The Kitchen Sink
SCC 121: Lecture 4

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Items in the Sink

- Based on your questions, difficulties and my observations
  - In class and in practicals
- Not a revision lecture
- Lots of software implementation

The Items

- C: Passing values (including pointers) into functions
- A variant of last week's practical, including the Hacker Ed
  - Brings together 2D arrays, sets, relations, and some nice programming idioms
  - Linear array representation of binary relation versus matrix-based representation
- What are bounded queues good for?
- How to implement a bounded queue using arrays
  - Hacked Ed next week asks you to implement a more efficient variant

Synchronization using Bounded Queue

- In many settings, you have producers enqueueing items to a queue and consumers dequeuing them
- If the queue is full, producers stop producing new items, in effects synchronizing with the consumers
- TCP, the network protocol used by vast majority of Internet applications, uses this idea so that senders doesn’t overwhelm receivers by sending messages faster than the receiver can process them
- Produce-Consumer is a paradigmatic problem in concurrency

Code on Moodle

- Binary-relation-type-checker.c
  - Matrix-based implementation of checking binary relations for various properties
- Queue-array.c
  - Array-based implementation of bounded queue
- Hacker ed in practical next week
  - Circular buffer-style queue: More efficient version of bounded queue