CARDIFF CARDIFF UNIVERSITY
EXAMINATION PAPER

Academic Year:	2000-2001
Examination Period:	Autumn 2000
Examination Paper Number:	CM0340
Examination Paper Title:	Multimedia
Duration:	2 hours

Do not turn this page over until instructed to do so by the Senior Invigilator.

Structure of Examination Paper:
There are three pages.
There are four questions in total.

There are no appendices.

The maximum mark for the examination paper is 100% and the mark obtainable for a question or part of a question is shown in brackets alongside the question.

Students to be provided with:
The following items of stationery are to be provided:
One answer book.

Instructions to Students:
Answer THREE questions.

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 are the main facilities that must be provides in a system designed to support the integration of multimedia into 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 and start a subtitle text display 19000 milliseconds into the video clip. You may assume that both clips are of the same duration and must start at the same instant. [13]

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

   (b) Briefly explain how the LZW Transform Operates. What common compression methods utilise this transform? [10]

   (c) Show how the LZW transform would be used to encode the following 2D array of image data. You should use 2x2 window elements for the tokens used in the encoding.

0	1	0	2	2	0
2	0	1	1	1	0
0	2	0	1	0	2
1	0	2	0	1	1
2	0	0	2	0	2
1	0	1	0	1	1

[14]

3. (a) What key features of Quicktime have led to its adoption and acceptance as an international multimedia format? [4]

(b) Briefly outline the Quicktime Architecture and its key components. [10]

(c) Quicktime provides many basic built-in *visual effect* procedures. By using fragments of Java code show how a cross-fade effect between two images can be created. You solution should concentrate only on the Java code specific to producing the Quicktime effect. You may assume that the images are already imported into the application and are referred to as sourceImage and destImage. You should not consider any Graphical Interfacing aspects of the coding.

4. (a) What is MIDI? How is a basic MIDI message structured? [6]

(b) In what ways can MIDI be used effectively in Multimedia Applications, as opposed to strictly musical applications? [8]

(c) How can MIDI be used with modern data compression techniques? Briefly describe how such compression techniques may be implemented. [13]