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# Modeling a Career Office Information System with UML

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***Abstract*— Difficulties faced by students while trying to penetrate into the labor market and challenges faced by university career offices when helping students build successful professional careers demand the building of mediums which would facilitate the transition of students to the market by bringing career office staff, students and businesses altogether in a single platform. This paper focuses on analysis and design based on the Unified Modeling Language (UML) of a Career Office Information System (COIS), whose aim is to establish connections between students and businesses, and simply the enormous work of a Career Office in a certain university.**

***Keywords*— *Career Office Information System(COIS), UML, student, business***

## I. INTRODUCTION

The social and economic development of a country is fundamentally dependent on higher educational studies since they lead the society to scientific research, innovation and professional growth. Approximately 30,000 [1] students are enrolled each year for higher studies in Albanian universities, which will help them to make a successful integration into the market labor. However, the transition of students from school into the market is one of the major issues that Albanian students are facing since nearly 29% of graduate students can't find an appropriate job. The lack of established connections between students and businesses, the lack of opportunity to show their professional competences to future employers and a lack of internships and mentorships for gaining experience and familiarizing students with the latest job openings are some of the most severe problems that students are facing nowadays while trying to make a successful transition to the labor market [2].

It is the duty of universities to create facilities for students to help them build a successful career. A possible means of addressing this need is the analysis, design and development of a Career Office Information System which will serve as a connecting medium between students, businesses and the university. This medium alleviates students' difficulties in creating connections with companies, while trying to gain and apply for jobs or other career development programs and reduces the Career Office workload by facilitating the managements of students' career development processes.

## II. BACKGROUND

Universities and national offices have developed different Career Information Systems fulfilling the needs of students or city residents for a successful career development. Two fully comprehensive Career Information Systems are Massachusetts Career Information System and Georgia Career Information System.

Massachusetts Career Information System (MassCIS) is an online tool developed by intoCareers, part of University of Oregon. MassCIS is a free online tool for all residents of Massachusetts, whose can provide occupational and educational information for a better career planning and development. Proving help for resume writing, information of free jobs positions, generation of occupation lists matching one's skills, competences and interests, information of schools, university programs, training and career activities across the country are some of the main features that MassCIS offers to its users [3].

Georgia Career Information System (GCIS), designed by Georgia State University, is a well-known system that provides state and national occupational and educational information. It is widely used by schools, universities, Employment Services offices etc. GCIS offers to its users the list of occupations, jobs, programs of study, local and national schools, financial aids programs etc. Building of personal career portfolios, where users may store all their career related materials and data like education records, job experiences, skills, competences, awards, educational and personal plans etc, is another important feature of GCIS [4].

Career Office Information System (COIS) will be controlled and used inside a specific university in Albania. Similar to GCIS, COIS offers to its users the personal career portfolios, in form of electronic portfolios (e-portfolios). It will also serve as a medium for all occupational and educational information free for all users, same as in GCIS and MassCIS. Different from GCIS and MassCIS, COIS will not serve only as an informative medium, but also will digitize the process of applying for any career development

 

programs such as job, internship, mentorship by bringing closer students with businesses for better employment chances.

## III. Requirement Analysis

A software development process is a group of connected activities that lead us to the production of software. The main development steps generally followed by a software development process are requirement analysis, system design, implementation and testing. Requirement analysis is the process of collecting services, operations, features of a system, which are generally defined after consultation with all of the users of a system. System design is related to constructing the system architecture and also defines the system abstractions and their relationships. Realization of software design based on a set of programs represents the implementation of the system. After implementation the process of checking if system requirements are fulfilled or not are called system testing [5].

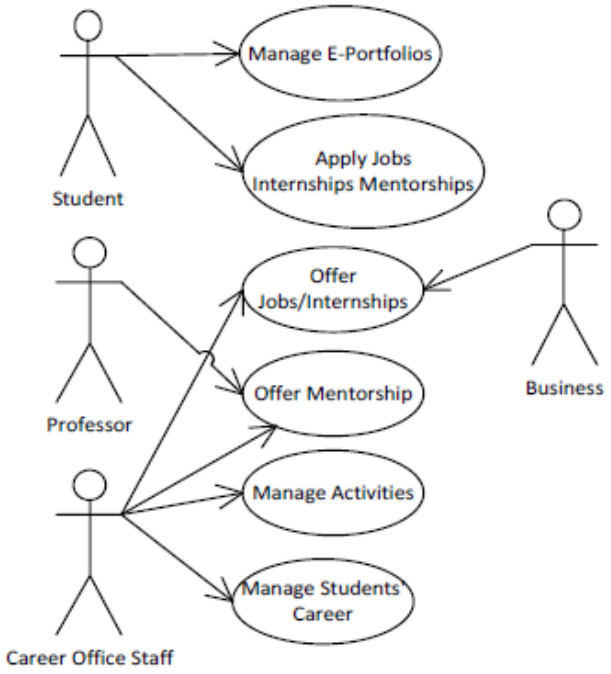


**Figure 1- COIS Use Case Diagram**

System Requirements are a group of actions that a system is supposed to perform. One of the most powerful tools used to represent all of the system requirements is Unified Modeling Language (UML). UML is composed of a set of diagrams and notations used to model object-oriented systems. UML use case model is used to represent the requirements of an application. A use case diagram is composed of use cases, which are units of functionality, and actors, who are users that interact with the system [6]. Career Office Information System (COIS) use case diagram shown in Figure 1, displays the systems users which are:

- *Undergraduate Student* – Any student enrolled in undergraduate studies in the university
- *Master Student* - Any student enrolled in master studies in the university
- *Alumni* – Any graduated students from undergraduate or/and master studies
- *Professor* – Any lecturer working in the university
- *Career Office Staff* – Any person working at universities Career Office
- *Business* – Any partner business collaborating with the university

## IV. System Design

Based on a detailed requirement analysis, there exists five sections that make up the whole Career Office Information System:

### *A. Students E-Portfolio*

An E-Portfolio is a "digitized collection of artifacts, including demonstrations, resources, and accomplishments, that represents an individual, group, community, organization, or institute" [7]. Recording one person's skills, achievements, competences, knowledge, works, activities and being able to use these as a full packaged resume are some of the most crucial importance of using E-Portfolios. Student E-Portfolio section is composed of User Profile, Recommendation, Works and Activities subsections.

- User Profile subsection is composed in form of an editable resume where users may display their experiences, qualifications, areas of interests and personal information. Profile can also be converted from the electronic version into a PDF format or a printed format.
- Recommendation subsection enables the communication of students and professors or businesses while exchanging recommendation letters. Students may request recommendation letters from any professors or businesses, whose replies are automatically added to each student's E-Portfolio.
- Works subsection serves as a repository, where students may store their projects, posters and papers. Students may take comments from their professors for each work, which may serve as a feedback for all visitors of a student's E-Portfolio. Figure 2 represent the Works subsection activity diagram, which shows how execution flows inside functional requirement represented by a use case [8].

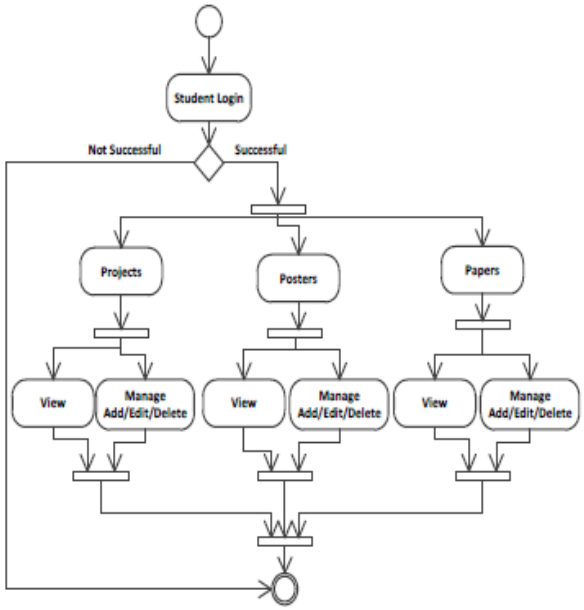


**Figure 2 - Work Activity Diagram**

Work Activity Diagram represents the execution flow of actions when an undergraduate student, master student or alumni interacts with the work subsection of student's e-Portfolio. Student has to login into the system. After a successful login, he/she may access projects, posters or papers part. User may view any of his projects, posters or papers and may also manage these sections by adding new works, editing or deleting existing works. After performing any of these actions execution terminates. In case of an unsuccessful login action execution terminates immediately.

- Activities subsection is composed in form of a showcase for all activities that a particular student has participated inside or outside university.

*B. Job Section*

Job Section serves as medium where businesses and University Career Office offer free job position and students apply for any published job. This section is mainly focused on simplifying the process of job applications from a bureaucratic procedure to an easy one-click procedure.

*C. University Activities Section*

All university activities are managed by Career Office staff under the COIS university activities section. This process is represented in Figure 3 by a sequence diagram which displays the interaction of an actor with an existing object of a system, and also interaction of objects with each other.

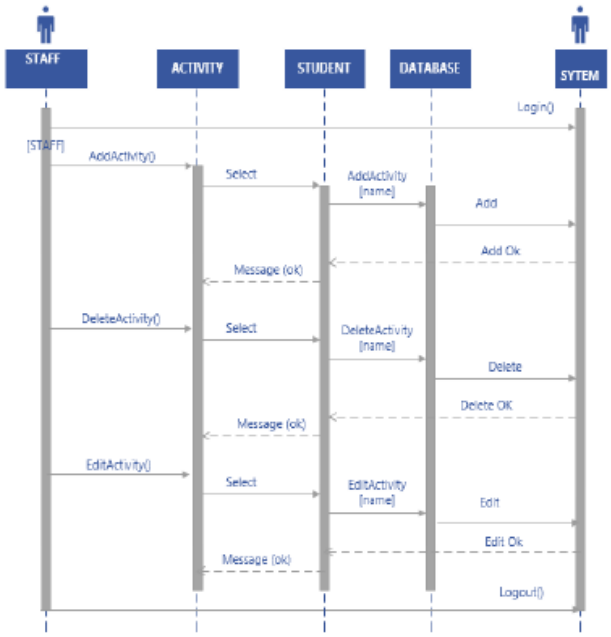


**Figure 3 - University Activity Sequence Diagram**

Main methods performed under the University Activity Section are: add new activity, delete an activity and editing an existing activity. The career office staff user interacts with the system when logging in. Career Office Staff requires adding, editing or deleting a specific activity of a specific student. Activity objects interacts with the student activity, which interacts with the database. Modification of the database are made by the COIS system. After a successful execution of any of these actions Career Office Staff interacts with the COIS system while logging out.

*D. Internship and Mentorship Section*

An internship program is a program offered by an employer for an undergraduate student to help him/her gain work experience by being involved in real projects, and also becoming a potential candidate for particular jobs that this company may offer in the future [9]. A mentorship program is a mutually beneficial relationship during which a more experienced person helps a less experienced one to achieve his/her academic and career goals [10].

COIS internship and mentorship section serves as a web portal where Career Office and businesses may offer any kind of this programs and where students are free to apply for any of the published positions only by a click which sent to the publisher the full E-Portfolio of the candidate.

### *E. News and Events Section*

News and Events Section enables the Career Office to publish the most recent news and also inform the other users of the system about the upcoming events that are going to be organized.

An implemented version of a Career Office Information System may be found on: http://inf-proj.epoka.edu.al/projects/thesis_work/erisa_terolli/public/login.php

## V. Conclusion

Rapid growth in the number of students who enroll for continuing bachelor, master or doctorate studies is beneficial in many ways, but raises the challenge of integrating these many students into the job market. It is the responsibility of government, universities and businesses to create facilities for students who are making the transition from school to the labor market. Creation of institutional contracts between universities and companies is the first step of helping undergraduate, master and graduate students to enter into the job market. Partner businesses with a specific university may offer students job opportunities, internships, mentorships or other programs that may help a student to achieve his/her career goals. Another facility for students is the creation of a personal area in which everyone can show his/her own skills, achievements and areas of interest. These areas are built in the form of e-portfolios and are considered as a suitable hiring tool, since HR managers can find enough information inside e-portfolios to decide if a candidate is appropriate for an interview or not.

Modeling of a Career Office Information System, whose main objective is to create connections between undergraduate/master students/alumni with businesses, is a significant step toward the process of facilitating the transition of students from the university into the labor market. In this application, student/alumni are informed for all open positions of jobs, internships, mentorships and may instantly apply for any of them; they also have the possibility to create their own profile and publish their works, projects, skills, capabilities for those who may be their future employers. Businesses, on the other hand, may offer jobs, internships and mentorships programs and have possibility to see a complete profile of all applicants and then decide to invite the strongest candidates for interviews.

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