Laboratory Assignment AND Assessment Requirements Specification

Version 1.0

March, 2020

Developed by:

Student X, Student Y

933

Version History

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Description of Change | Author | Date |
| V01 | Initial | Student X  Student Y | 16.03.2020 |
|  |  |  |  |

**Contents**

[Laboratory Assignment AND Assessment Requirements Specification 1](#_heading=h.gjdgxs)

[Version 1.0 1](#_heading=h.30j0zll)

[March, 2020 1](#_heading=h.1fob9te)

[1 Functional Requirements 3](#_heading=h.2et92p0)

[2 Actors 3](#_heading=h.tyjcwt)

[3 Use cases – diagram 3](#_heading=h.3dy6vkm)

[3.1 Use case number 1 (Description of the use case) 3](#_heading=h.1t3h5sf)

[4 Analysis 3](#_heading=h.4d34og8)

[4.1 Entities 3](#_heading=h.2s8eyo1)

[4.2 Relations between entities 3](#_heading=h.17dp8vu)

[4.3 Attributes 3](#_heading=h.3rdcrjn)

[4.4 System behavior 4](#_heading=h.26in1rg)

[4.4.1 Use case 1-2-3 4](#_heading=h.lnxbz9)

[4.5 System events 4](#_heading=h.35nkun2)

[5 Design 4](#_heading=h.1ksv4uv)

**Analysis and design Document**

# Functional Requirements

List the functional requirements (FR) of the system.

|  |  |
| --- | --- |
| Section/ Requirement ID | Requirement Definition |
| FR1.0. | Add a new student |
| FR1.1 | Remove a student |
| FR1.1.1 | Update student |
| **FR2.0** | **Add a new laboratory assignment** |
| **FR2.1** | **Extend the deadline of a laboratory assignment** |
| **FR3.0** | **Add grade to a Student to a given laboratory assignment** |

# Actors

Teacher

# Use cases – diagram



## Use case number 1 (Description of the use case)

Actors: teacher

Description: create a new student

Precondition: - id is an integer, name is a string, group is a 3-digit integer

Postcondition: - a new student was added in the list

|  |  |
| --- | --- |
| Action | System Response |
| 1 Completes the necessary fields for adding |  |
|  | 2 Checks if everything is alright, adds a new element in the list if so |
| 3 - | 3. If the input is invalid, throws an exception |

Exceptions: When the fields aren’t filled.

## 3.2 Use case number 2 (Description of the use case)

Actors: teacher

Description: delete student

Precondition: - **~~valid id belonging to an existing student is specified,~~ id should be an integer**

Postcondition: - the student with the specified id is removed from the list

|  |  |
| --- | --- |
| Action | System response |
| 1 Give an id as input |  |
|  | 2 Checks if it is a valid id and there is a student with that id and deletes the student |
| 3 - | 3. If the input is invalid, throws an exception |

## 3.3 Use case number 3 (Description of the use case)

Actors: teacher

Description: update student

Precondition: - valid id belonging to an existing student and all other fields for student are specified

Postcondition: - the student with the specified id has the data updated

|  |  |
| --- | --- |
| action | System response |
| 1 Give an id and all other fields for the Student entity as input |  |
|  | 2 Checks if it is a valid id and there is a student with that id, than checks if the rest of the input is valid, and updates the data for that student |
| 3 - | 3. If the input is invalid, throws an exception |

## 3.4 Use case number 4 (Description of the use case)

Actors: teacher

Description: add a new laboratory assignment

Precondition: - all fields are specified

Postcondition: - a new laboratory assignment was added in the list

|  |  |
| --- | --- |
| Action | System Response |
| 1 Completes the necessary fields for adding |  |
|  | 2 Checks if every field is valid, adds a new element to the list if so |
| 3 - | 3. If the input is invalid, throws an exception |

## 3.5 Use case number 5 (Description of the use case)

Actors: teacher

Description: extend the deadline of a laboratory assignment

Precondition: - the deadline is in date format

Postcondition: - the laboratory assignment’s deadline was updated

|  |  |
| --- | --- |
| Action | System Response |
| 1 Teacher enters the id and the new deadline |  |
|  | 2 Checks if the id is valid and belongs to an existing laboratory assignment |
|  | 33333 3 Checks if the date is valid and it is not a date in the past. |
|  | 4 4 4 4 Update the assignment’s deadline |
| 3 - | 5 If the input is invalid, throws an exception |

## 3.6 Use case number 6 (Description of the use case)

Actors: teacher

Description: add grade to a Student to a given laboratory assignment

Precondition: - student id, laboratory id, new grade is an integer, submitted day is a date

Postcondition: - the laboratory assignment is graded

|  |  |
| --- | --- |
| Action | System Response |
| 1 Teacher enters the student id, laboratory id, the grade, submit date, feedback |  |
|  | 2 Checks if the student id is valid and belongs to an existing student |
|  | 33333 3 Checks if the laboratory id is valid and belongs to an existing laboratory assignment |
|  | 4 Checks if the grade is valid, checks if the submit date is valid and it is not in the past |
|  | 4 4 4 5 Update the assignment’s grade |
| 3 - | 6. If the input is invalid, throws an exception |

# Analysis

## Entities

Student, Assignment, Grade

## Relations between entities

One student can have multiple assignments and one assignment can be assigned to many students. It is a many-to-many relationship between the two classes. Class Grade has as id, a pair consisting of studentId and assignmentId and it is the association class between the Student and Assignment classes.

## Attributes

Student: id, name, group, email, professor name

Assignment: id, description, deadline, assignation date

Grade: id(studentId, assignmentId), value, deliver date, feedback

## System behavior

## Use case 1-2-3

The system will act as a subsystem to a larger environment, in order to speed up a certain process in the company’s workflow.

## System events

After each operation a message is shown to the user either if the command terminated succesfully or with an error message.

# Design

* 1. **Class diagram**

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* 1. **Sequence diagrams (for each use case)**
* **Add Student Sequence Diagram**

****

* **Delete Student Sequence Diagram**

****

* **Update Student Sequence Diagram**

****

* 1. **GRASP**

GRASP is set of exactly 9 **G**eneral **R**esponsibility **A**ssignment **S**oftware **P**atterns:

1. Information Expert

2. Creator

3. Controller

4. Low Coupling

5. High Cohesion

6. Indirection

7. Polymorphism

8. Pure Fabrication

9. Protected Variations