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# Mobile Systems


Lecture 4 – 17/03/15

## Workshop 2: Image coding

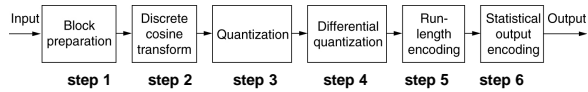
COMP28512

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## JPEG image compression: Summary



```

graph LR
    Input --> B1[Block preparation]
    B1 --> B2[Discrete cosine transform]
    B2 --> B3[Quantization]
    B3 --> B4[Differential quantization]
    B4 --> B5[Run-length encoding]
    B5 --> B6[Statistical output encoding]
    B6 --> Output
    B1 --- S1[step 1]
    B2 --- S2[step 2]
    B3 --- S3[step 3]
    B4 --- S4[step 4]
    B5 --- S5[step 5]
    B6 --- S6[step 6]
  
```


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## MATLAB demonstration

- Course web-site has the following progs:
  - Lecture4tiledimageEncoder.m
  - Lecture4tiledimageDecoder.m
- Also a selection of image files.
- Encoder implements steps 1-3 & stores the resulting data in a file: 'imageData.dat'.
  - '4x4' I-tiles are combined in fours to give 8x8 I-tiles.
  - Similarly for Q-tiles.
- Decoder reads the data & reconstructs the image.
- No run-length coding has been implemented yet.
- No Huffman coding yet.
- Other aspects are shown to work.

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## Extra problem

Symbols A,B,C,D E,F,G have probabilities:  
0.12, 0.13, 0.07, 0.07, 0.1, 0.36, 0.15

Devise a Huffman code & consider how it would be decoded..

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