

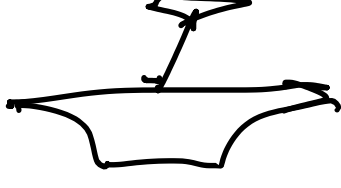
Demo of Basic container terminal solution using SimPy

## Task

Simulate the vessels arriving to the container terminal

time b/w vessels arrival  $\rightarrow$  exponential distribution

Random. exponential ( $\lambda = 1.0$ )

Each vessels   $\rightarrow$  150 containers

only two berth available for vessels  $\rightarrow$  (berth-1 & berth-2)

If vessels arrived and both berth are occupied then new berth will be blocked.

Vessels at Berth  $\rightarrow$  Quay Crane  $\rightarrow$  2 available

vessel will use 1 crane only

take 3 minutes to move one container

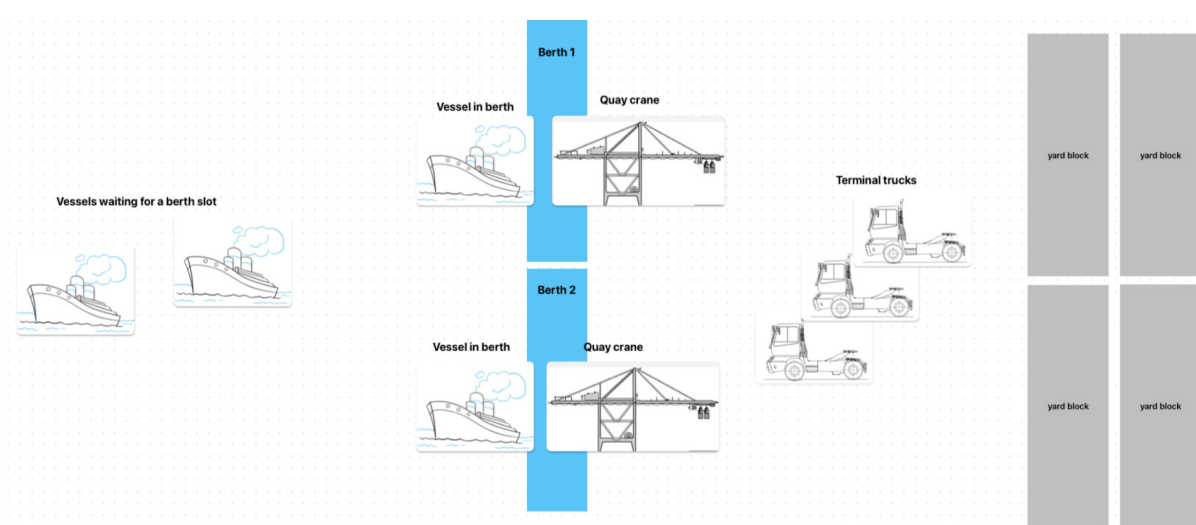
Crane put it to truck. if no truck available crane will wait

terminal 3 trucks for transportation

takes 6 minutes to drop off the containers & comeback

output  
expected

Simple log  
vessel arriving  
vessel berthing  
quay crane to container



Vessels  $\rightarrow$  can be any number

Berth  $\rightarrow$  2

Crane  $\rightarrow$  2

truck  $\rightarrow$  3

yard

1 vessel  $\rightarrow$  1 berth  $\rightarrow$  crane

1 vessel  $\rightarrow$  150 cont  $\rightarrow$

6 min per cont truck

3 min per cont to rack

ex 100

logic

random  $\rightarrow$  no.  $\rightarrow$  vessel arrived  $\rightarrow$  100

berthed

Crane start  $\rightarrow$  +3

truck  $\rightarrow$  +6

③

103  $\rightarrow$  T1

104  $\rightarrow$  T2

105  $\rightarrow$  T5



So use the truck  $\rightarrow$  Let suppose crane 1 is has moved the containers to truck 1 then in next time truck returns (6 min) it can move the containers to 2<sup>nd</sup>/3<sup>rd</sup> truck same followed by both cranes

ex  $\rightarrow$  vessel 1 arrive at  $\rightarrow$  100

Crane 1 move cont. 1  $\rightarrow$  103

truck 1 start moving cont  $\rightarrow$  103

Crane 1 start cont 2  $\rightarrow$  106

truck 2  $\rightarrow$  start  $\rightarrow$  106

Crane 1  $\rightarrow$  cont 3  $\rightarrow$  109

truck 3  $\rightarrow$  cont  $\rightarrow$  3 = 109

truck 1 free  $\rightarrow$  109

Crane 1  $\rightarrow$  cont 4  $\rightarrow$  112  $\rightarrow$  truck 1  $\rightarrow$

Vessel 2 arrived

Crane start  $\rightarrow$  112

Crane 2  $\rightarrow$  cont 1  $\rightarrow$  115

Crane 1  $\rightarrow$  cont 5  $\rightarrow$  115

truck 2  $\rightarrow$  cont 5

truck 3  $\rightarrow$  cont 6

can apply

will add summary