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Q) Given:

Resources:

Pen Drive (PD) = 5 $\Rightarrow R_1 = 5$

Printers = 2 $\Rightarrow R_2 = 2$

Scanners = 4 $\Rightarrow R_3 = 4$

Hard Disk = 3 $\Rightarrow R_4 = 3$

Processes: Total 4.

P, R, Q, S

Solution:

Processes.	Allocation				Max			
							R_3	R_4
P							1	1
Q	1	0	0	0	2	1	2	
R	1	0	1	1	3	1	1	1
S	1	1	0	1	1	1	1	1
Total	4	2	2	3				

∴ Need

R_1	R_2	R_3	R_4
1	1	0	0
0	1	1	2
2	1	0	0
0	0	1	0

∴ Available Resources

$R_1 = 5 - 4 = 1$

$R_2 = 2 - 2 = 0$

$R_3 = 4 - 2 = 2$

$R_4 = 3 - 3 = 0$

∴ Process S is satisfied.

∴ Res. after exec. = 1, 0, 1, 0 (Need - Available)

∴ Final available res = 2, 1, 2, 1 (Res. after + Max(S))

∴ Process P is satisfied.

∴ Res. after exec. = 1, 0, 2, 1

∴ Final available res. = 4, 1, 3, 2

∴ Process Q is satisfied.

∴ Res. after exec. = 4, 0, 2, 0

∴ Final available res = 4, 2, 3, 2

∴ Process R is also satisfied.

∴ Res. after exec. = 2, 1, 3, 2

∴ Final availableres. = 5, 2, 4, 3

Check:

Since Total res == Final available check succeed

∴ Safe proc. execution queue is:

<S, P, Q, R>