## Case Study - Simulating a container

```
Process: { Process for unloading containers from vessels, Process for loading containers onto the truck }
Resource: { Berths[2], Trucks[3], Cranes[2] }
Event: { Request for berth, Request for truck, Request for crane }
Environment: { Container terminal }

Container terminal has limited number of resources {berths, cranes, and trucks} to operate the containers in parallel.
```

1. Scenario of Vessels and Berths:

```
vessels are coming with probability, i.e. exponentially distributed with an average time of [u = 5hrs] = 5 * 60 mins
vessels that came to terminal, note their arrival time
vessels will be queued and request for berth,
    if no berth allocated[busy/not_in_service] to vessel:
        vessel wait_for_berth()
        if any berth freed:
            note its berthing time
            give it to vessel at front in the queue
            Process_for_unloading_container()
            leave_the_berth()
    else:
        note its berthing time
        give it to vessel at front in the queue
        Process_for_unloading_container()
        leave_the_berth()
```

2. Scenario of Containers and Cranes: Process_for_unloading_containers()

```
All containers numbered from [1-150] will be queued and request for the crane [2 cranes available] to be allocated
    if crane available to container:
        crane will pick a container at front at a time
        3 minutes of time will elapsed by the crane to move container + waiting time for truck.
        Process_for_loading_container_on_truck()
    else:
        wait_for_the_crane()
```

3. Scenario of Crane and Trucks: Process_for_loading_container_on_truck()

```
Cranes request for the truck [3 trucks available] truck's service time per container is 6 minutes.
    if atleast truck available:
        crane queued at front will get the truck and load the container.
        Truck take 6 minutes to drop the container to yard block and return.
```