# Guide to scripts and files- broken up into sections based on report

## Data collection

***Data\_Parser.py***: reads raw observations and produces some data summaries- this was used to extract service times and inter-arrival times

***AllInterarrivalTimes2.txt***: a list of all inter-arrival times

***AllServiceTimes2.txt:*** a list of all server times

All other text files are the raw data collected using Monitor.py- shown in table below

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| File name (.txt) | Session time | No. customers | Av. service | Av. inter-arrival |
| evening\_30\_03 | Wed- Evening | 21 | 75.75 | 52.74 |
| morningCrew300316 | Wed- Morning | 28 | 51.43 | 89.27 |
| midday\_d | Sat- Midday | 36 | 104.47 | 80.31 |
| midday\_29\_01 | Tues- Midday | 42 | 78.66 | 68.25 |
| morningCrew010416 | Fri- Morning | 55 | 82.32 | 41.64 |
| morning\_k | Sat- Morning | 60 | 91.88 | 57.18 |
| midday\_01\_04 | Fri- Midday | 78 | 75.65 | 32.6 |
| Totals/Averages |  | 320 | 81.36 | 55.09 |

## Data fitting

***DataFittingServiceTimes.py*** and ***DataFittingInterarrivalTimes.py***: utilises the scipy library to fit distributions and test these with the chi squared test

## Models

***G/G/C.py***: simulates the G/G/C model

***MMC.py***: simulates the M/M/C model

***Empirical.py***: simulates the empirical model

***G⁄G⁄C\_varyingServers.py:*** used to compare completion times for different numbers of servers

## Comparing models with observations

***arrival\_departure\_plot\_rawData.py***: a modification of *Data\_Parser.py* that reads a raw data file and produces a plot of customers in the system over time (and servers open)

***min\_before\_departure.py:*** reads raw data and calculates the time each customer arrived before departure

***min\_before\_departure\_list.txt***: list of minutes before departure generated using the *min\_before\_departure.py* script

***ArrivalProportions.py***: from the list of arrival times before departure works out the proportion of customers in each of seven time intervals

***proportions\_model.py***: simulates a deterministic arrival rate based on proportions with service times following the gamma distribution