Liverpool John Moores University

Title: MULTIPLAYER ONLINE GAMES DEVELOPMENT
Status: Definitive
Code: **6059BECK**   (118391)
Version Start Date: 01-08-2011

Owning School/Faculty: Computing and Mathematical Sciences
Teaching School/Faculty: Beckett College London

Team	emplid	Leader
Rubem Pereira		Y

Academic Level: FHEQ6   **Credit Value:** 24.00   **Total Delivered Hours:** 72.00

Total Learning Hours: 240   **Private Study:** 168

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24.000
Practical	12.000
Seminar	12.000
Tutorial	24.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Students will develop an end-to-end solution for a distributed multimedia application, encompassing data manipulation and storage both at client and server, transmission, scheduling and routing across a computer network.	50.0	
Artefacts	AS2	Programming project involving online gaming design, architecture and programming.	50.0	

Aims

To develop an understanding of distributed multimedia system components, including compression and storage of multimedia data;
To examine the time constraints and synchronisation aspects associated with the delivery of video and audio streams and develop the networking requirements of distributed multimedia systems.
To explore the various design, technical and interactivity issues involved in multiplayer games.
To identify key factors affecting multiplayer games;
To study architectures, techniques and methods to use in online games design and implementation.

Learning Outcomes

After completing the module the student should be able to:

1   Analyse end-to-end design issues for distributed multimedia systems.
2   Critically evaluate the main components of distributed multimedia systems, including software, hardware, compression algorithms and storage schemes.
3   Elicit the transmission requirements of specific distributed multimedia applications.
4   Critically evaluate interactivity requirements of online games and other media productions.
5   Use advanced techniques for the design and implementation of online games.
6   Critically evaluate and select appropriate architectures for the development of large scale online games.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Distributed multimedia app	1	2	3
Programming project	4	5	6

Outline Syllabus

Multimedia traffic types;
Digital video systems hardware and software.
Image and video compression techniques and related standards, e.g. JPEG. MPEG.
Storage and retrieval aspects of video data:
Case study: VoD storage scheme
Server and client Buffering;
Algorithms for distributed multimedia support.
End-to-end QoS mechanisms: Admission Control, Resource allocation;
Issues and opportunities in online games;
The Internet model: Main protocols and implications for real-time traffic;
Networking Game Development: Architecture (peer-to-peer, client/server, floating server, (multiple)-Servers Network),

Issues (latency, reliability, Bandwidth, Security, Scalability),
Tools (protocols, APIs) and Techniques (Dead-Reckoning, Interest Management,
etc…); Interactivity Design: The Importance of Interactivity; Interactivity for
Multiplayer Online Games.

Learning Activities

Lectures, tutorials, seminar/group work, and practical/lab sessions.

References

Course Material	Book
Author	Li, Z-N. and Drew, M. S.
Publishing Year	2004
Title	Fundamentals of Multimedia
Subtitle	
Edition	
Publisher	Prentice Hall
ISBN	0130618721

Course Material	Book
Author	Armitage, G., Claypool, M. and Branch, P.
Publishing Year	2006
Title	Networking and Online Games Understanding and Engineering Multiplayer Internet Games
Subtitle	
Edition	
Publisher	Wiley
ISBN	0470018577

Course Material	Book
Author	Mulligan, J. and Patrovsky, B.
Publishing Year	2004
Title	Developing Online Games: An Insider's Guide
Subtitle	
Edition	
Publisher	New Riders Games
ISBN	1592730000

Course Material	Book
Author	Friedl, M.
Publishing Year	2002
Title	Online Game Interactivity Theory
Subtitle	

Edition	
Publisher	Charles River Media
ISBN	1584502150

Course Material	Book
Author	Kurose, J. F. and Ross, K. W.
Publishing Year	2009
Title	Computer Networking, a Top Down Approach
Subtitle	
Edition	5th Edition
Publisher	Addison Wesley
ISBN	0136079679

Notes

This module will help students develop knowledge distributed multimedia systems and techniques for support of distributed multimedia applications. Students will explore the various design, technical and interactivity issues involved in multiplayer games. By understanding these issues, developers can identify the factors that affect them, and learn which architecture, techniques and methods to use in online games design and implementation.