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# Diploma Projects Management App

## Sprint Report

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ΠΑΠΑΝΤΩΝΙΟΥ ΚΩΝΣΤΑΝΤΗΣ, 4769

ΣΩΜΑΚΟΣ ΒΑΣΙΛΕΙΟΣ, 4806

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## VERSIONS HISTORY

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Date	Version	Description	Author
2023/03/08	<1.0>	Discussion on the project	4769, 4806
2023/03/21	<2.0>	Initial design of classes	4769, 4806
2023/04/10	<3.0>	Extensive class design starting with model	4769, 4806
2023/04/20	<4.0>	Extensive class design	4769, 4806
2023/04/27	<5.0>	Discussion on the analysis classes and consistency to the requirements	4769, 4806
2023/05/10	<6.0>	FINAL REPORT	4769, 4806

## 1 Introduction

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This document provides information concerning the 8<sup>th</sup> sprint of the project.

### 1.1 Purpose

### 1.2 Document Structure

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The rest of this document is structured as follows. Section 2 describes out Scrum team and specifies the this Sprint's backlog. Section 3 specifies the main design concepts for this release of the project.

## 2 Scrum team and Sprint Backlog

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### 2.1 Scrum team

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<b>Product Owner</b>	A. Zarras
<b>Scrum Master</b>	Vasileios Somakos, Konstantis Papantoniou
<b>Development Team</b>	Vasileios Somakos, Konstantis Papantoniou

### 2.2 Sprints

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<List below the sprints that you performed and the user stories that have been realized in each Sprint>

Sprint No	Begin Date	End Date	Number of weeks	User stories
1	2023/03/09	2023/03/15	1	To create a new account to the application with my role (STUDENT or PROFESSOR), username, and password.

				To login to the application with my username and password.
2	2023/03/16	2023/03/22	1	<p>To set personal profile information (full name, year of studies, current average grade, number of remaining courses for graduation).</p> <p>To have access to a list of available diploma thesis subjects offered by the professors.</p>
3	2023/03/23	2023/03/29	1	<p>To see a more detailed description of a diploma thesis subject (title, objectives, supervisor).</p> <p>Apply for a diploma thesis subject.</p>
4	2023/03/30	2023/04/05	1	<p>To set personal profile information (full name and specialty).</p> <p>To have access to the list of available diploma thesis subjects offered by me.</p>
5	2023/04/20	2023/04/26	1	<p>To have access to the list of assigned diploma thesis projects that I supervise.</p> <p>Set the grades for the implementation, the report, and the presentation of a diploma thesis subject that I supervise.</p>
6	2023/04/27	2023/05/03	1	Calculate the overall grade of a diploma thesis that I supervise based on the given weighted average formula.
7	2023/05/04	2023/05/10	1	<p>Developing unit test for general stories.</p> <p>Developing unit test for general and student stories.</p>
8	2023/05/11	2023/05/17	1	Developing unit test for general and professor stories.

### 3 Use Cases

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<Specify the concrete Use Cases that describe the interaction of the user with the applications, as derived from the abstract user stories. Give a **UML Use Case diagram** and the **detailed use case descriptions**.>

#### 3.1 <Use Case 1>

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<b>Use case ID</b>	UC01
<b>Actors</b>	User
<b>Pre conditions</b>	<ul style="list-style-type: none"><li>• The user is not registered</li><li>• The user has selected a role</li><li>• The user has entered the username and password</li></ul>
<b>Main flow of events</b>	<ul style="list-style-type: none"><li>• The user selects the “Register” Option</li><li>• The system presents a form for the user to enter their role (STUDENT or PROFESSOR), username, and password.</li><li>• The system presents a form for the user to enter their role (STUDENT or PROFESSOR), username, and password.</li><li>• The system presents a form for the user to enter their role (STUDENT or PROFESSOR), username, and password.</li><li>• The system presents a form for the user to enter their role (STUDENT or PROFESSOR), username, and password.</li></ul>
<b>Alternative flow 1</b>	<ul style="list-style-type: none"><li>• The system detects invalid input in the form fields.</li><li>• The system displays an error message to the user.</li><li>• The user corrects the input and resubmits the form.</li></ul>
<b>Post conditions</b>	The user’s account is created and is stored in the application’s database

#### 3.2 <Use Case 2>

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<b>Use case ID</b>	UC02
<b>Actors</b>	User
<b>Pre conditions</b>	<ul style="list-style-type: none"><li>• The user is authenticated and registered into the application</li></ul>

<b>Main flow of events</b>	<ul style="list-style-type: none"> <li>• The user selects the “Login” Option (Instead of the Register option)</li> <li>• The system presents a login form for the user to enter their username and password. The system presents a form for the user to enter their role (STUDENT or PROFESSOR), username, and password.</li> <li>• The user enters their credentials.</li> <li>• The system verifies the credentials and authenticates the user.</li> </ul>
<b>Alternative flow 1</b>	<ul style="list-style-type: none"> <li>• Incorrect credentials (“Username or Password is invalid”)</li> <li>• The User has to resubmit his credentials</li> </ul>
<b>Post conditions</b>	The user is logged in the applications and is redirected to the homepage

### 3.3 <Use Case 3>

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<b>Use case ID</b>	UC03
<b>Actors</b>	Student
<b>Pre conditions</b>	<ul style="list-style-type: none"> <li>• The student is logged into the application.</li> </ul>
<b>Main flow of events</b>	<ul style="list-style-type: none"> <li>• The Student selects to be redirected to “Home”</li> <li>• The student selects the "Profile Info" option.</li> <li>• The system presents a form for the student to enter their full name, year of studies, current average grade, and number of remaining courses for graduation.</li> <li>• The student enters the required information and submits it to the database by pressing “Save” button.</li> <li>• The system saves the student's profile information.</li> </ul>
<b>Alternative flow 1</b>	<ul style="list-style-type: none"> <li>• The Student selects “Log out” from the Dashboard and is logged out of the system</li> </ul>
<b>Alternative flow 2</b>	<ul style="list-style-type: none"> <li>• The Student selects “Log out” from the Homepage and is logged out of the system</li> </ul>
<b>Post conditions</b>	A “student” entity has been created in the database with all the necessary information

### 3.4 <Use Case 4>

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<b>Use case ID</b>	UC04
<b>Actors</b>	Student
<b>Pre conditions</b>	<ul style="list-style-type: none"><li>• The student is logged into the application.</li></ul>
<b>Main flow of events</b>	<ul style="list-style-type: none"><li>• The student selects the "Available Diploma Thesis Subjects" option.</li><li>• The system retrieves a list of diploma thesis subjects offered by professors.</li><li>• The system displays the list to the student.</li></ul>
<b>Post conditions</b>	The Student now has access to a list of all the available Diploma Thesis Subjects

### 3.5 <Use Case 5>

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<b>Use case ID</b>	UC05
<b>Actors</b>	Student
<b>Pre conditions</b>	<ul style="list-style-type: none"><li>• The student is logged into the application and viewing the list of available diploma thesis subjects.</li></ul>
<b>Main flow of events</b>	<ul style="list-style-type: none"><li>• The student selects a specific diploma thesis subject from the list to see the details from by pressing "See Details".</li><li>• The system retrieves the detailed description of the selected diploma thesis subject, including its name, objectives, and supervisor.</li><li>• The system displays the detailed description to the student.</li></ul>
<b>Post conditions</b>	The Student now sees a more detailed description of the chosen subject

### 3.6 <Use Case 6>

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<b>Use case ID</b>	UC06
<b>Actors</b>	User
<b>Pre conditions</b>	<ul style="list-style-type: none"> <li>The student is logged into the application and viewing the detailed description of a diploma thesis subject.</li> </ul>
<b>Main flow of events</b>	<ul style="list-style-type: none"> <li>The student selects the "Apply" option.</li> <li>The system saves the student's application for the selected diploma thesis subject.</li> </ul>
<b>Post conditions</b>	A new “application” entity has been created to the database with all the necessary fields

### 3.7 <Use Case 7>

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<b>Use case ID</b>	UC07
<b>Actors</b>	Professor
<b>Pre conditions</b>	<ul style="list-style-type: none"> <li>The professor is logged into the application.</li> </ul>
<b>Main flow of events</b>	<ul style="list-style-type: none"> <li>The professor selects the "Profile Info" option.</li> <li>The system presents a form for the professor to enter their full name and specialty.</li> <li>The professor enters the required information.</li> <li>The system saves the professor's profile information.</li> </ul>
<b>Post conditions</b>	A “professor” entity has being created in the database with all the necessary information

### 3.8 <Use Case 8>

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<b>Use case ID</b>	UC08
<b>Actors</b>	Professor
<b>Pre conditions</b>	<ul style="list-style-type: none"> <li>The professor selects the “My Diploma Thesis Subjects" option.</li> </ul>
<b>Main flow of</b>	<ul style="list-style-type: none"> <li>The system retrieves the list of diploma thesis subjects offered by the</li> </ul>



<b>events</b>	<p>professor.</p> <ul style="list-style-type: none"> <li>The system displays the list of diploma thesis subjects to the professor. The user enters their credentials.</li> </ul>
<b>Post conditions</b>	The Professor now has access to a list of all his available Diploma Thesis Subjects.

### 3.9 <Use Case 2>

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<b>Use case ID</b>	UC02
<b>Actors</b>	Professor
<b>Pre conditions</b>	<ul style="list-style-type: none"> <li>The professor is logged into the application and viewing the list of their diploma thesis subjects.</li> </ul>
<b>Main flow of events</b>	<ul style="list-style-type: none"> <li>The system presents a form for the professor to enter the name and objectives of the new diploma thesis subject.</li> <li>The professor selects the "Save" option.</li> <li>The system adds the new diploma thesis subject to the professor's list.</li> </ul>
<b>Alternative flow 1</b>	<ul style="list-style-type: none"> <li>A field is empty and the Professor is required to fill it in order to proceed with the "Save" option.</li> </ul>
<b>Post conditions</b>	A "subject" entity has being created in the database with all the necessary information.

### 3.10 <Use Case 10>

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<b>Use case ID</b>	UC10
<b>Actors</b>	Professor
<b>Pre conditions</b>	<ul style="list-style-type: none"> <li>The professor is logged into the application and viewing the list of their diploma thesis subjects.</li> </ul>
<b>Main flow of events</b>	<ul style="list-style-type: none"> <li>The professor selects a specific diploma thesis subject from the list.</li> <li>The system prompts the professor with the option to delete the selected diploma thesis subject.</li> <li>The professor selects "Delete" to remove the subject from the</li> </ul>

	database
<b>Post conditions</b>	The deleted subject is no longer in the database.

### 3.11 <Use Case 11>

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<b>Use case ID</b>	UC11
<b>Actors</b>	Professor
<b>Pre conditions</b>	<ul style="list-style-type: none"> <li>The professor is logged into the application and viewing the list of their diploma thesis subjects.</li> </ul>
<b>Main flow of events</b>	<ul style="list-style-type: none"> <li>The professor selects the "See Applications" option.</li> <li>The system retrieves the list of applications from students who want to take over a diploma thesis subject.</li> <li>The system displays the list of applications to the professor.</li> </ul>
<b>Post conditions</b>	The Professor now has access to a list of the applications of the selected subject.

### 3.12 <Use Case 13>

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<b>Use case ID</b>	UC13
<b>Actors</b>	Professor
<b>Pre conditions</b>	<ul style="list-style-type: none"> <li>The professor is logged into the application.</li> </ul>
<b>Main flow of events</b>	<ul style="list-style-type: none"> <li>The professor selects the "My Diploma Thesis Projects" option.</li> <li>The system retrieves the list of assigned diploma thesis projects that the professor supervises.</li> <li>The system displays the list of assigned diploma thesis projects to the professor.</li> </ul>
<b>Post conditions</b>	The professor now has access to a list of the assigned diploma thesis projects that he supervises.

### 3.13 <Use Case 14>

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<b>Use case ID</b>	UC14
<b>Actors</b>	Professor
<b>Pre conditions</b>	<ul style="list-style-type: none"><li>• The professor is logged into the application and viewing the list of the assigned thesis projects.</li></ul>
<b>Main flow of events</b>	<ul style="list-style-type: none"><li>• The professor selects the "Set Grades" option.</li><li>• The system presents a form for the professor to enter grades for the implementation, report, and presentation of the diploma thesis project.</li><li>• The professor enters the required grades.</li><li>• The system saves the grades for the diploma thesis project.</li></ul>
<b>Post conditions</b>	The "thesis" entity has been updated in the database.

### 3.14 <Use Case 15>

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<b>Use case ID</b>	UC15
<b>Actors</b>	Professor
<b>Pre conditions</b>	<ul style="list-style-type: none"><li>• The professor is logged into the application and viewing the "thesis grade" form and has set the grades.</li></ul>
<b>Main flow of events</b>	<ul style="list-style-type: none"><li>• The professor selects the "Calculate Total Grade" option.</li><li>• The system calculates the overall grade of the diploma thesis project based on the given weighted average formula.</li></ul>
<b>Post conditions</b>	The thesis entity has been updated in the database.

## 4 Design

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### 4.1 Architecture

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<Specify the overall architecture for this release in terms of a **UML package diagram**.>

### 4.2 Design

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<Specify the detailed design for this release in terms of **UML class diagrams**.>

<Document the classes that are included in this release in terms of CRC cards according to the template that is given below.>

Class Name: Application	
<b>Responsibilities:</b> <ul style="list-style-type: none"><li>▪ Get and set the ID</li><li>▪ Get and set the subject</li><li>▪ Get and set the student</li><li>▪ Get and set the professor</li></ul>	<b>Collaborations:</b> <ul style="list-style-type: none"><li>▪ Subject</li><li>▪ Student</li><li>▪ Professor</li></ul>

Class Name: BestApplicantStrategy	
<b>Responsibilities:</b> <ul style="list-style-type: none"><li>▪ Find the best applicant among a list of applications....</li></ul>	<b>Collaborations:</b> <ul style="list-style-type: none"><li>▪ Application</li></ul>

Class Name: BestApplicantStrategyFactory	
<b>Responsibilities:</b> <ul style="list-style-type: none"><li>▪ Get the best applicant strategy based on the strategy type</li></ul>	<b>Collaborations:</b> <ul style="list-style-type: none"><li>▪ BestApplicantStrategy</li></ul>

Class Name: BestAvgGradeStrategy	
<b>Responsibilities:</b> <ul style="list-style-type: none"><li>▪ Compare applications based on the average grade</li></ul>	<b>Collaborations:</b> <ul style="list-style-type: none"><li>▪ TemplateStrategyAlgorithm</li></ul>

<ul style="list-style-type: none"> <li>Find the best applicant among a list of applications</li> </ul>	<ul style="list-style-type: none"> <li>Application</li> </ul>
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<b>Class Name: FewestCoursesStrategy</b>	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>Compare applications based on the number of courses</li> <li>Find the best applicant among a list of applications</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>TemplateStrategyAlgorithm</li> <li>Application</li> </ul>

<b>Class Name: GradeAndFewestCoursesStrategy</b>	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>Compare applications based on the number of courses and average grade</li> <li>Find the best applicant among a list of applications</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>TemplateStrategyAlgorithm</li> <li>Application</li> </ul>

<b>Class Name: RandomStrategy</b>	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>Compare applications randomly</li> <li>Find the best applicant among a list of applications</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>TemplateStrategyAlgorithm</li> <li>Application</li> </ul>

<b>Class Name: Role</b>	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>Get the value of the role</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>-</li> </ul>

<b>Class Name: StrategyType</b>	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>Get the value of the strategy type</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>-</li> </ul>

Class Name: Student	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>▪ Get and set the ID</li> <li>▪ Get and set the thesis</li> <li>▪ Get and set the name</li> <li>▪ Get and set the year</li> <li>▪ Get and set the grade</li> <li>▪ Get and set the courses</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>▪ Thesis</li> </ul>

Class Name: Subject	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>▪ Get and set the ID</li> <li>▪ Get and set the name</li> <li>▪ Get and set the objectives</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>▪ Application</li> <li>▪ Thesis</li> </ul>

Class Name: TemplateStrategyAlgorithm	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>▪ Get the strategy type</li> <li>▪ Find the best applicant among a list of applications...</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>▪ BestApplicantStrategy</li> </ul>

Class Name: Thesis	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>▪ Get and set the ID</li> <li>▪ Get and set the professor</li> <li>▪ Get and set the subject</li> <li>▪ Get and set the student</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>▪ Professor</li> <li>▪ Subject</li> <li>▪ Student</li> </ul>

Class Name: ApplicationDAO	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>▪ Provide access to the data persistence</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>▪ Application</li> </ul>

layer for Application objects.	<ul style="list-style-type: none"> <li>▪ Student</li> <li>▪ Subject</li> </ul>
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<b>Class Name: ProfessorDAO</b>	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>▪ Provide access to the data persistence layer for Professor objects.</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>▪ Professor</li> </ul>

<b>Class Name: StudentDAO</b>	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>▪ Provide access to the data persistence layer for Student objects.</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>▪ Student</li> </ul>

<b>Class Name: SubjectDAO</b>	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>▪ Provide access to the data persistence layer for Subject objects.</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>▪ Subject</li> <li>▪ Professor</li> </ul>

<b>Class Name: ThesisDAO</b>	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>▪ Provide access to the data persistence layer for Thesis objects.</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>▪ Thesis</li> <li>▪ Professor</li> <li>▪ Student</li> <li>▪ Subject</li> </ul>

<b>Class Name: UserDAO</b>	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>▪ Provide access to the data persistence layer for User objects.</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>▪ User</li> </ul>

<b>Class Name: AdminController</b>	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>▪ Handle requests related to professor actions</li> <li>▪ Manage professors profiles, subjects, and applications</li> <li>▪ Assign subjects to students based on different strategies</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>▪ ProfessorDAO</li> <li>▪ SubjectDAO</li> <li>▪ ApplicationDAO</li> <li>▪ ThesisDAO</li> <li>▪ ProfessorService</li> </ul>

<b>Class Name: UserController</b>	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>▪ Get the user's home page</li> <li>▪ Get the user's profile page</li> <li>▪ Get the subjects page</li> <li>▪ Save the user's profile</li> <li>▪ Apply for a subject</li> <li>▪ Get the details of a subject</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>▪ UserService</li> <li>▪ StudentDAO</li> <li>▪ ProfessorDAO</li> <li>▪ SubjectDAO</li> <li>▪ ApplicationDAO</li> </ul>

<b>Class Name: ProfessorService / ProfessorServiceImpl</b>	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>▪ Retrieve a professor's profile</li> <li>▪ Save a professor's profile</li> <li>▪ List subjects of a professor</li> <li>▪ List applications for a subject</li> <li>▪ Get theses supervised by a professor</li> <li>▪ Update a professor's profile</li> <li>▪ Get professor by username</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>▪ ProfessorDAO</li> <li>▪ SubjectDAO</li> <li>▪ ApplicationDAO</li> <li>▪ ThesisDAO</li> <li>▪ StudentDAO</li> </ul>

<b>Class Name: StudentService / StudentServiceImpl</b>	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>▪ Save a student's profile</li> <li>▪ Retrieve a student's profile</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>▪ StudentDAO</li> </ul>



<ul style="list-style-type: none"> <li>▪ List subjects of a student</li> <li>▪ Apply to a subject</li> <li>▪ Update a student's profile</li> </ul>	
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Class Name: UserService / UserServiceImpl	
<b>Responsibilities:</b> <ul style="list-style-type: none"> <li>▪ Save a user</li> <li>▪ Check if a user is present</li> <li>▪ Find a user by ID</li> <li>▪ Update a user</li> </ul>	<b>Collaborations:</b> <ul style="list-style-type: none"> <li>▪ UserDAO</li> <li>▪ ....</li> <li>▪ ....</li> </ul>