

Prof. Dr.-Ing. Bernd Noche

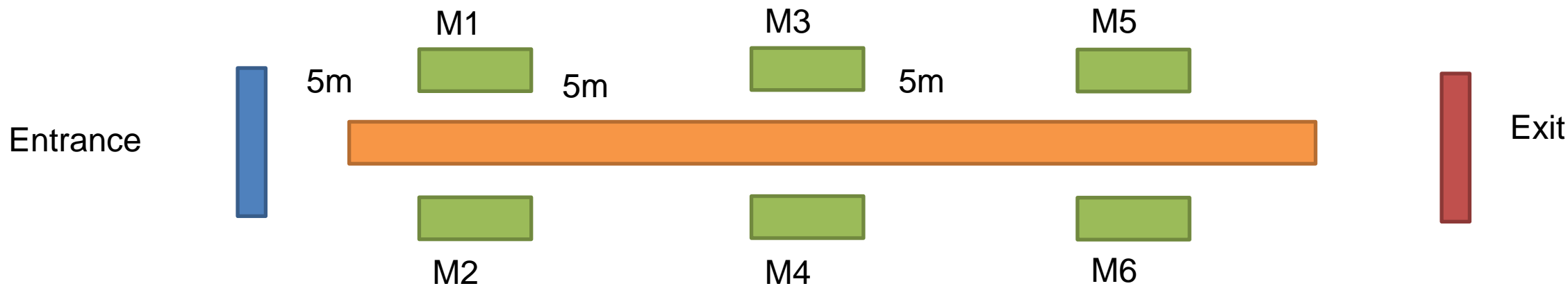
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# Excercise-1







# Task 1



For the above production line, four (P1, P2, P3, P4) different products are processed at different machines. These are product are generated with a fixed frequency every 20 seconds. The products are transported between machines through conveyor. The total conveying distance is 15m. The product are processed at machines and again placed on conveyor for further processing. The conveying distance between entrance and first machine 5m.

These machine have different processing time and set up times.

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-  Machine
-  Conveyor
-  Exit
-  Entrance

Machine	Object processed	Distribution	(time in seconds)	
M1	P1 P2	Uniform	40	60
M2	P3 P4	Exponential	45	
M3	P1 P4	Normal	45	8
M4	P2 P3	Uniform	55	75
M5	P1 P3	Exponential	30	
M6	P2 P4	Normal	50	8

### Set up time Matrix (seconds)

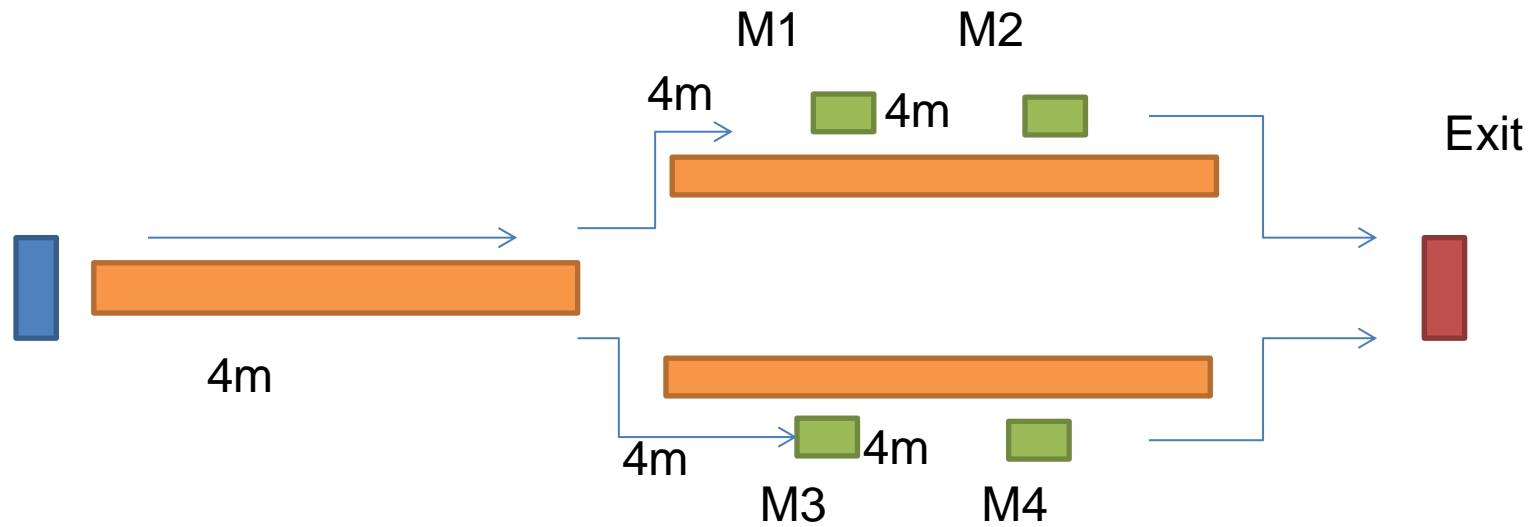
From object	P1	P2	P3	P4
P1	x	5	7	9
P2	10	x	5	7
P3	12	10	x	14
P4	14	12	9	x

Conveyor speed: 1m/s

Capacity: 5 for every 5m

**Task 2**

Entrance

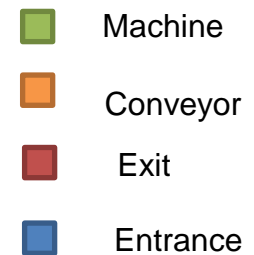


For given layout, the machines process three types of products (P1 P2 P3). These product are generated with exponential distribution mean 1 minute.

After processing, the product P3 is given first priority to enter the exit.

Please assume the set up times.

Please build the simulation model for 4 hours with following layout.



Machine	Object processed	Distribution (time in seconds)		
M1	P1 P2	Uniform	40	60
M2	P1 P2	Exponential	45	
M3	P3	Normal	45	8
M4	P3	Fixed	55	

Conveyor speed: 1m/s

Capacity:4