

# Exam II Review

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## 1 Review

1. Performance evaluation equation: total running time.
2. Carry lookahead addition:
  - (a) Important equations:  $p$ ,  $g$ ,  $c$ ,  $P$ ,  $G$ ,  $PP$ ,  $GG$ .
  - (b) Two building blocks.
  - (c) Structure and running time.
3. Multiplication:
  - (a) shift and add; enhancements.
  - (b) Booth recoding.
  - (c) Froebenious iteration.
4. Basic datapath elements: memory, registers, ALUs/adders, register file, muxes.
5. The instruction cycle.
6. Single-cycle datapath. Combinational control.
7. Multi-cycle datapath:

- (a) Improvement over the single-cycle implementation.
- (b) Sequential control.
- (c) State machine/instruction cycle stages.