Q- Consider following and generate a solution to find whether the system is in safe state or not?

Banker's Algorithm

Available				Processes	Allocation				Max			
A	B	C	D		A	B	C	D	A	B	C	D
1	5	2	0	P_0	0	0	1	2	0	0	1	2
				P_1	1	0	0	0	1	7	5	0
				P_2	1	3	5	4	2	3	5	6
				P_3	0	6	3	2	0	6	5	2
				P_4	0	0	1	4	0	6	5	6

(1) We have to find need? **Need = Max − Allocation**

	Need			
	A	B	C	D
P_0	0	0	0	0
P_1	0	7	5	0
P_2	1	0	0	2
P_3	0	0	2	0
P_4	0	6	4	2

(2) Now we have to determine safe state-

Available is A B C D
1 5 2 0

1) P_0 need A B C D
0 0 0 0 and available is A B C D
1 5 2 0

So P_0 is executed.

New available is (Available + Allocation)

(1520 + 0012)

(1532)

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2) P_1 need A B C D
0 7 5 0 but when we compare with available 1 5 3 2 it is not satisfying the condition. It moves to P_2 without executing P_1.

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3) P_2 need A B C D
1 0 0 2 and available is A B C D
1 5 3 2

P_2 can be easily executed.

New available is (1532 + 1354)

=(2886)

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4) P_3 need A B C D
0 0 2 0 and available is A B C D
2 8 8 6

P_3 can be execute.

New available is (2886 + 0632) = (2 14 11 8)

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5) P_4 need A B C D
0 6 4 2 and available is A B C D
2 14 11 8

P_4 can be execute

New available is (2 14 11 8 + 0 0 14) = (2 14 12 12)

6) Go back to P_1 and the need of P_1 is (A B C D) 0 7 5 0 and new available is (A B C D) 2 14 12 12) and hence now P_1 can be execute.

Now we can say that system is in safe.

Process execute like $P_0 \rightarrow P_2 \rightarrow P_3 \rightarrow P_4 \rightarrow P_1$