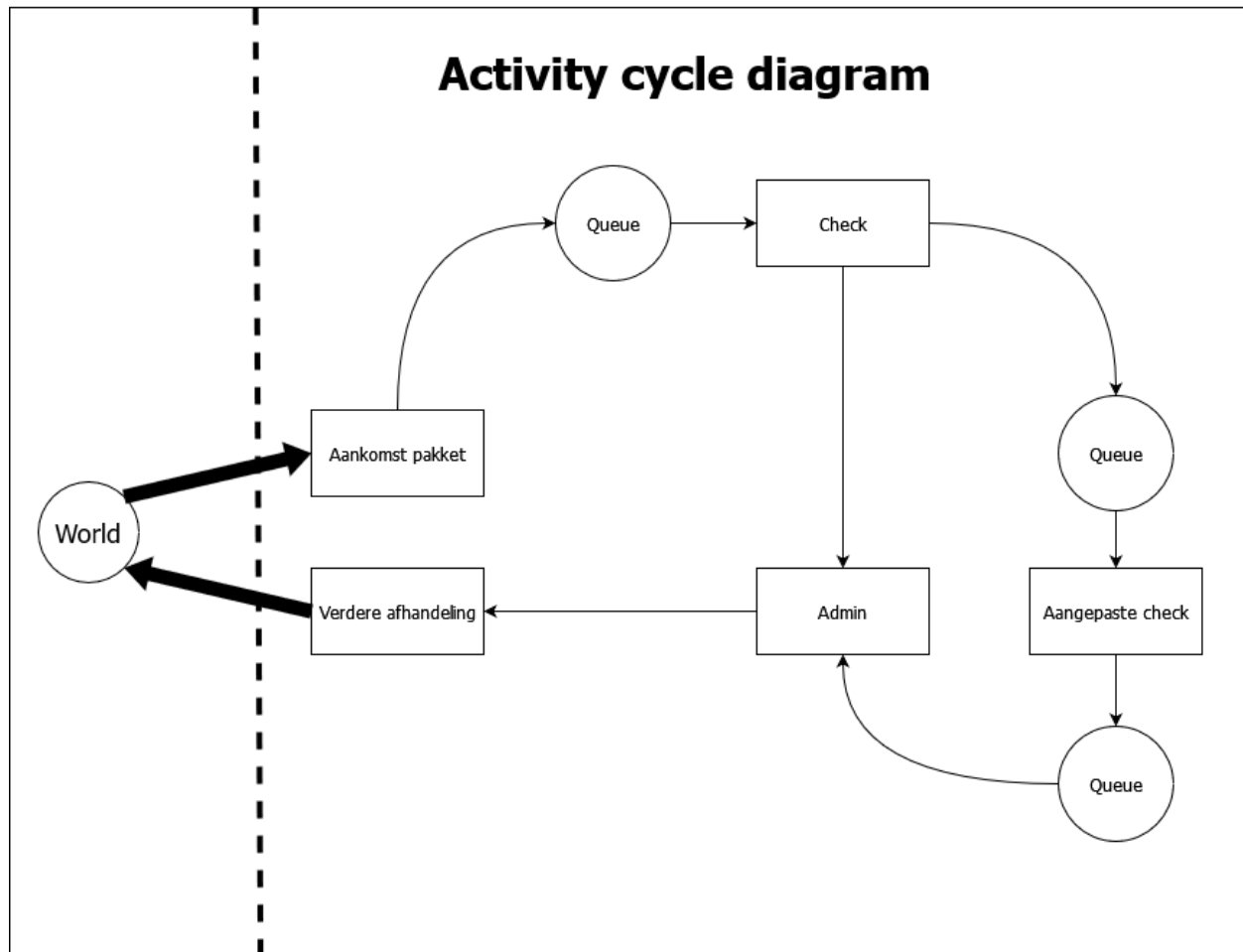


Eindopdracht

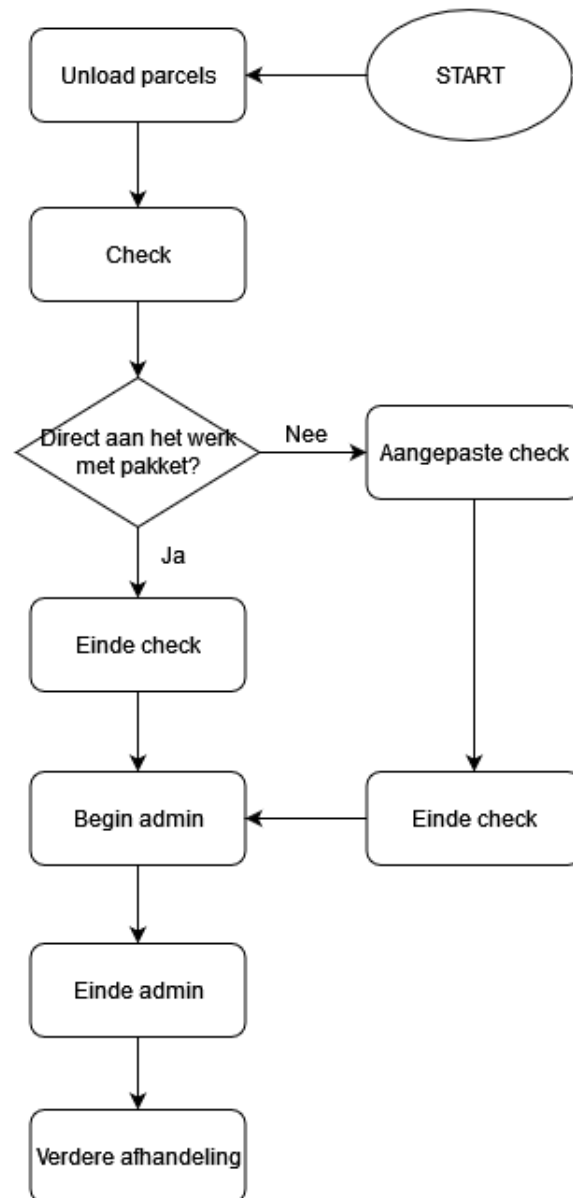
Mohammed Al Hor

2023-01-19

1. (2 points) Design a conceptual model for the analysis of the express company described in the case. Make a logic flow diagram and an activity cycle diagram. Note: the idea is to simulate multiple days. Construct a simulation model specification on paper in which the simulated days are run sequentially, without any time in between.



Logic flow diagram



2 (a) The mean, and standard deviation of the checking time, admin time, wait time before checking, wait time before admin, and total throughput time of a parcel.

Express worker mean and sd of checking time in hours:

Mean:

0.08177864 Hours

Standard deviation:

0.01593596 Hours

Express worker mean and sd of wait time in hours:

Mean:

0.03481143 Hours

Standard deviation:

0.05387818 Hours

Admin worker mean and sd of checking time in hours:

Mean:

0.1308929 Hours

Standard deviation:

0.03200319 Hours

Admin worker mean and sd of wait time in hours:

Mean:

0.03481143 Hours

Standard deviation:

0.05387818 Hours

Mean and standard deviation of total throughput of a parcel in hours:

Mean:

0.2490325 Hours

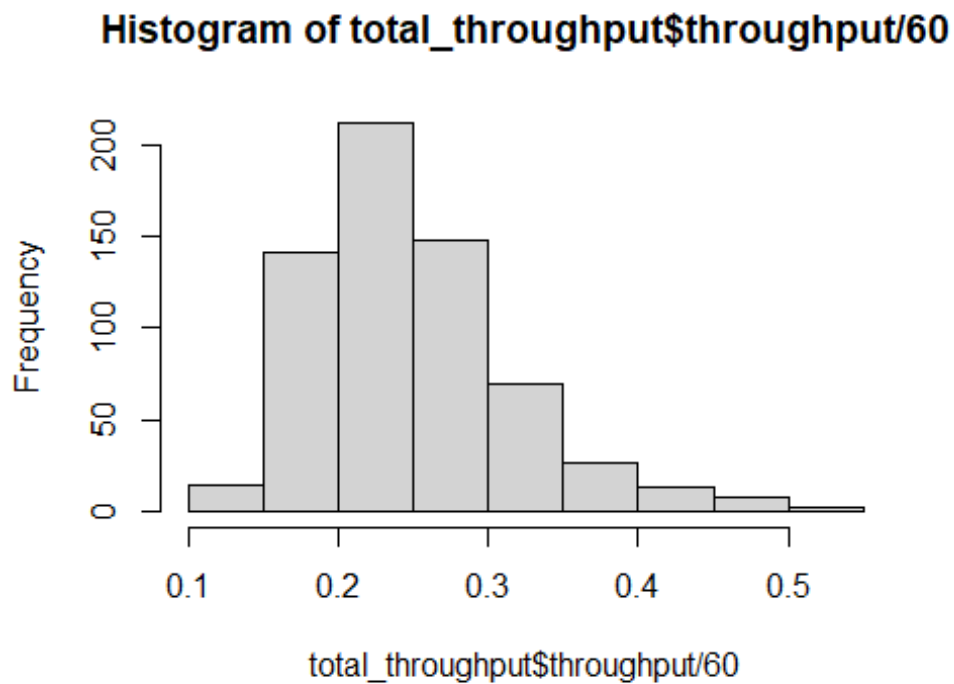
Standard deviation:

0.06722136 Hours

2 (b) A density histogram of the total throughput, checking time, admin time, wait time before checking and wait time before admin in the simulation.

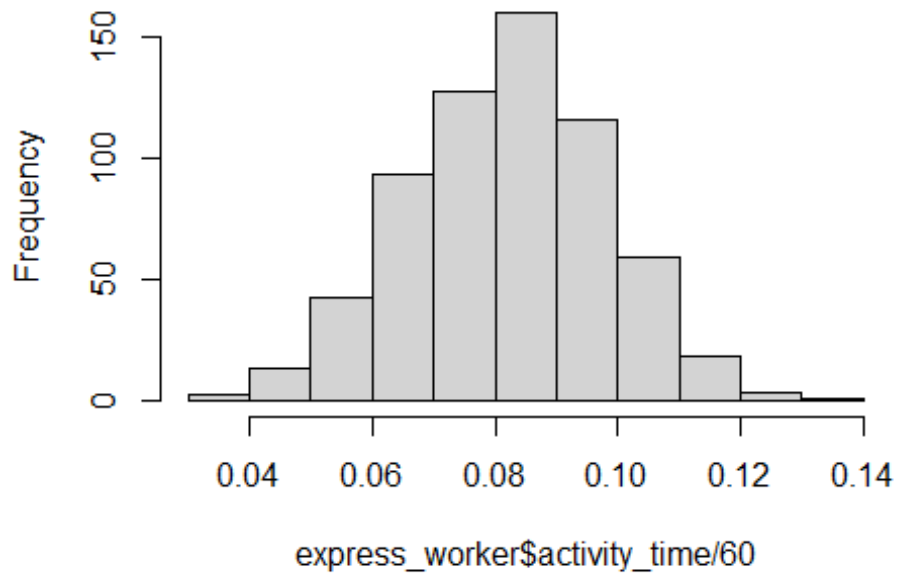
*All of these values have been converted to hours

Histogram of total throughput:



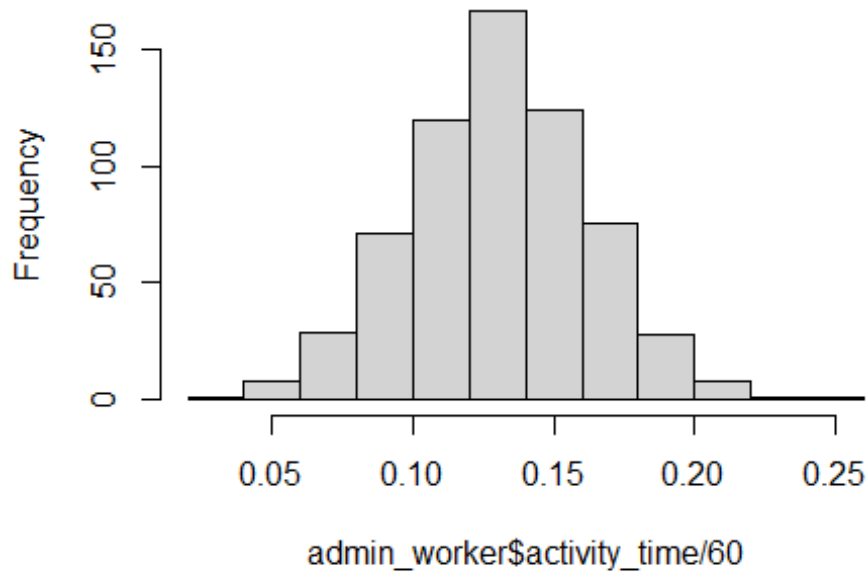
Histogram of checking time:

Histogram of express_worker\$activity_time/60



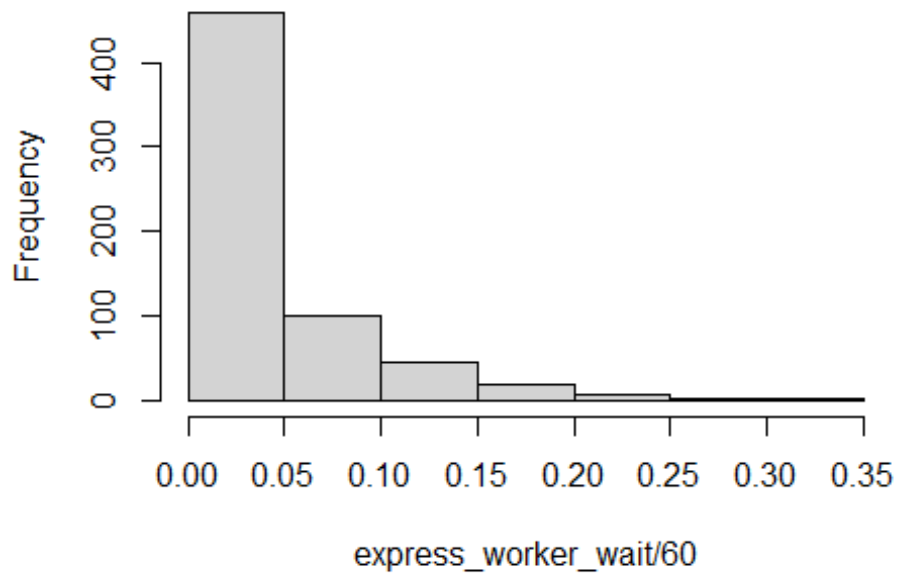
Histogram of admin time:

Histogram of admin_worker\$activity_time/60



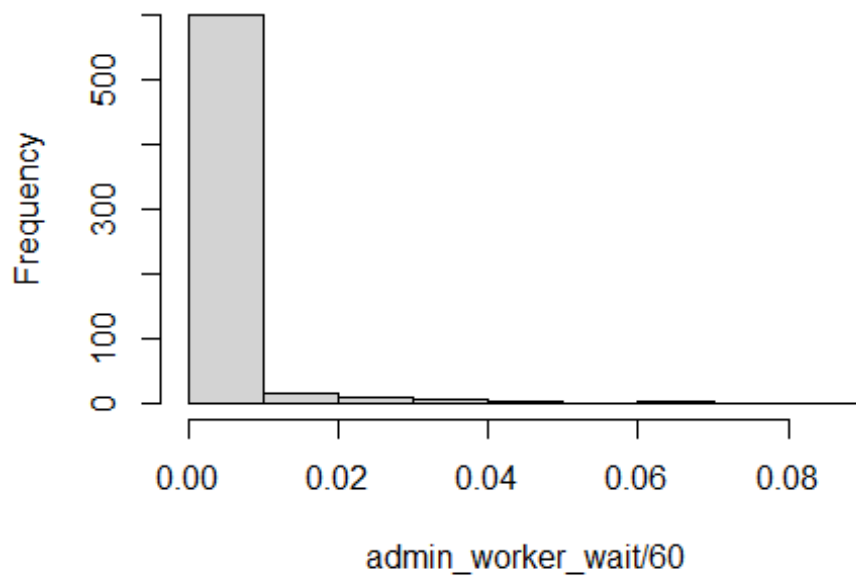
Histogram of wait time before checking:

Histogram of express_worker_wait/60



Histogram of wait time before admin:

Histogram of admin_worker_wait/60



(c) The proportion of parcels sent out in time. Please also state the simulated amount of parcels and the runtime.

Proportion of parcels sent out on time:

100% of parcels are shipped out on time

Total number of parcels simulated:

634 parcels were simulated.

Total runtime in hours:

157.8866 hours