Multimedia
Mock Exam Questions Dec 1999

Exam paper format:

- Time Allowed: 2 Hours
- *Answer 3 Questions out of 4*
- Each Question Carries 27 Marks

1. (a) What is meant by the terms *Multimedia* and *Hypermedia*? Distinguish between these two concepts. [2]

(b) What is meant by the terms *static* media and *dynamic* media? Give two examples of each type of media. [4]

(c) What major factors affect the integration of multimedia in a multimedia presentation? [8]

(d) Describe giving suitable code fragments how you would effectively combine a video clip and an audio clip in an MHEG application. You may assume that both clips are of the same duration and must start at the same instant. [13]

2. (a) Why is file or data compression necessary for Multimedia activities?
[3]

(b) Briefly explain how the Discrete Cosine Transform Operates, and why is it so important in data compression in Multimedia applications
[10]

(c) A Simple Transform Encoding procedure maybe described by the following steps for a 2x2 block of monochrome pixels:

(b) Take top left pixel as the base value for the block, pixel *A*.
(c) Calculate three other transformed values by taking the difference between these (respective) pixels and pixel *A*, *i.e. B-A*, *C-A*, *D-A*.
(d) Store the base pixel and the differences as the values of the transform.

Given the above transform:

(i) What is the inverse transform? [2]
(ii) How may such a transform scheme be used to compress data?
[4]
(iii) Show how you would encode and compress the following image block:

10	20	20	25
15	25	15	20
20	25	10	20
15	20	15	25

[5]
(iv) Why is this scheme not very suitable for general image compression?
[3]

3 (a) What are the major factors to be taken into account when considering storage requirements for Multimedia Systems? [4]

(b) What is RAID technology and what advantages does it offer as a medium for the storage and delivery of large data? [4]

(c) Briefly explain the *eight* levels of RAID functionality. [8]

(d) A digital video file is 40 Mb in size. The disk subsystem has four drives and the controller is designed to support read and write onto each drive, concurrently. The digital video is stored using the *disk striping* concept. A block size of 8 Kb is used for each I/O operation.

(i) What is the performance improvement in *sequentially* reading the complete file when compared to a single drive subsystem in terms of the number of operations performed?

(ii) What is the percentage performance improvement for this system compared to a single drive system?

[11]

4 (a) Give a definition of a Multimedia Authoring System. What key features should such a system provide? [2]

(b) What Multimedia Authoring paradigms exist? Describe each paradigm briefly. [8]

(c) How would you facilitate the following application in Macromedia Director. Your answer should concentrate on the Lingo programming aspects rather than Interface issues.

Accept two numeric inputs from an appropriate cast members that enables another cast member to be moved to the inputted 2D coordinates specified by the input. The input should be checked to see if valid coordinates have been specified. [17]