Conditional Statements

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Fetch Execute Cycle

- A central part of the CPU is the ***Program Counter*** a.k.a. ***Instruction Counter***

- Its contents are the address of the next instruction to be executed

- Fetch-Execute cycle:

  - Fetch the instruction from where the program counter tells you

  - Execute the instruction while incrementing the program counter

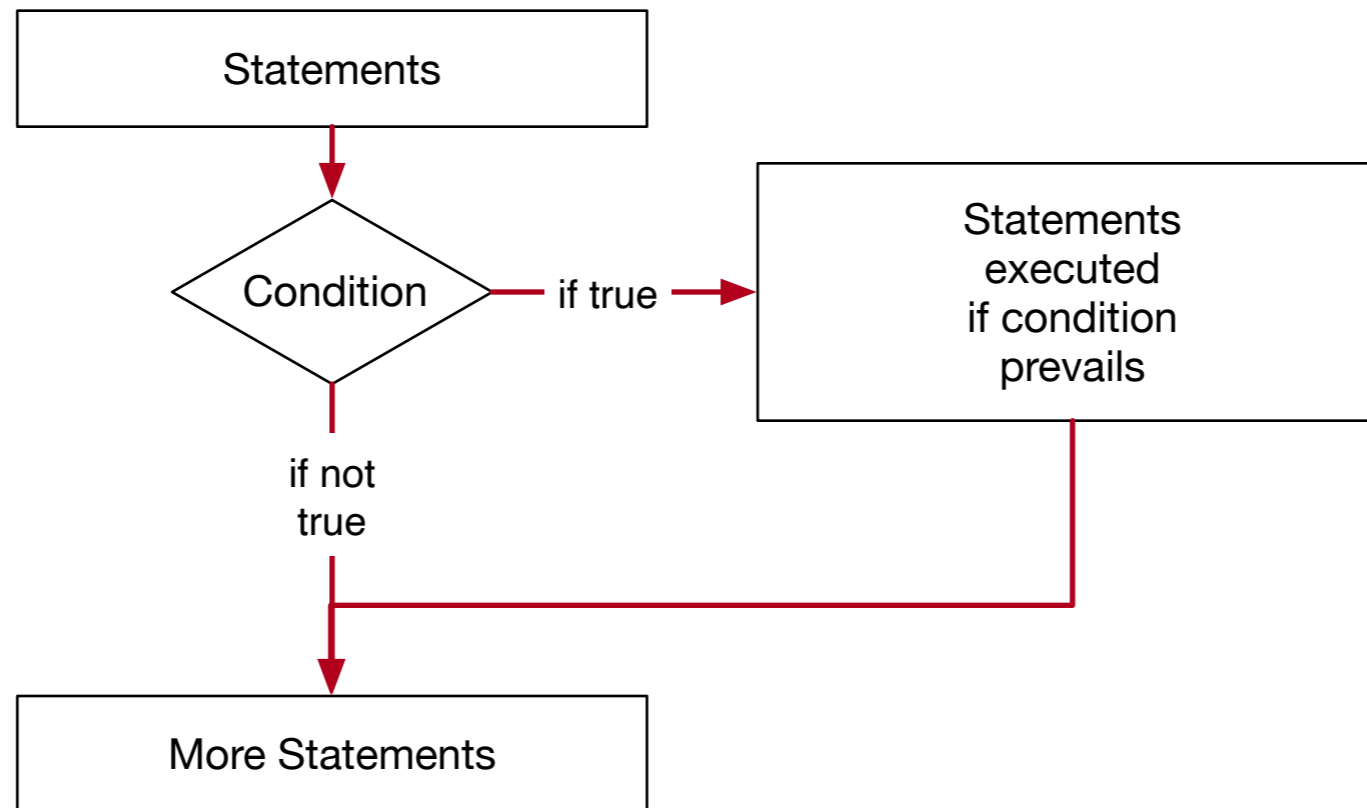# Program Flow

- This allows programs to execute a linear list of instructions

  - But it is not sufficient

    - Need to

      - Repeat program fragments

      - React to the environment

      - React to computed results

Program Flow

- Computer Science have developed several classic paradigms

  - Used to be given as flow diagrams, because the actual programming was not trivial
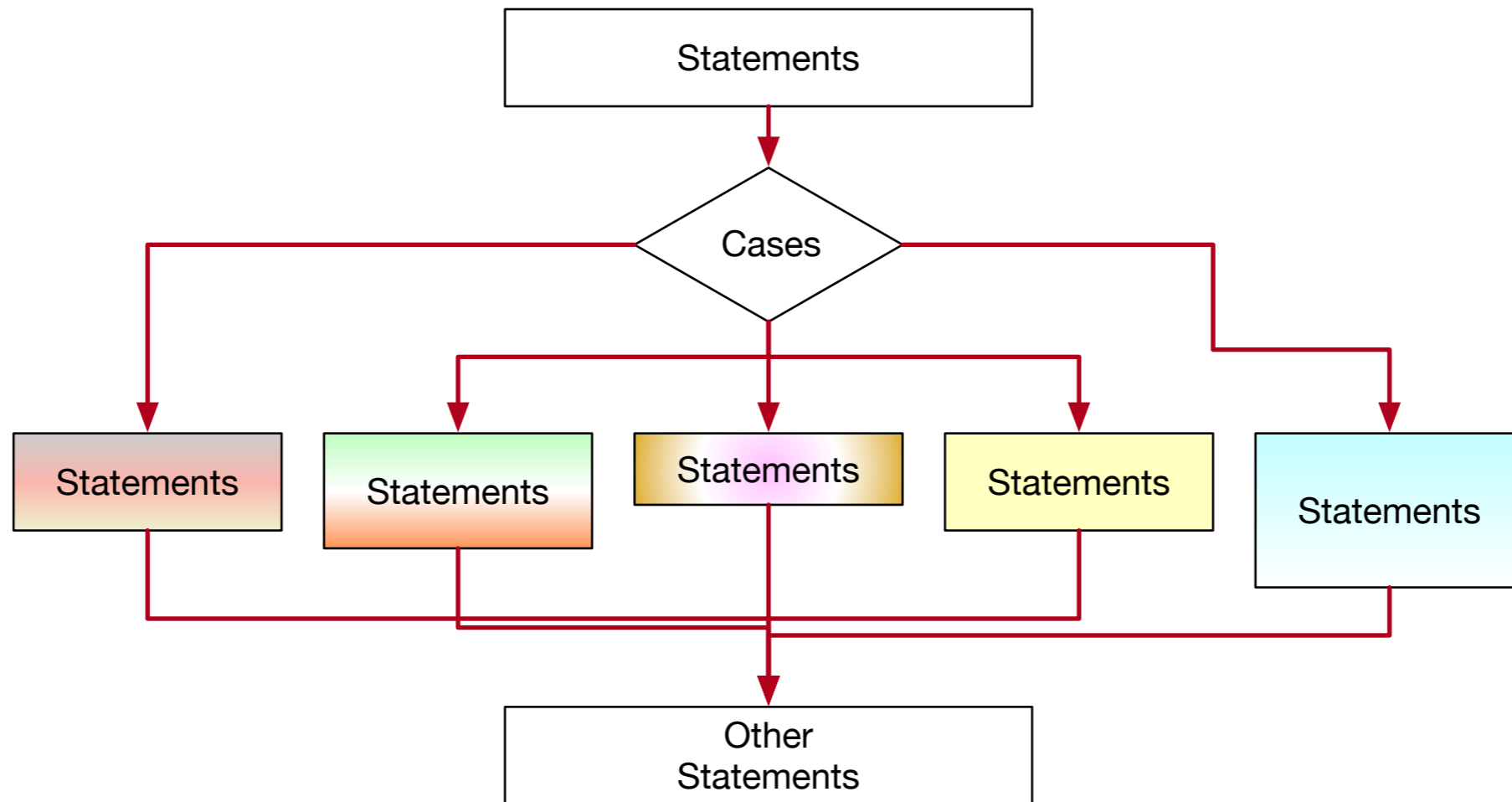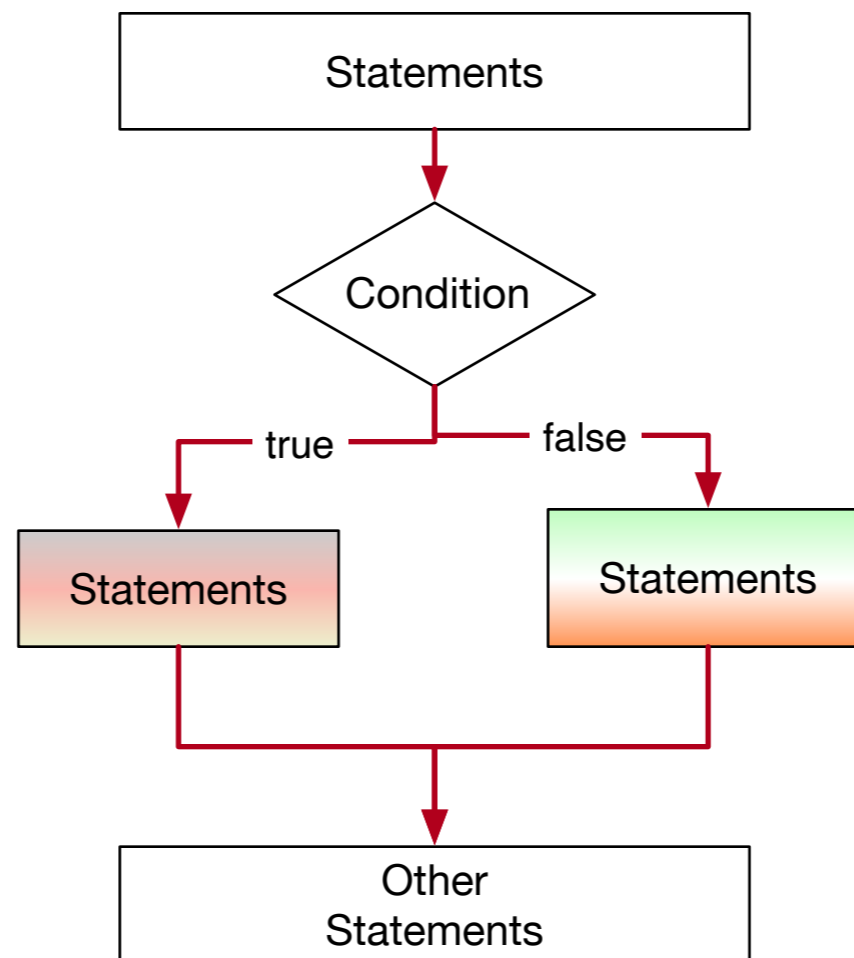
Program Flow

- Conditional Execution

Program Flow

- A switch statement

Program Flow

- The if-else pattern is a sub-pattern of the switch

Program Flow

- A loop:

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            ┌─────────────────┐
            │   Statements    │
            └────────┬────────┘
                     │
                     ▼
              ◇ Condition ◇ ──── if false ──┐
              ▲      │                       │
              │   if true                    │
              │      ▼                        │
              │  ┌──────────────┐            │
              │  │  Repeated     │            │
              │  │  Statements   │            │
              │  └──────┬───────┘            │
              └─────────┘                     │
                                              ▼
            ┌─────────────────┐
            │   Statements    │
            └─────────────────┘
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