

**ONLINE BOOKING SYSTEM FOR MEETING AND SEMINAR
ROOMS COLLEGE OF ARTS AND SCIENCE,
UUM**

**A project submitted to Faculty of Information Technology in partial
fulfillment of the requirements for the degree Master
(Information Technology),
University Utara Malaysia**

By

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DEDICATION

....To My Family

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ABSTRACT

An online reservation service gives the flexibility to clients to access anytime and anywhere without wasting time and efforts. However, UUM has a large number of meeting rooms which use for certain events such as (Conferences, workshop, etc) the reservation process is preceding manually. The current system is unable to provide lecturers with the flexibility to do their reservation for certain events via the online reservation systems. Furthermore, the current reservation system is unable to check the room availability. Hence, it's proposes an online booking CAS system for meeting and seminar rooms. The general methodology was applied to achieve the study objectives. Additionally, and questionnaire technique was adopted in this study to measure the visual aspects of the application usability.

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CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter briefly elaborates the main idea of this study in term of data retrieving and representing process. However, this chapter provides an answer of the question why the study was conducted and what is the main element involved. The first sub-topic describes the overall idea in this study through the scenario and motivation that lead to the implementation of the whole project. This is followed by the problem statement, research question, research objectives, scope, and research significance. The last sub-topic elaborates the way this project is organized.

1.1 Background

Communication services becomes one of the most important applications in the world for providing clients with the intellectual services (Ahn, T., et al., 2004). The Internet has changed the way that the people look at life and business. Meanwhile, using the Internet becomes common thing and a lot of people prefer to work through the Internet while doing their jobs and business. The online booking system of meeting and seminar rooms will give us a flexible sustainable application aims to save time and emulate mistakes. Generally, users are looking for an interactive and easy way to communicate and do their jobs via Internet. The usefulness of the providing such a reservation services is to help staff in their daily work by making their reservation up to schedule, connected, and generating reports easily.

The contents of
the thesis is for
internal user
only

REFERENCE

Abowd, D., & Bahrami, A. (1999). *Object-oriented system development*. Boston, MA: Addison-Wesley Longman Publishing Co.

Ahmed, E. (2001). Architecture Recovery of Web Applications. *Paper presented at the 24th International Conference on Software Engineering (ICSE '02)*, (pp. 29-34). Orlando, Florida, USA: ACM.

Ahn, T., Ryu, S., & Han, I. (2004). The impact of the online and offline features on the user acceptance of Internet shopping malls. *Electronic Commerce Research and Applications*, 3(4), 405-420.

Anderson, P. (2007). What is Web 2.0? Ideas, technologies and implications for education. *JISC Technology and Standards Watch*, 1, 2-64.

Atanas, O., & Miriam, R. (2006). Static control-flow analysis for reverse Engineering of UML sequence diagram. *Journal of Software Engineering*, 31(1), 96-102.

Bennett, S., McRobb, S., & Farmer, R. (2002). *Object-oriented System Analysis and Design* (2nd Ed.). UK: McGraw Hill.

Chris, G., Shuo, T., & Samuel, T. (2008). Secure web browsing with the op web browser. *Proceeding of the IEEE Symposium Conference on Security and Privacy*, (pp. 402 – 416). IEEE.

Carlisle, G., & Jackie, S. (2007). User-Generated Content Online: Legitimate power or the Wild West. *Proceeding of the Annual Conference of Hertfordshire*, (pp. 1-12). British: Education and Technology Association.

Denver, I. (2010). *Astronomical Society, Choose Event for Reservation, University of Denver*. Retrieved 29, Jun, 2010, from <http://www.thedas.org/Calendar.html>.

Duncan, B. (2010). *Online booking system for university students*. Rice University. Retrieved 1, July, 2010, from http://www.ruf.rice.edu/~deanengr/reservations/rooms_policy.html.

Dennis, A., Wixom, H., & Tegarden, D. (2005). *System analysis and design with UML version 2.0: an object-oriented approach with UML*, (2nd Ed.). Hoboken, NJ: John Wiley and Sons, Inc.

Eriksson, H., & Penker, M. (2006). *UML Toolkit*. New Jersey: John Wiley & Sons, Inc.

Feng, Z., & Takeshi, C. (2009). A Web Application Framework for Reservation Systems and its Reusability Evaluation. *Proceedings of the International Conference of Engineers and Computer Scientists IMECS 2009, Hong Kong* (pp. 56-66). Japan, Kawasaki: IMECS.

Fang, F., Syahrul, A., & Musa, H. (2010). Design and Implementation of Airline Reservation Web Services Using Service-oriented Architecture. *Proceedings of the World Congress on Conference Engineering, 1, London* (pp. 67-73). U.K, London: WCE.

Goto, K., Matsubara, H., & Myojo, S. (1999). Autonomous Decentralized Systems, Integration of Heterogeneous Systems. *Paper presented at the Autonomous Decentralized Systems, 1999. Integration of Heterogeneous Systems. Proceedings. The Fourth International Symposium on. Proceedings of the Fourth International Symposium on*, (pp. 12-17). Japan, Tokyo: IEEE Computer Society.

George, C., & Scerri, J. (2007). User-Generated Content Online: Legitimate power or the Wild West?. *Paper presented at the Annual conference Hertfordshire*, (pp. 67-72). U.K, London: WCE.

Guntram, G., & Martin, G. (2005). An evolution-oriented architecture for web applications, Retrieved July 2, 2010, from (<http://www.teco.edu/~graef/paper/nosa99.pdf>)

Hoffer, J., George, J., & Valacich, J. (1999). *Modern Systems Analysis and Design* (2nd Edition). United Kingdom: Addison Wesley Longman.

Hoffer, J., George, J., & Valacich, J. (2002). *Modern Systems Analysis and Design* (3rd Ed). New Jersey, USA: Prentice Booking.

Jacobson, I., Christerson, M., Johnsson, P., & Overgaars, G. (2004). *Object-oriented Software Engineering: A Use Case Driven Approach*. Harlow, England: Addison-Wesley.

Scranton Reservation System. (2010). University Of Scranton Events System, On-Line Programs for General Users, retrieved July 2, 2010, from (http://matrix.scranton.edu/resources/re_rh_online.shtml).

Knight, A., & Dai, N. (2002). Objects and the Web. *Software, IEEE*, 19(2), 51-59.

Kong, X., Liu, L., & Lowe, D. (2006). Critical Feature Method-A Lightweight Web Maintenance Methodology for SMEs. *Journal of Digital Information*, 5(2), 56-67.

Laudon, K. C., & Laudon, J. P. (2000). *Management Information Systems*, New Jersey, USA: Prentice Hall PTR.

Lowe, D., & Henderson, B. (2003). *Characterising Web Systems: Merging Information and Functional Architectures*. Architectural Issues of Web-Enabled Electronic Business. New Jersey, USA: Idea Group Publishing.

Martin, J., & Odell, J. (1996). *Object Oriented Methods: a Foundation, the UML*. New Jersey, USA: Prentice Hall.

Nijaz, S. (2000). *Dynamic web-based application development*. New York, USA: Prentice Hall.

Niels, P., Moheeb, A., & Fabian, M. (2008). *All your iFRAMES point to us*. Presented In the Proceedings of the 17th Conference on Security symposium.

Richard, S., Jacob, H., Steven, D., & Henry, M. (2006). *A safety-oriented platform for web applications*. In the proceeding of the IEEE Symposium on Security and Privacy conference, 1-9.

Roy, T., & Richard, N. (2000). Principled design of the modern Web architecture. *ACM Transactions on Internet Technology (TOIT)*, 2(2), 115-150.

Refsdal, A., & Stølen, K. (2008). Extending UML sequence diagrams to model trust-dependent behavior with the aim to support risk analysis. *Electronic Notes in Theoretical Computer Science*, 197(2), 15-29.

Silva, P., & Paton, N. (2003). UML: The Unified Modeling Language for Interactive Applications. Retrieved 27, Jun, 2010, from <http://scholar.google.com/scholar?q=UMLi:%20The%20Unified%20Modeling%20Language%20for%20Interactive%20 Applications&hl=en&lr=&oi=scholar>.

Schmuller, J. (2002). *SAMS teach yourself UML in Hours*. Indiana, USA: SAMS Publishing.