

# SMS Simulation Exercise

The objective is to simulate sending a large number of SMS alerts, like for an emergency alert service. The simulation consists of three parts:

1. A producer that generates a configurable number of messages (default 1000) to random phone numbers. Each message contains up to 100 random characters.
2. A configurable number of senders who pick up messages from the producer and simulate sending messages by waiting a random period of time distributed around a configurable mean. Senders also have a configurable failure rate.
3. A progress monitor that displays the following and updates it every N seconds (configurable):
  - a. Number of messages sent so far
  - b. Number of messages failed so far
  - c. Average time per message so far

One instance each for the producer and the progress monitor will be started while a variable number of senders can be started with different mean processing time and error rate settings.

*You are free in the programming language you choose, but your code should come with reasonable unit testing.*