

## Exercise 2

It is the time to open up the black-boxes without imposing too much constraints on the implementation details. Let's modify the solution so that it would log important events in the following format:

- Log entries are in JSON, one JSON object per line
- Optional text comments could start with the #, they are ignored.

We need to **log an entry when the important domain events happen: transport departs and when it arrives**.

A single line in the log might look like the one below. It is pretty-printed to look nice, normally it would be **one line**:

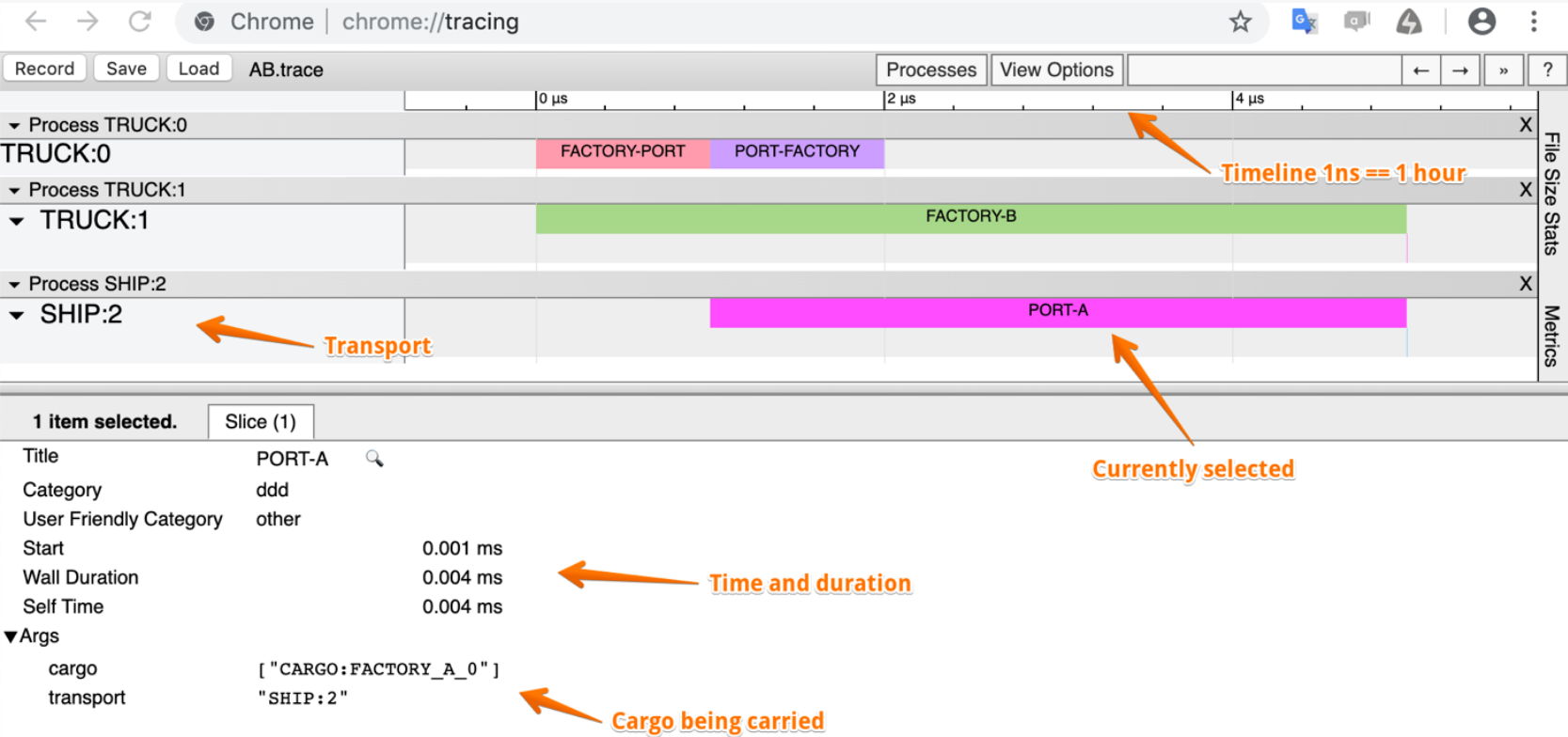
```
{
  "event": "DEPART",      # type of log entry: DEPART or ARRIVE
  "time": 0,             # time in hours
  "transport_id": 0,      # unique transport id
  "kind": "TRUCK",        # transport kind
  "location": "FACTORY",  # current location
  "destination": "PORT",  # destination (only for DEPART events)
  "cargo": [              # array of cargo being carried
    {
      "cargo_id": 0,      # unique cargo id
      "destination": "A", # where should the cargo be delivered
      "origin": "FACTORY" # where it is originally from
    }
  ]
}
```

Given that file, we could do two things with our event logs:

1. Compare the reasoning of our solution to the reasoning from the another solution (even though they could be in different languages).
2. Feed it to the <https://github.com/Softwarepark/exercises/tree/master/transport-tycoon/trace/> script that will convert this log to Chrome Trace Viewer format file (also JSON, but a different format).  
That file could be loaded in Chrome to display the outline of our travel.

Here is an example event log for the entire AB delivery:

```
# Deliver AB
{"event": "DEPART", "time": 0, "transport_id": 0, "kind": "TRUCK", "location": "FACTORY", "destination": "PORT", "cargo": [{"cargo_id": 0, "destination": "A", "origin": "FACTORY"}]}
{"event": "DEPART", "time": 0, "transport_id": 1, "kind": "TRUCK", "location": "FACTORY", "destination": "B", "cargo": [{"cargo_id": 1, "destination": "B", "origin": "FACTORY"}]}
{"event": "ARRIVE", "time": 1, "transport_id": 0, "kind": "TRUCK", "location": "PORT", "cargo": [{"cargo_id": 0, "destination": "A", "origin": "FACTORY"}]}
{"event": "DEPART", "time": 1, "transport_id": 0, "kind": "TRUCK", "location": "PORT", "destination": "FACTORY"} {"event": "DEPART", "time": 1, "transport_id": 2, "kind": "SHIP", "location": "PORT", "destination": "A", "cargo": [{"cargo_id": 0, "destination": "A", "origin": "FACTORY"}]}
{"event": "ARRIVE", "time": 2, "transport_id": 0, "kind": "TRUCK", "location": "FACTORY"}
{"event": "ARRIVE", "time": 5, "transport_id": 1, "kind": "TRUCK", "location": "B", "cargo": [{"cargo_id": 1, "destination": "B", "origin": "FACTORY"}]}
{"event": "DEPART", "time": 5, "transport_id": 1, "kind": "TRUCK", "location": "B", "destination": "FACTORY"} {"event": "ARRIVE", "time": 5, "transport_id": 2, "kind": "SHIP", "location": "A", "cargo": [{"cargo_id": 0, "destination": "A", "origin": "FACTORY"}]}
{"event": "DEPART", "time": 5, "transport_id": 2, "kind": "SHIP", "location": "A", "destination": "PORT"}
```



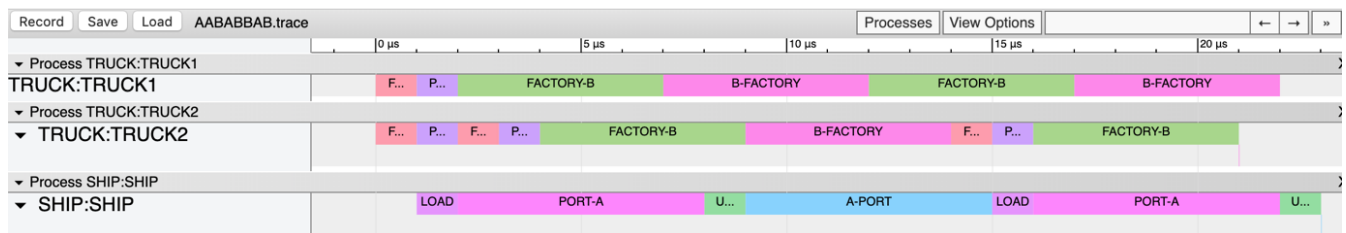
## Task

- **Extend your solution** to print domain events.
- Run the domain event log through the [trace.py](#) converter and then **display in the Chrome Trace tool**.  
Does the **AABABBAB** solution look right? Does it complete on the hour 29? What about **ABBBABAAABBB**?
- Add a new rules to the code:
  - **Ship can take up to 4 containers, but is slower now:**
  - Ship takes 1 hour to load *all* cargo
  - Ship takes 1 hour to unload *all* cargo
  - Ship takes 6 hours to travel in each direction
  - Note, that ship doesn't wait to be full in order to DEPART. It just LOADs the available cargo and leaves.
- Add **LOAD** and **UNLOAD** events to the domain output. They have similar schema as **ARRIVE**, are published at the beginning of the operation and have **duration** field (**0** for TRUCK and **1** for the SHIP)

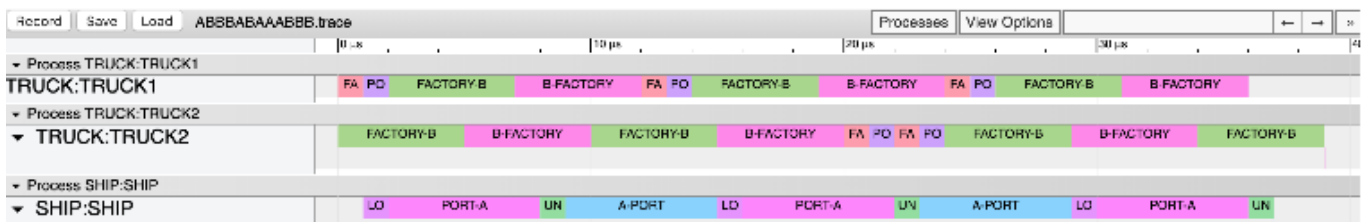
## Reference Traces

We are including reference traces so that you could compare your simulation results.

### *AABABBAB*



### *ABBBABAAABBB*



## Exercise Notes

- Feel free to add domain logs and rendered trace files alongside your solution and **point to their folder** in the solution list  
<https://github.com/Softwarepark/exercises/blob/master/transport-tycoon/README.md> ("Ex 2" column). For example, put domain logs for the **AB** scenario into **AB.log**.  
Solution list already has some references.
- Check out the exercise discussions at <https://github.com/orgs/ddd-exercises/teams/tt/discussions>