layer protocol for internet is _____	ethernet	internet protocol	hypertext transfer protocol	file transfer protocol
5	ICMP is primarily used for _____	error and diagnostic functions	addressing	forwarding	routing

# REFERENCES

- <http://www.engppt.com/2009/12/networking-fourozan-ppt-slides.html>

