

Software Requirements Specification

for

Exam Management System

Version 1.1 Draft

Prepared by

**Emami, Chris
Goel, Shalini
Peixoto, Mario
Zhang, Xuezhu**

March 31, 2016

Table of Contents

Revision History	6
1. Introduction	7
1.1. Purpose	7
1.2. Scope	7
1.3. References	7
1.4. Overview	7
2. Overall Description	8
2.1. Product Perspective	8
2.2. Product Functions	8
2.2.1. Shared functions	9
2.2.1.1. Login	9
2.2.1.1.1. Description	9
2.2.1.1.2. Rationale	9
2.2.2. Faculty functions	9
2.2.2.1. Create Exam	9
2.2.2.1.1. Description	9
2.2.2.1.2. Rationale	9
2.2.2.2. Exam Options	9
2.2.2.2.1. Description	9
2.2.2.2.2. Rationale	9
2.2.2.3. View Registered for Exam	9
2.2.2.3.1. Description	10
2.2.2.3.2. Rationale	10
2.2.2.4. Edit Exam	10
2.2.2.4.1. Description	10
2.2.2.4.2. Rationale	10

2.2.2.5. Enter Exam Results	10
2.2.2.5.1. Description	10
2.2.2.5.2. Rationale	10
2.2.2.6. View Exam Results	10
2.2.2.6.1. Description	10
2.2.2.6.2. Rationale	10
2.2.2.7. Publish Exam Results	10
2.2.2.7.1. Description	10
2.2.2.7.2. Rationale	11
2.2.2.8. View Students	11
2.2.2.8.1. Description	11
2.2.2.8.2. Rationale	11
2.2.2.9. Add new Student	11
2.2.2.9.1. Description	11
2.2.2.9.2. Rationale	11
2.2.2.10. Search Student	11
2.2.2.10.1. Description	11
2.2.2.10.2. Rationale	11
2.2.2.11. Edit Student	11
2.2.2.11.1. Description	11
2.2.2.11.2. Rationale	11
2.2.2.12. Change Exam Result	11
2.2.2.12.1. Description	12
2.2.2.12.2. Rationale	12
2.2.2.13. View Completed	12
2.2.2.13.1. Description	12
2.2.2.13.2. Rationale	12
2.2.3. Student functions	12

2.2.3.1. Register for Exam	12
2.2.3.1.1. Description	12
2.2.3.1.2. Rationale	12
2.2.3.2. Withdraw from Exam	12
2.2.3.2.1. Description	12
2.2.3.2.2. Rationale	12
2.2.3.3. View Student Exam Results	12
2.2.3.3.1. Description	12
2.2.3.3.2. Rationale	13
2.3. User Classes and Characteristics	13
2.4. Constraints	13
2.4.1. Usability	13
2.4.2. Availability	13
2.4.3. Security	13
2.4.4. Performance	13
3. Specific Requirements	14
3.1. Functions	14
3.1.1. Shared Functions	14
3.1.1.1. Login	14
3.1.2. Faculty Functions	14
3.1.2.1. Create Exam	14
3.1.2.2. Exam Options	15
3.1.2.3. View Registered for Exam	15
3.1.2.4. Edit Exam	15
3.1.2.5. Enter Exam Results	16
3.1.2.6. View Exam Results	16
3.1.2.7. Publish Exam Results	17
3.1.2.8. View Students	17

3.1.2.9. Add new Student	18
3.1.2.10. Search Student	18
3.1.2.11. Edit Student	19
3.1.2.12. Change Exam Result	19
3.1.2.13. View Completed	20
3.1.3. Student Functions	20
3.1.3.1. Register For Exam	20
3.1.3.2. Withdraw from Exam	20
3.1.3.3. View Student Exam Results	21

Revision History

Name	Date	Reason for Changes	Version
Draft	03/02	Initial document	1.0
Second Draft	03/31	Fixing product functions and formats	1.1

1. Introduction

1.1. Purpose

The purpose of this document is to present a detailed description of the Exam Management System, a system designed to manage students and exams and provide organized records of exam results and program completion by students. It will explain the functions that the faculty members and the students will be able to access, the interfaces of the system, what the system will do, the constraints under which it must operate and how it will react to external stimuli. This document is intended for both students and faculty members of **Texas State** and developers and will be submitted to the customer for approval.

1.2. Scope

The Exam Management System is a software system that will be used by the faculty members and students of the Computer Science department of Texas State University. The system will help the faculty members and students to track the student progress and determine when and if the student can graduate according to graduation requirements.

More specifically, the system is designed to allow the faculty members to login and create the core, programming, and communication exams. Once the exams are created, the faculty member can view the details of the registered students, edit and view each exam details and publish the results. The system is also designed to assist a faculty member to manage student record information. The system will allow faculty member to add, edit, view, and search the student record information, including the exam results. The system will also allow the faculty to view all students that have completed all the graduation requirements, therefore eligible to graduate.

The system is also designed for students, who can login, register or withdraw from an specific exam, and view its results for all exams.

1.3. References

[1] IEEE Software Engineering Standards Committee, "IEEE Std 830-1998, IEEE Recommended Practice for Software Requirements Specifications", June 25 1998.

1.4. Overview

The rest of the document is organized as follows: Section 2 gives an overview of the functionality of the product. It describes the informal requirements and is used to establish a context for the technical requirements specification in the following chapter. Section 3 describes in technical terms the details of the functionalities of the product and is written primarily for the developers.

Both sections of the document describe the same software product in its entirety, but are intended for different audiences and thus use different language.

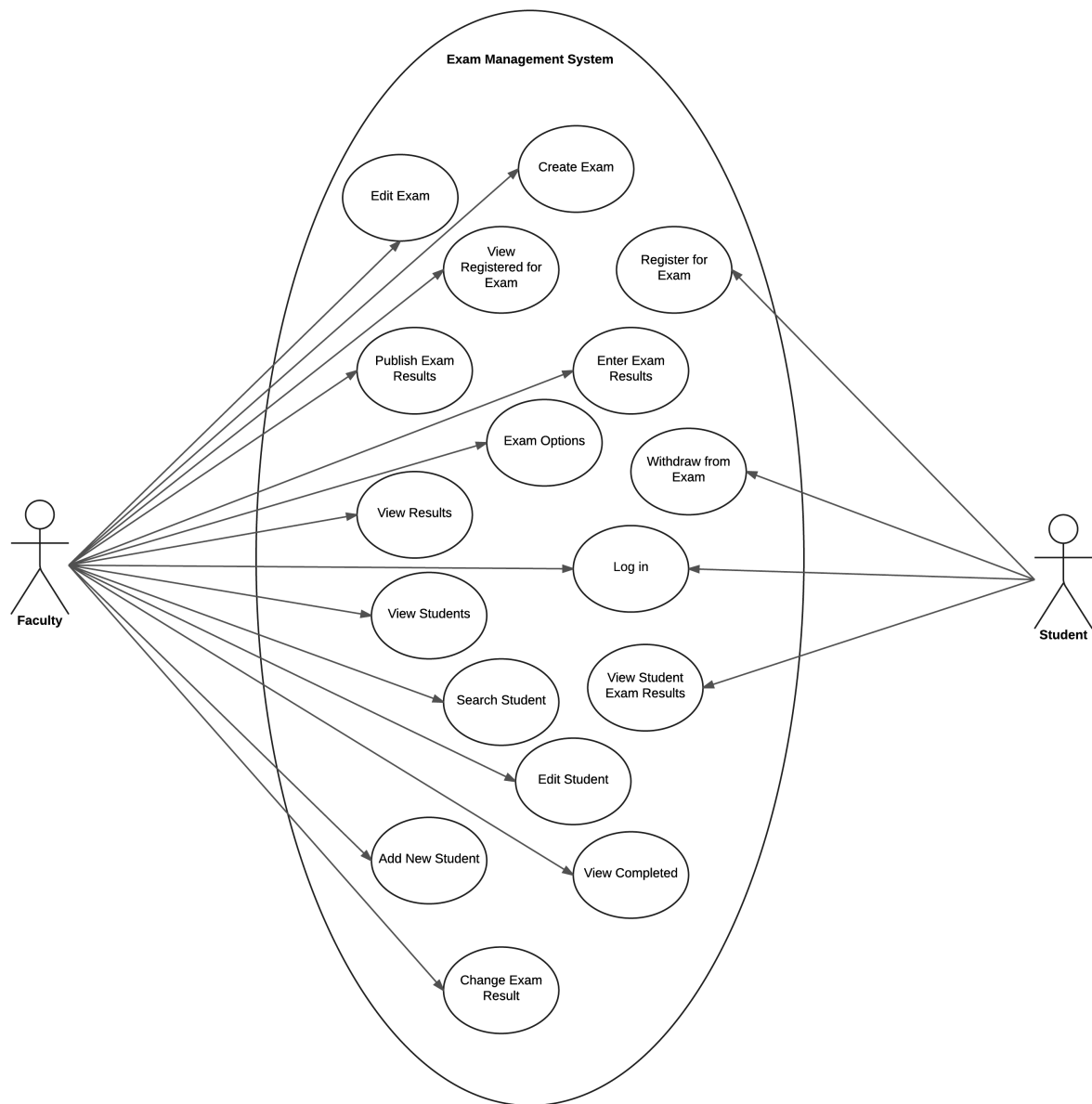


Fig. 1. Summary of use cases

2. Overall Description

2.1. Product Perspective

The Exam Management System is a new web-based application and does not depend or is a part of any other system. It has two different actors: the faculty member and the students. Both students and faculty members need a compatible web browser and internet access to access the system. The user interface is responsible for calling the backend server in order to correctly get information and handling that information to show on the screen. The backend server provides services and uses a database management system to save data.

2.2. Product Functions

The online exam management system can be accessed by Texas State faculty members and students. The system will assist in tracking the progress of the students and determine whether the student is ready to graduate or not.

The system will provide different functions for both faculty members and the students. This section outlines the product functions for faculty members and students pictured on Figure 1.

2.2.1. Shared functions

2.2.1.1. Login

2.2.1.1.1. Description

The faculty or the student login to the exam management system using login credentials.

2.2.1.1.2. Rationale

This function allows both faculty members and students to access specific functions of the exam management system and by enforcing login we can ensure to only allow the execution of functions according to the user role.

2.2.2. Faculty functions

2.2.2.1. Create Exam

2.2.2.1.1. Description

The faculty member creates an exam for the students to register.

2.2.2.1.2. Rationale

This function allows a faculty member to create programming and communication exams. Once these exams are created, then the students can see them in their interfaces.

2.2.2.2. Exam Options

2.2.2.2.1. Description

The faculty member lists all exams previously created and has convenient access to exam functions such as: View Registered for Exam, Edit Exam, Enter Exam Results, View Exam Results, Publish Exam Results.

2.2.2.2.2. Rationale

This function allows a faculty member to list and manage the exams created.

2.2.2.3. View Registered for Exam

2.2.2.3.1. Description

The faculty member can view all the students registered for a particular exam.

2.2.2.3.2. Rationale

This functions allows the faculty member to have an organized record of who is registered for an exam.

2.2.2.4. Edit Exam**2.2.2.4.1. Description**

The faculty member can edit an exam and change any of the detail of the exam.

2.2.2.4.2. Rationale

This function allows the faculty member to change critical information regarding an exam.

2.2.2.5. Enter Exam Results**2.2.2.5.1. Description**

The faculty member enters results for an exam for each student.

2.2.2.5.2. Rationale

This function allows the faculty member to start an organized record of the exam results and it's the first step on making the results available to all students registered for that exam.

2.2.2.6. View Exam Results**2.2.2.6.1. Description**

The faculty member views the results and statistics for a particular exam.

2.2.2.6.2. Rationale

This function allows the faculty member to view an organized record of the exam results, and to be able to see some statistics for that particular exam.

2.2.2.7. Publish Exam Results**2.2.2.7.1. Description**

The faculty member publishes the results for a particular exam and makes the results available to students.

2.2.2.7.2. Rationale

This functions allows the faculty member to share the exam results with the students registered for it.

2.2.2.8. View Students**2.2.2.8.1. Description**

The faculty member views all students in the system.

2.2.2.8.2. Rationale

This function allows the faculty member to list and manage all students that have access to the system.

2.2.2.9. Add new Student**2.2.2.9.1. Description**

The faculty member adds a new student to the system.

2.2.2.9.2. Rationale

This function allows the faculty member to add a new student to the system.

2.2.2.10. Search Student**2.2.2.10.1. Description**

The faculty member searches for a specific student in the system.

2.2.2.10.2. Rationale

This function allows the faculty member to search for an specific student in the system.

2.2.2.11. Edit Student**2.2.2.11.1. Description**

The faculty member edits student information.

2.2.2.11.2. Rationale

This function allows the faculty member to edit the information for a particular student in the system.

2.2.2.12. Change Exam Result

2.2.2.12.1. Description

The faculty member can search for the student and then change the result of exams for that particular student.

2.2.2.12.2. Rationale

This function allows a faculty member to change a student exam results.

2.2.2.13. View Completed

2.2.2.13.1. Description

The faculty member can view the details of the students who have passed all exams.

2.2.2.13.2. Rationale

This function allows the faculty member to have an organized record of all students who have passed the programming, communication, and core exams.

2.2.3. Student functions

2.2.3.1. Register for Exam

2.2.3.1.1. Description

The student can register for an exam. Once a student has registered for the exam, a faculty member can see this registration in the View Registered function.

2.2.3.1.2. Rationale

This function allows the student to register for an exam once it's created.

2.2.3.2. Withdraw from Exam

2.2.3.2.1. Description

The student withdraw from a particular exam.

2.2.3.2.2. Rationale

This function allows the student to withdraw from a particular exam.

2.2.3.3. View Student Exam Results

2.2.3.3.1. Description

The student can view results of his own exams that were already published by the faculty members.

2.2.3.3.2. Rationale

This function allows the student to track its own progress by seeing the results of all exams that the student has been registered for.

2.3. User Classes and Characteristics

The users are faculty members and students from the Texas State University. They are supposed to have high education degrees and know how to use a web browser.

2.4. Constraints

2.4.1. Usability

The system shall be implemented in a way that the faculty members and the students can fully use after 2 hours of training, and after the training, the faculty members and the students **do not make more than 5 mistakes per hour** while using the system.

2.4.2. Availability

The system shall be available 24/7 and must not exceed 1 hour of unavailability per day.

2.4.3. Security

The system shall use encryption on **sensitive user data like passwords**.

2.4.4. Performance

The system response time **must** not exceed 10 seconds for any user interaction event.

3. Specific Requirements

3.1. Functions

3.1.1. Shared Functions

3.1.1.1. Login

Function	Login
Description	The Faculty or the Student login to the system. The user enters username and password and submits the form. The system verifies the username and password. If the username and password is correct, the user gets logged in the system, otherwise it shows error messages describing the error.
Inputs	Username, Password
Source	Username and password are input by the user
Outputs	Successful login, error messages
Destination	None
Pre-condition	The login page is displayed on the user's screen
Post-condition	The user is logged into the system or error messages are displayed on the user's screen.
Side-effects	None

3.1.2. Faculty Functions

3.1.2.1. Create Exam

Function	Create Exam
Description	The Faculty creates an exam. The Faculty enters exam data and clicks Create Exam button. The system validates the data and creates the exam or respond with error messages.
Inputs	Type (Programming, Communication or Core), Date (yyyy-mm-dd format), start time and end time (24hr format HH:MM:SS), Semester (Fall, Spring), Location, Registration deadline (yyyy-mm-dd format)
Source	The type, date, start time, end time, semester, location and registration deadline are input by the user.
Outputs	New exam identifier, error messages
Destination	The Exam Management System database
Requires	Logged user with Faculty role.
Pre-condition	The user clicks the Create Exam function and the Create Exam page is displayed on the user's screen.

Post-condition	The exam is created or error messages are displayed on the user's screen.
Side-effects	None

3.1.2.2. Exam Options

Function	Exam Options
Description	The Faculty lists all previously created exams. The system shows a list of all previously created exams and a list of functions for each exam.
Inputs	None
Outputs	Information for each exam: Type (Programming, Communication or Core), Date (yyyy-mm-dd format), Start and end time (24hr format HH:MM:SS), Semester (Fall, Spring), Location, Registration deadline (yyyy-mm-dd format). List of functions: View Registered for Exam, Edit Exam, Enter Exam Results, Publish Exam Results
Destination	Screen
Requires	Logged user with Faculty role.
Pre-condition	The user clicks the Exam Options function and the Exam Options page is displayed on the user's screen.
Post-condition	None
Side-effects	None

3.1.2.3. View Registered for Exam

Function	View Registered for Exam
Description	The Faculty views all students registered for a particular exam. The system shows a list of students registered for a particular exam.
Inputs	Exam identifier
Source	The exam identifier from the database.
Outputs	Information for each student: Username, Texas State ID, Last name, First name, Results (registered or not), Comments
Destination	Screen
Requires	Logged user with Faculty role.
Pre-condition	The Exam Options page is open and the user clicks on the View Registered for Exam button.
Post-condition	The View Registered for Exam page is displayed on user's screen with a list of students registered for it.
Side-effects	None

3.1.2.4. Edit Exam

Function	Edit Exam
Description	The Faculty edits an exam. The system shows the current exam information. The user edits the desired information. The user clicks the Save button. The system saves the changed data or respond with error messages.
Inputs	Exam identifier, Type (Programming, Communication or Core), Date (yyyy-mm-dd format), Start and end time (24hr format HH:MM:SS), Semester (Fall, Spring), Location, Registration Deadline (yyyy-mm-dd format)
Source	Exam type, date, start time, end time, semester, location, registration from the database or input by the user. Exam identifier from the database.
Outputs	Redirection to Exam Options, error messages
Destination	The Exam Management System database
Requires	Logged user with Faculty role.
Pre-condition	The Exam Options page is open and the user clicks on the Edit Exam button.
Post-condition	The exam gets updated with the new information or error messages are displayed.
Side-effects	None

3.1.2.5. Enter Exam Results

Function	Enter Exam Results
Description	The Faculty enters results for an exam. The system shows a list of students registered for the exam showing only the Texas State ID. The user enters the results for each student (noshow, passed, failed). The user clicks the Save button.
Inputs	Texas State ID, Exam identifier, exam result
Source	Exam result is input by the user. Texas State ID and exam identifier from the database.
Outputs	Redirection to Exam Options, error messages
Destination	The Exam Management System database
Requires	Logged user with Faculty role.
Pre-condition	The Exam Options page is open and the user clicks on the Enter Exam Results button.
Post-condition	The results are saved to the database or error messages are displayed.
Side-effects	None

3.1.2.6. View Exam Results

Function	View Exam Results
Description	The Faculty views results for an exam. The system shows a list of students registered for the exam and a summary of the exam results..

Inputs	Exam identifier
Source	Exam identifier from the database.
Outputs	Username, Texas State ID, Last name, First name, Result (noshow, passed, failed). Total Results, How many passed, How many failed, how many noshow.
Destination	Screen
Requires	Logged user with Faculty role.
Pre-condition	The Exam Options page is open and the user clicks on the View Exam Results button.
Post-condition	The student list with individual results and summary are displayed on the user's screen.
Side-effects	None

3.1.2.7. Publish Exam Results

Function	Publish Exam Results
Description	The Faculty publishes results for an exam. The system makes the results available to the students.
Inputs	Exam identifier
Source	Exam identifier from the database.
Outputs	None
Destination	The Exam Management System database
Requires	Logged user with Faculty role.
Pre-condition	The Exam Options page is open and the user clicks on the Publish Exam Results button.
Post-condition	None
Side-effects	The results for the selected exam becomes available for the students.

3.1.2.8. View Students

Function	View Students
Description	The Faculty views all students. The system shows a list of all students in the system.
Inputs	None
Source	None
Outputs	Username, Texas State ID, Last name, First name, Major, Email, Result of programming exam, Result communication exam, Result of core exam, Exam history (exam name, exam date, exam result)
Destination	Screen

Requires	Logged user with Faculty role.
Pre-condition	None
Post-condition	The student list with all data is displayed on the user's screen.
Side-effects	None

3.1.2.9. Add new Student

Function	Add new Student
Description	The Faculty adds a new students. The Faculty enters student data and clicks Save student.
Inputs	Username, Texas State ID, Last name, First name, Major, Email, Result of Programming Exam, Result of Communication Exam, Result of Core Exams, Local phone, Local address, Local city, Local state, Local zip.
Source	Username, Texas State ID, Last name, First name, Major, Email, Result of Programming Exam, Result of Communication Exam, Result of Core Exams, Local phone, Local address, Local city, Local state, Local zip is input by the user.
Outputs	Student identifier.
Destination	The Exam Management System database
Requires	Logged user with Faculty role.
Pre-condition	None
Post-condition	The new student is created to the database.
Side-effects	None

3.1.2.10. Search Student

Function	Search Student
Description	The Faculty searches for a student. The Faculty enters search data and clicks Search. The system shows a list of students in the database according to the search criteria.
Inputs	Username, Texas State ID, Last name, First name, Major, Email, Result of Programming Exam, Result of Communication Exam, Result of Core Exams.
Source	Username, Texas State ID, Last name, First name, Major, Email, Result of Programming Exam, Result of Communication Exam, Result of Core Exams are input by the user.
Outputs	Each student information: Username, Texas State ID, Last name, First name, Major, Email, Result of Programming Exam, Result of Communication Exam, Result of Core Exams.
Destination	Screen
Requires	Logged user with Faculty role.
Pre-condition	None

Post-condition	The student list in the database according to the search criteria is displayed on the user's screen.
Side-effects	None

3.1.2.11. Edit Student

Function	Edit Student
Description	The Faculty edits a student. The Faculty enters Username or Texas State ID and click search. The system loads the student information. The Faculty edits the student information except for username and texas state ID and clicks Save student.
Inputs	Username, Texas State ID, Last name, First name, Major, Email, Programming Exam Result, Communication Exam Result, Each core exam result, Local phone, Local address, Local city, Local state, Local zip
Source	Username, Texas State ID, Last name, First name, Major, Email, Programming Exam Result, Communication Exam Result, Each core exam result, Local phone, Local address, Local city, Local state, Local zip are input by the user.
Outputs	None
Destination	The Exam Management System database
Requires	Logged user with Faculty role.
Pre-condition	None
Post-condition	The student gets updated with the new information or error messages are displayed.
Side-effects	None

3.1.2.12. Change Exam Result

Function	Change Exam Result
Description	The Faculty changes the result of exams for a student. The Faculty enters Username or Texas State ID and click search. The system loads the student information. The Faculty edits the result information clicks Save Results.
Inputs	Username, Texas State ID, Programming Exam Result, Communication Exam Result, Each core exam result.
Source	Username, Texas State ID, Programming Exam Result, Communication Exam Result, Each core exam result are input by the user.
Outputs	None
Destination	The Exam Management System database
Requires	Logged user with Faculty role.
Pre-condition	None
Post-condition	The student results gets updated with the new information or error messages are displayed.

Side-effects	None
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3.1.2.13. View Completed

Function	View Completed
Description	The Faculty views the students that have passed all exams. The system shows a list with all students that have passed all exams.
Inputs	None
Outputs	Information for each student: Username, Texas State ID, Last name, First name, Major, Email, Result of programming exam, Result of communication exam, Result of core exams
Destination	Screen
Requires	Logged user with Faculty role.
Pre-condition	None
Post-condition	The students that have passed all exams are displayed on the user's screen.
Side-effects	None

3.1.3. Student Functions

3.1.3.1. Register For Exam

Function	Register for Exam
Description	The Student registers for an exam. The system shows all exams open for registration. The Student chooses the Exam to register and clicks on the Register button. The system registers the student on the desired exam and makes it available for Faculty.
Inputs	Student identifier, Exam identifier.
Source	Student identifier and exam identifier from the database
Outputs	None
Destination	The Exam Management System database
Requires	Logged user with Student role and Exam open for registration.
Pre-condition	None
Post-condition	The student is registered for the exam or error messages are displayed.
Side-effects	The student registration becomes available for the Faculty.

3.1.3.2. Withdraw from Exam

Function	Withdraw from Exam
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Description	The Student withdraws from an exam. The system shows all exams that the user is registered. The Student chooses the Exam to withdraw and clicks on the Withdraw button. The system withdraws the student from the desired exam and makes it available for Faculty.
Inputs	Student identifier, Exam identifier.
Source	Student identifier and exam identifier from the database
Outputs	None
Destination	The Exam Management System database
Requires	Logged user with Student role and Student already registered for the Exam.
Pre-condition	None
Post-condition	The student is withdrawn from the exam or error messages are displayed.
Side-effects	The student withdrawn becomes available for the Faculty.

3.1.3.3. View Student Exam Results

Function	View Student Exam Results
Description	The Student views his results on all exams. The system shows exam results for the student.
Inputs	Student identifier.
Source	Student identifier from the database
Outputs	Result of programming exam, Result of communication exam, Result of core exams
Destination	Screen
Requires	Logged user with Student role.
Pre-condition	None
Post-condition	The exam results for the logged student are displayed on the user's screen
Side-effects	None