بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـــســـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

Department of Mathematics
Faculty of Science
Cairo University

The Design of an Intelligent Advising System

M. Sc. Thesis Submitted by

Muhsin Issa Al Hasan

In partial fulfillment of the requirements
for the degree of M. Sc. in Computer Science

Supervised by:

Prof. B. T. Hassan

Mathematics Dep., Faculty of Science,
Cairo University
Giza, Egypt.

Dr. Mohamed Ashraf El-Kosheiry

Director of Computer Studies Division
at American University in Cairo
Cairo, Egypt

Cairo-Egypt
2000

Approval Sheet

The Design of an Intelligent Advising System

Master Thesis Submitted by

Muhsin Issa Al Hasan

This thesis for the Master Degree in Computer Science, Department of Mathematics, Faculty of Science, Cairo University, has been approved by:

Name	Signature
Prof. B. T. Hassan	.....
Dr. Mohamed Ashraf El-Kosheiry	.....

ACKNOWLEDGEMENT

I wish to express my sincere gratitude to Professor B. T. Hassan, head of the mathematics department for Faculty of Science at Cairo University.

Also I would like to thank *Dr. Ashraf El-Kosheiry*, for suggesting the plan of this work, spending uncounted hours of useful supervision with me, reading through the manuscript of this thesis and his very useful discussions. I also thank him for his help in knowledge acquisition as a domain expert, and for his kind support and guidance.

ABSTRACT

Next to grading, student advising in selecting courses for coming semester involves some of the most weary and difficult tasks that faculty encounter. Using computers makes the advising process more productive, and more pleasant, for both faculty and students. Using an expert system facilitates the enrollment process, where one can code the domain knowledge in the computer and link between it and the student records to provide the functions of a faculty advisor to student. This would help to reduce the tedium and improve the consistency in student advising.

In this research, we have chosen one of the most common methodologies in object-oriented software development; namely, **O**bject **M**odeling **T**echnique (**OMT**) developed by Rumbaugh to develop our system. We have developed a system called ISARS (**I**ntelligent **S**tudent **A**dvising and **R**egistration **S**ystem for Academic Advising). The proposed system will help an academic advisor at the Computer Studies Division of the American University in Cairo to advise students in selecting courses for the coming semester and register these students in those courses. Transcripts can be issued and the tuition fees due are reported.

For the analysis phase of the system, we have prepared a statement of the problem and built three models: the object model, the dynamic model, and the functional model. A statement of the problem was a result of the conceptualization phase. In this phase, we have defined the knowledge acquisition sources, studied and analyzed the concepts of the domain, selected the appropriate method for representing this knowledge.

For the system design, we have divided the proposed system into four subsystems. For the object design, we have determined the full definitions of classes used in the implementation, and written algorithms of the methods used to implement operations. For the system implementation, we have translated what was accomplished through analysis and design into code in Microsoft Visual C++ programming language. The system was then tested and evaluated on sample data sets.

The proposed system offers ease of use and maintenance, and provides accuracy of results. It is an advising and registration system that generates a full report on the selected courses by the student, checks on prerequisites, registers these courses, computes their costs, and computes the student GPA (Grade Point Average) along with the progress of the student. In addition, it allows the student to modify his previous registration by adding/dropping courses. It has subsystems for developing the data and knowledge in dynamic form (deleting, updating, and adding rule (or record)).

The system has a friendly user interface that allows the user to determine his responses by typing on the keyboard or clicking a mouse. Therefore, it can be used by advisors who have no prior computer skills.

Keywords: (Expert Systems, Knowledge – Based Systems, Intelligent Advising Systems, OMT, Object Modeling Technique, Advice Giving Systems).

Table of contents

Chapter 1

Introduction