ECS 235B Module 2
Basic Components
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• Confidentiality
  • Keeping data and resources hidden

• Integrity
  • Data integrity (integrity)
  • Origin integrity (authentication)

• Availability
  • Allowing access to data and resources
McCumber Cube

Critical Information Characteristics
- CIA Triad

Information States
- Stages in handling information

Security Measures
- Controls for information access and handling

Information States

• Storage
  • Where data is kept
  • Examples: disks, USB memory sticks

• Transmission
  • How data moves from one place to another
  • Examples: network connections, pipes

• Processing
  • Computations using the information
  • Examples: computing statistics, drawing pictures
Security Measures

• Technology
  • Something implemented and used to ensure critical information characteristics maintained through information states
  • Example: encryption, access controls

• Policy and Practice
  • Something which says what information can be accessed, by whom, and how; a procedure to enhance security
  • Example: students may not access one another’s homework files

• Education, Training, and Awareness
  • Make people understand security at level appropriate for them
  • Example: cybersecurity training UC Davis folks must take
Assumptions and Trust

• Underlie *all* aspects of security

• Policies
  • Unambiguously partition system states
  • Correctly capture security requirements

• Mechanisms
  • Assumed to enforce policy
  • Support mechanisms work correctly