

# COMP3950 Project Description

Due: 14th April 2017

Lines serve as some of the greatest annoyances of everyday life. Chief among these irksome lines are those that we encounter in grocery stores. Consequently, deciding how the lines in grocery stores are managed, created, and run is vital towards providing a good experience for customers. Queueing theory and queueing simulations are good tools for aiding in those decisions. Your tasks are as follows:

- Go to a grocery store and record the inter-arrival and service times for customers for a reasonable period of time
- Record other factors about the queues for cashing - the number, the manner in which customers decide which line to go to, whether there are express lanes or not, etc....
- Assuming the inter-arrival times and service times are exponentially distributed, write a simulation for the grocery store
- Measure, from your simulation, various performance characteristics of the grocery - average queue length, average weighting time, average number of servers every time step, etc...
- Attach to the waiting time and service times a reasonable cost per time unit
- Make one suggestion on how the grocery can bring down costs and use your simulation to justify it.

**Deliverable:** Code used to simulate the grocery and a short report (no more than 4 pages) stating your assumptions, showing your data, describing how you decided the values for different parameters, and briefly outlining your improvement.