What you should know-1

- What is data hiding, its application and requirements?
  - Embedding other data in a cover media, e.g. data casting in Television, captioning, copyright protection, ownership assertion
  - Embed as many bits as possible while not altering appearance of cover media and being resistant to modification
    - Robustness, imperceptibility and payload (capacity)
  - How does watermarking, fingerprinting, authentication, and steganography differ in their goals?
    - I.e, how does data hiding facilitate them?
What you should know-2

• What is watermarking, its application and requirements?
  – The watermark signal is used for intellectual property protection of the cover media
  – Requirements are application dependent
  – Should know differences about different applications
    • ownership assertion, authentication, copy prevention, change detection, etc.
  – Some basic techniques
    • Spatial domain modification
    • Transform domain modification
What you should know-3

• What is authentication?
  – Public key cryptography is used for this purpose
    • Encryption/decryption and hashing
    • It does not work well with multimedia signal
  – Certain signal processing operations may be tolerable whereas others not
    • Compression, contrast/brightness adjustment, translation, scaling
  – Fragile watermarking
    • Embed intrinsic features of the image in a way that is invariant under the specified signal processing operations
What you should know-4

- What is fingerprinting?
  - How is it different than watermarking?
    - Associates the cover media to its holder
    - In addition, it requires the ability to resist collusion
  - This is achieved by an intelligent design of the watermark
    - Many users cooperate to generate a new version of the cover through processing (averaging, copy-pasting, etc.) each individual’s copy
    - Each watermark is a codeword as in error correcting codes
    - These codes (when colluded) enable tracing colluders
What you should know-5

• What is steganography, its application and requirements?
  – Steganography: Embed secret messages in a cover media
  – Minimize the probability of detection of secret messages
  – Active vs. passive steganography
• What is steganalysis, its application and requirements?
  – Detect the presence of a secret message (not necessarily decipher the message)
  – Maximize the probability of detection of secret messages
• Watermarking and steganography are special cases of data hiding