Question 1

Compute the response time and turnaround time when running three jobs of length 200 with the SJF and FIFO schedulers.

```
./scheduler.py -p FIFO -j 3 -l 200,200,200 -c
  Job   0 -- Response: 0.00  Turnaround 200.00  Wait 0.00
  Job   1 -- Response: 200.00  Turnaround 400.00  Wait 200.00
  Job   2 -- Response: 400.00  Turnaround 600.00  Wait 400.00
  Average -- Response: 200.00  Turnaround 400.00  Wait 200.00

./scheduler.py -p SJF -j 3 -l 200,200,200 -c
  Job   0 -- Response: 0.00  Turnaround 200.00  Wait 0.00
  Job   1 -- Response: 200.00  Turnaround 400.00  Wait 200.00
  Job   2 -- Response: 400.00  Turnaround 600.00  Wait 400.00
  Average -- Response: 200.00  Turnaround 400.00  Wait 200.00
```

Question 2

Now do the same but with jobs of different lengths: 100, 200, and 300.

```
./scheduler.py -p FIFO -j 3 -l 100,200,300 -c
  Job   0 -- Response: 0.00  Turnaround 100.00  Wait 0.00
  Job   1 -- Response: 100.00  Turnaround 300.00  Wait 100.00
  Job   2 -- Response: 300.00  Turnaround 600.00  Wait 300.00
  Average -- Response: 133.33  Turnaround 333.33  Wait 133.33

./scheduler.py -p SJF -j 3 -l 100,200,300 -c
  Job   0 -- Response: 0.00  Turnaround 100.00  Wait 0.00
  Job   1 -- Response: 100.00  Turnaround 300.00  Wait 100.00
  Job   2 -- Response: 300.00  Turnaround 600.00  Wait 300.00
  Average -- Response: 133.33  Turnaround 333.33  Wait 133.33
```

Question 3

Now do the same, but also with the RR scheduler and a time-slice of 1.

```
./scheduler.py -p RR -j 3 -l 200,200,200 -c
  Job   0 -- Response: 0.00  Turnaround 598.00  Wait 398.00
  Job   1 -- Response: 1.00  Turnaround 599.00  Wait 399.00
  Job   2 -- Response: 2.00  Turnaround 600.00  Wait 400.00
  Average -- Response: 1.00  Turnaround 599.00  Wait 399.00

./scheduler.py -p RR -j 3 -l 100,200,300 -c
  Job   0 -- Response: 0.00  Turnaround 298.00  Wait 198.00
  Job   1 -- Response: 1.00  Turnaround 499.00  Wait 299.00
  Job   2 -- Response: 2.00  Turnaround 600.00  Wait 300.00
  Average -- Response: 1.00  Turnaround 465.67  Wait 265.67
```

Question 4

For what types of workloads does SJF deliver the same turnaround times as FIFO?

Jobs that are already sorted by execution time.
Jobs that are all the same length.

Question 5

For what types of workloads and quantum lengths does SJF deliver the same response times as RR?

Jobs that are as long as the time slice, or vice versa.
The last Job can be infinitely long since this has no impact on the response time.

Question 6

What happens to response time with SJF as job lengths increase? Can you use the simulator to demonstrate the trend?

The response time also increases.

Question 7

What happens to response time with RR as quantum lengths increase? Can you write an equation that gives the worst case response time, given N jobs?

Response time increases linearly with quantum length increase. Let N be the number of jobs and q the quantum length, then the worst-case response time is (N-1)q/N.