



SOFTLAB
Software Engineering Laboratory

Software as a Service Technologies 2024-2025

clearSKY

**Software Requirements Specification
Document**

NTUA SOFTLAB

March 2025

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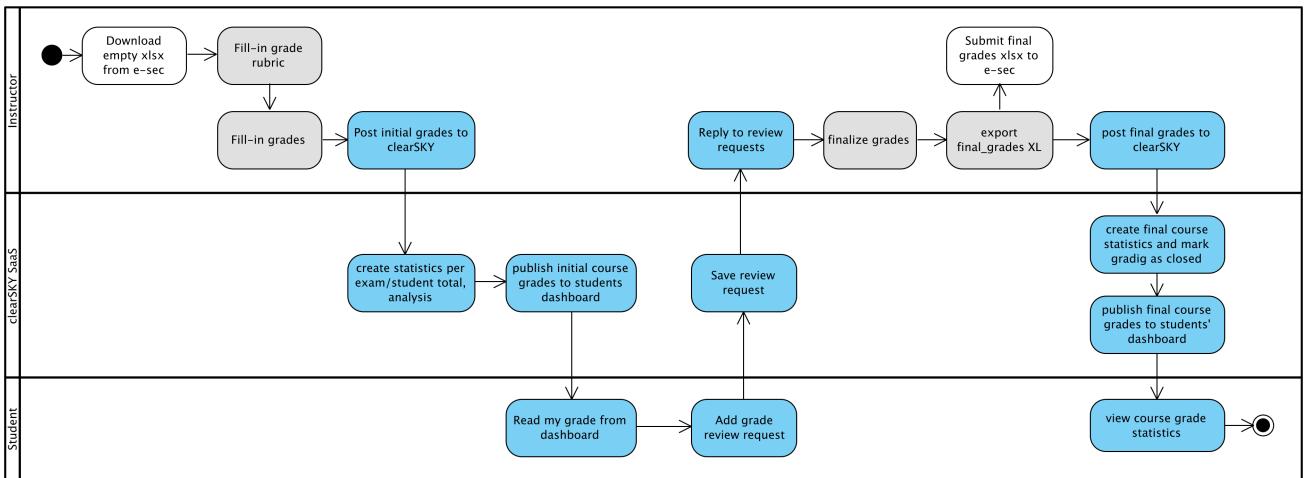
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1. Introduction

1.1. Purpose of the software

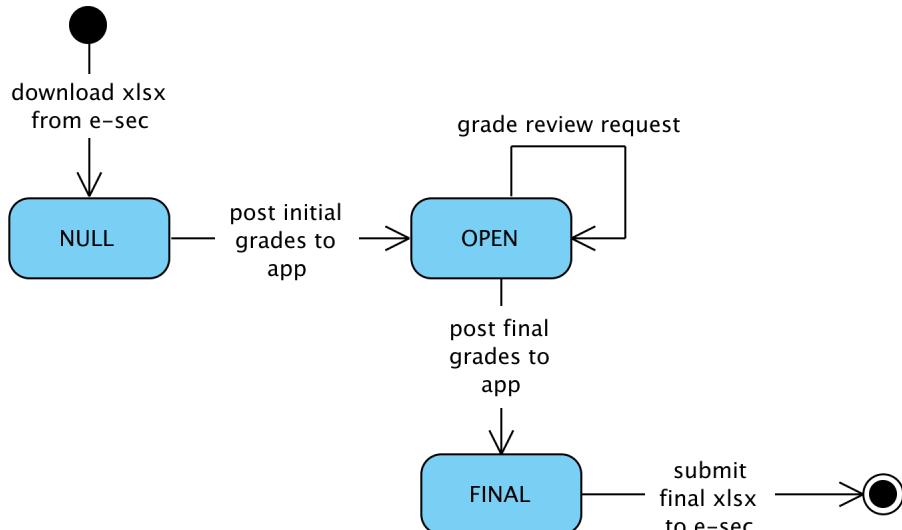
ClearSKY is a web service addressed to instructors at all educational levels, who post course grades before finalizing them, and allow a cycle of revision requests by students. The execution of this process by each instructor individually requires a significant amount of time, which can be avoided by using **clearSKY**. For the purposes of this project, we will adopt the Excel format used by the new registrar software at NTUA. **ClearSKY** will run on (hypothetical) cloud infrastructures with sufficient computational power for its purpose. Users (instructors, or their institutions) will pay according to the number of courses for which they use the service. The service will be free for students.

1.1.1. General flow



The above UML activity diagram shows the general flow of tasks. The actions marked in white refer to external software systems, e.g. the respective registrar software. The actions in grey are done manually in excel, while the actions in blue are those involving **clearSKY**.

1.1.2 Grades states



The initial rating state is **VOID**, i.e. there is no rating.

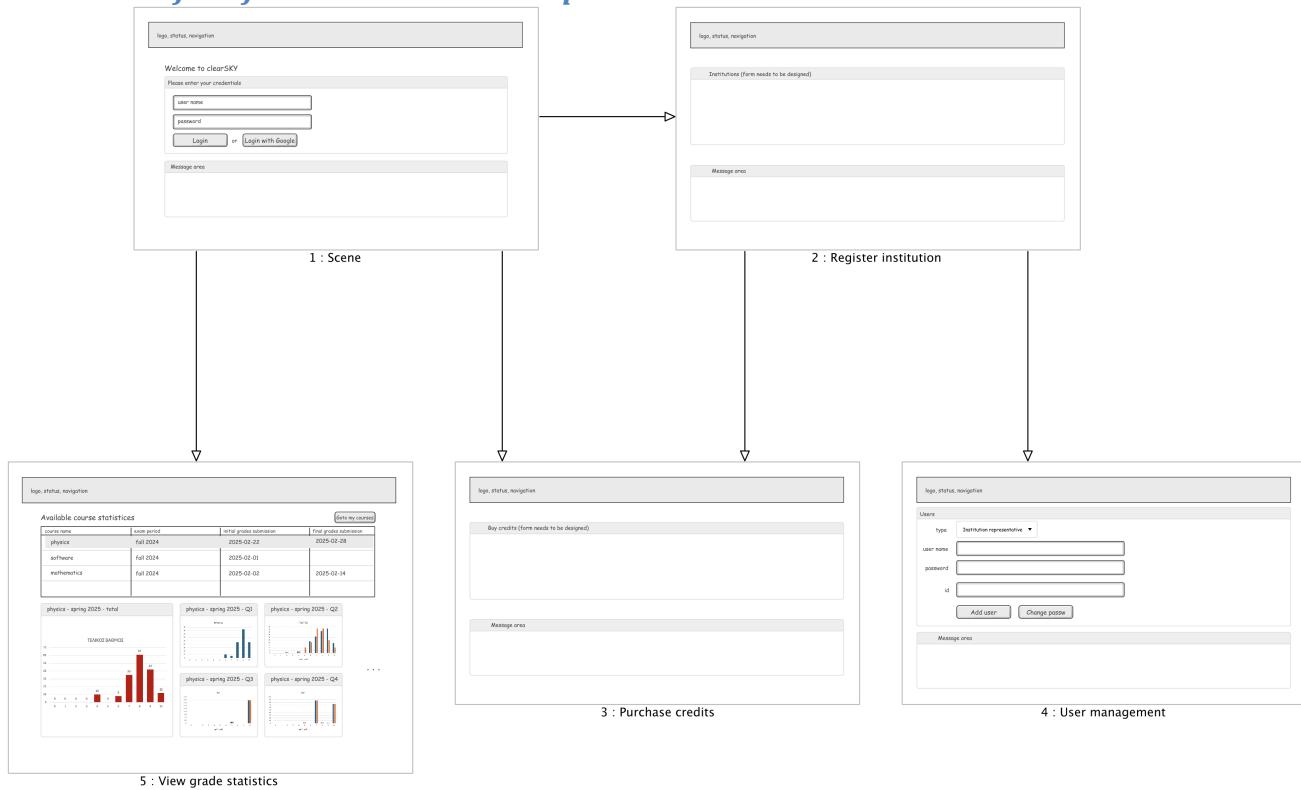
In **OPEN** mode, grades exist in excel and in the **clearSKY** app. They can be changed after review requests.

The final status (**FINAL**) is reached after the final grade has been entered in the student record (outside of the application) does not allow any grade modification.

1.2. Interfaces

1.2.1. User interfaces

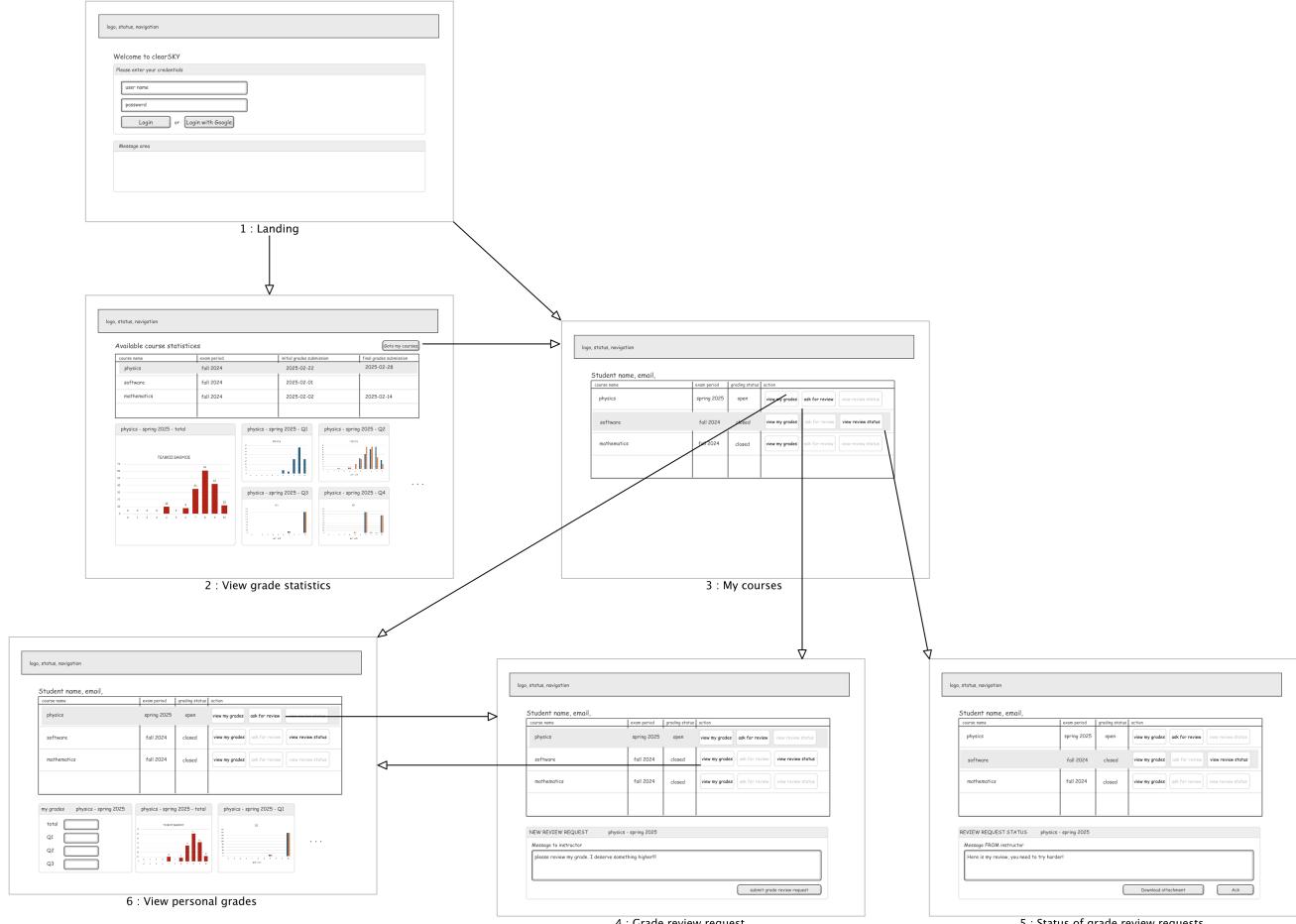
clearSKY UX flow for user: Institution representative



clearSKY UX flow for user: Instructor

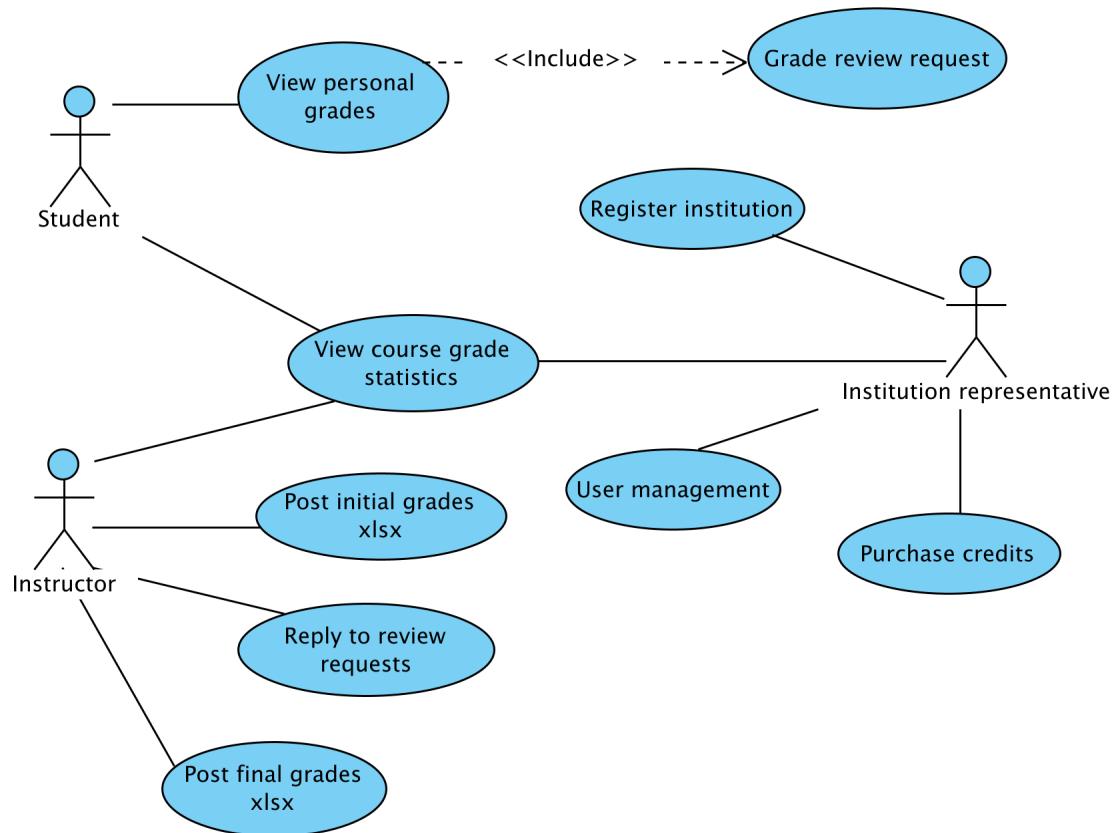


clearSKY UX flow for user: Student



2. Software Requirements Specifications

2.1. clearSKY use case model



2.2 Register institution

ID: UC09

Institution registration.

2.2.1 Primary Actors

👤 institution representative

2.2.2 Details

Level	User
Complexity	Low
Use Case Status	Initial
implementation status	Scheduled
Preconditions	N/A
Post-conditions	👤 Purchase credits
Author	VV

Assumptions

2.2.3 Requirements

Institutions management

ID: REQ003

Basic institution management.

Login

ID: REQ001

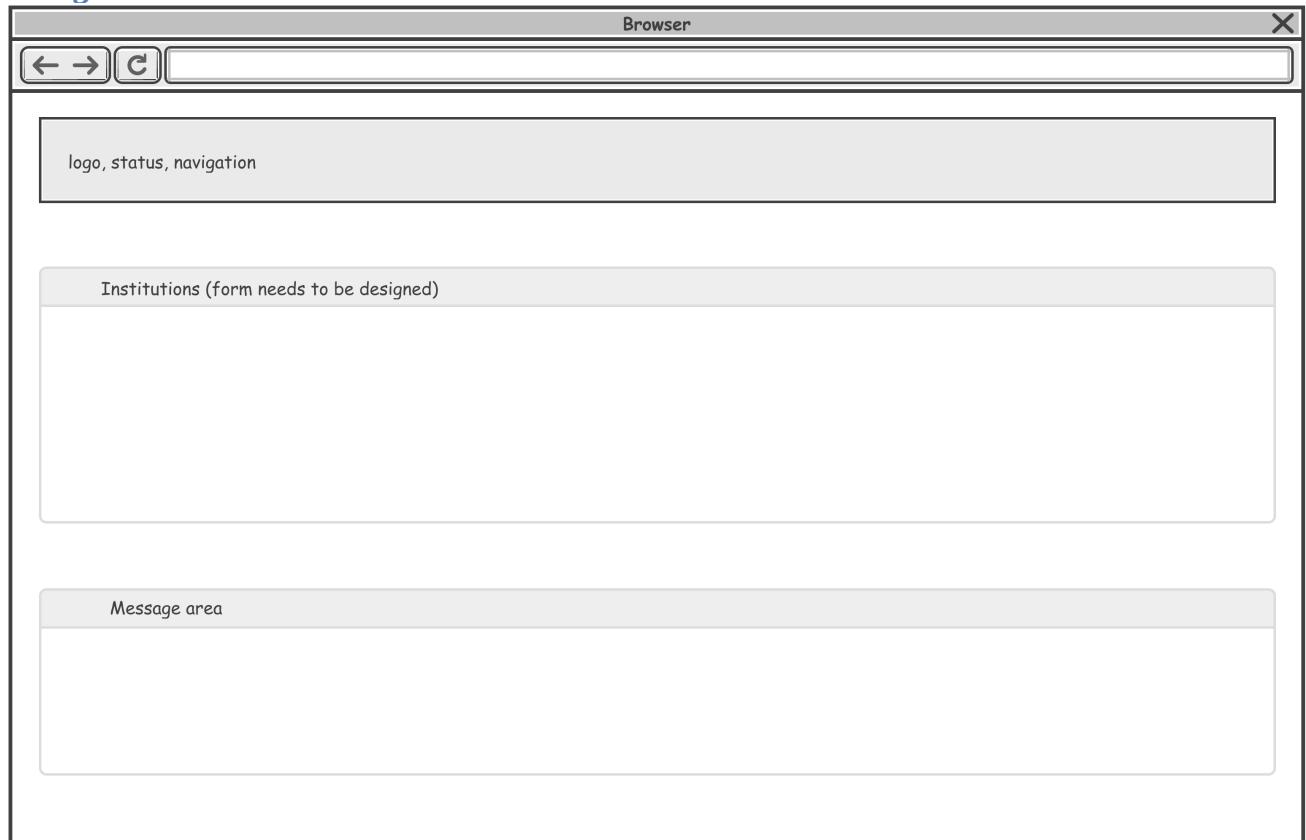
Basic login functionality

2.2.4 Relationships

Relationship	From	To
— unnamed	 institution representative	 Register institution

2.2.5 Sub Diagrams

Manage institutions



● 2.3 User management

ID: UC10

User management. In addition to the username or email that identifies the user account, each user will have a unique identifier which is their unique id created by the university, listed on their grade.

2.3.1 Primary Actors

 institution representative

2.3.2 Details

Level	User
Complexity	Low
Use Case Status	Initial
Implementation status	Scheduled
Preconditions	 Register institution
Post-conditions	N/A
Author	VV
Assumptions	-

2.3.3 Requirements

user management

ID: REQ002

Basic user management operations. Need to establish a Foreign Key (FK) (eg 031xxxxxx) to map grades from excel to students (users).

2.3.4 Relationships

Relationship	From	To
— unnamed	 institution representative	 user management

2.3.5 Sub Diagrams

user management

The screenshot shows a web-based user management application. At the top, there's a header bar with standard browser controls (back, forward, search). Below this is a 'Users' section. It contains a dropdown menu labeled 'type' with 'Institution representative' selected, and three input fields for 'user name', 'password', and 'id'. Below these fields are two buttons: 'Add user' and 'Change passw'. A 'Message area' is located at the bottom of the form. Two annotations are present: one pointing to the 'type' dropdown with the text 'Instructor, student or representative', and another pointing to the 'id' field with the text 'ID for extracting grades from excel (e.g. 03112345) For students, only'.

2.4 Purchase credits

ID: UC08

Purchase credits.

2.4.1 Primary Actors

👤 institution representative

2.4.2 Details

Level	N/A
Complexity	N/A
Use Case Status	N/A
implementation status	N/A
Preconditions	Register institution
Post-conditions	Post initial grades.xlsx
Author	N/A
Assumptions	N/A

2.4.3 Requirements

Buy credits

ID: REQ004

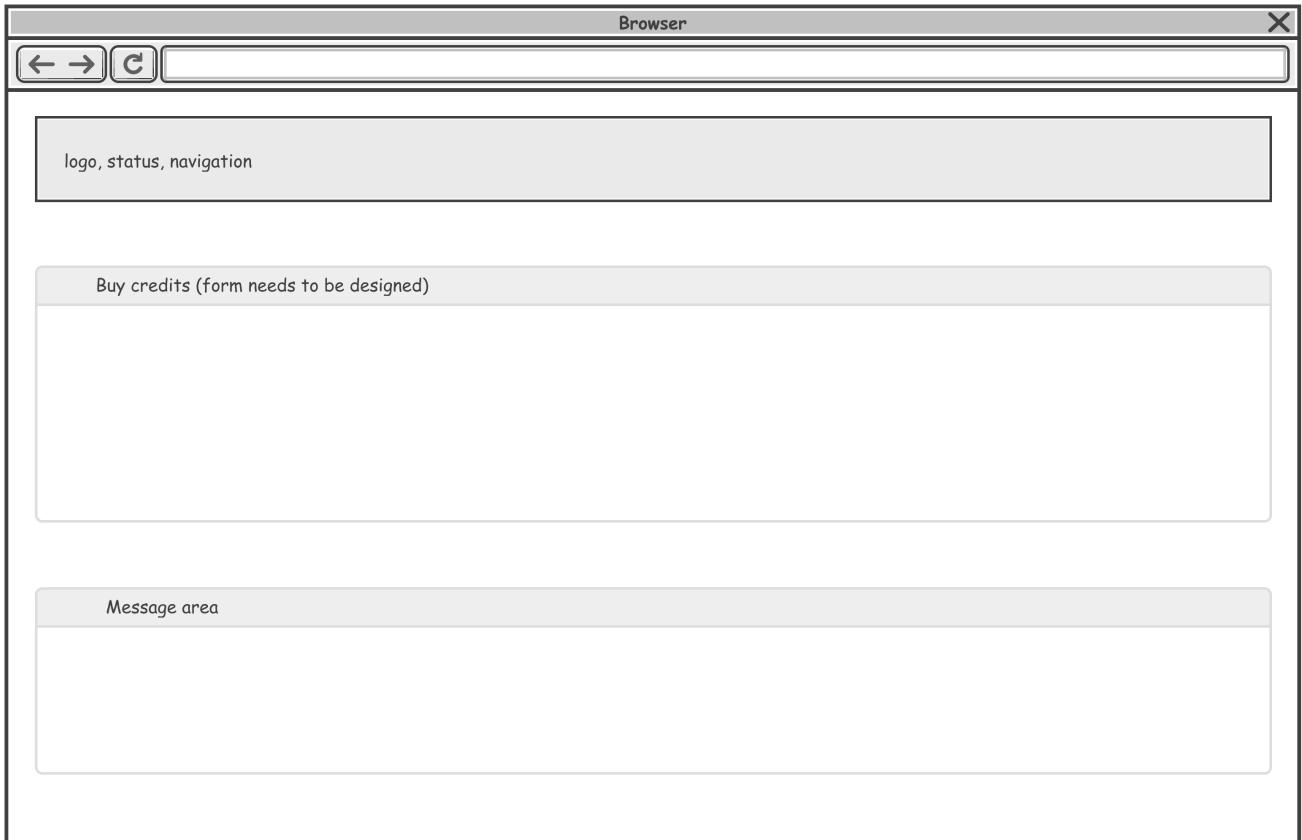
Add credits. 1 credit = 1 submission (initial+final)

2.4.4 Relationships

Relationship	From	To
— unnamed	institution representative	 Purchase credits

2.4.5 Sub Diagrams

Purchase credits



● 2.5. post initial grades xlsx

ID: UC01

Uploading of grades by instructors.

2.5.1 Primary Actors

 Instructor

2.5.2 Details

Level	User
Complexity	Low
Use Case Status	Initial

implementation status	Scheduled
Preconditions	N/A
Post-conditions	<ul style="list-style-type: none">  Post final grades.xlsx  View personal grades  Register institution  Purchase credits
Author	VV
Assumptions	-

2.5.3 Requirements

 ***Calc grade statistics***

ID: REQ010

Calculate grade distributions

 ***Create temp personal grades details***

ID: REQ015

Update temporary datastore with personal grades

 ***Extract grades from excel***

ID: REQ007

Parse excel file

 ***Post initial grades***

ID: REQ005

upload initial grades

 ***Verify excel structure***

ID: REQ006

Make sure that excel can be processed

2.5.4 Relationships

Relationship	From	To
— unnamed	 Instructor	 Post initial grades.xlsx

2.5.5 Sub Diagrams

Post initial grades

Browser

← → C X

logo, status, navigation

Instructor name

INITIAL GRADES POSTING

xlsx file with initial grades

select file to upload or drag and drop submit initial grades

XLSX file parsing

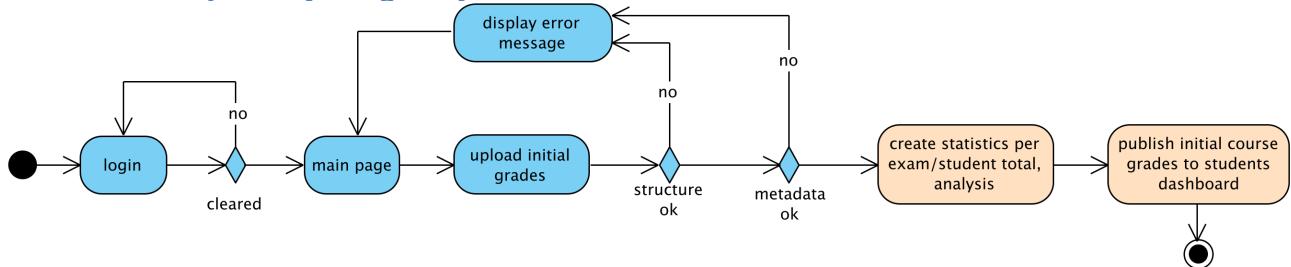
Course: Course name

Period: Exam period

n. of grades N CONFIRM CANCEL

Message area

Post initial xlsx (Activity Diagram)



2.5.6 Traceability

Type	Value
Transit From	General flow.Post initial grades to clearSKY

2.6 View course grade statistics

ID: UC06

Show statistics for courses with finalised grades.

2.6.1 Primary Actors

👤 Institution representative, 🎓 Instructor, 🏫 Student

2.6.2 Details

Level	User
Complexity	Low
Use Case Status	Initial
implementation status	Scheduled
Preconditions	 Post initial grades.xlsx
Post-conditions	N/A
Author	VV
Assumptions	-

2.6.3 Requirements

Prepare total statistics dashboard

ID: REQ011

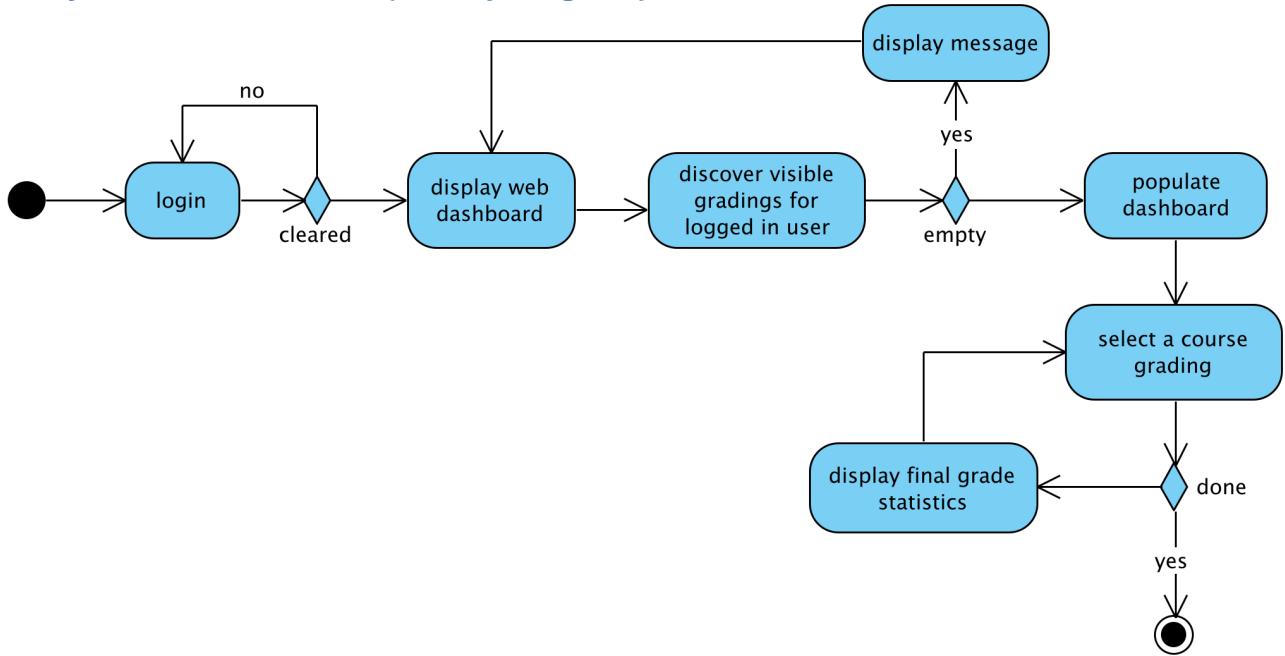
Create dashboard with statistics for all courses

2.6.4 Relationships

Relationship	From	To
— unnamed	 Student	 View course grade statistics
— unnamed	 Instructor	 View course grade statistics
— unnamed	 institution representative	 View course grade statistics

2.6.5 Sub Diagrams

Access final course statistics (Activity Diagram)



View course grade statistics

The screenshot shows a web browser window titled 'Browser' with a toolbar containing back, forward, and search buttons. The main content area displays course statistics:

Available course statistics

course name	exam period	initial grades submission	final grades submission
physics	fall 2024	2025-02-22	2025-02-28
software	fall 2024	2025-02-01	
mathematics	fall 2024	2025-02-02	2025-02-14

physics - spring 2025 - total

ΤΕΛΙΚΟΣ ΒΑΘΜΟΣ

Grade	Count
4	10
6	8
7	35
8	61
9	42
10	12

physics - spring 2025 - Q1

ΕΡΓΑΣΙΑ

Assignment	Count
1	2
2	1
3	1
4	1
5	1
6	10
7	45
8	20
9	15
10	10

physics - spring 2025 - Q2

ΓΡΑΠΤΟ

Assignment	Count
1	1
2	1
3	1
4	1
5	1
6	15
7	35
8	40
9	30
10	15

physics - spring 2025 - Q3

Ο1

Assignment	Count
6	10
7	10
8	150
9	10
10	10

physics - spring 2025 - Q4

Ο2

Assignment	Count
5	10
6	10
7	100
8	10
9	10

Goto my courses

2.6.6 Traceability

Type	Value
Transit From	 General flow .view course grade statistics

2.7. View personal grades

ID: UC02

View student grades. The identification of the student is done by his username when logging in to the system. The student can request a grade review by activating the [Grade review request](#) use case.

2.7.1 Primary Actors



2.7.2 Details

Level	User
Complexity	Low
Use Case Status	Initial
implementation status	Scheduled
Preconditions	 Login
Post-conditions	 Grade review request
Author	VV
Assumptions	-

2.7.3 Requirements

[Get student grades](#)

ID: REQ008

Read student grades from temp datastore

[Login](#)

ID: REQ001

Basic login functionality

[Prepare personal grades dashboard](#)

ID: REQ009

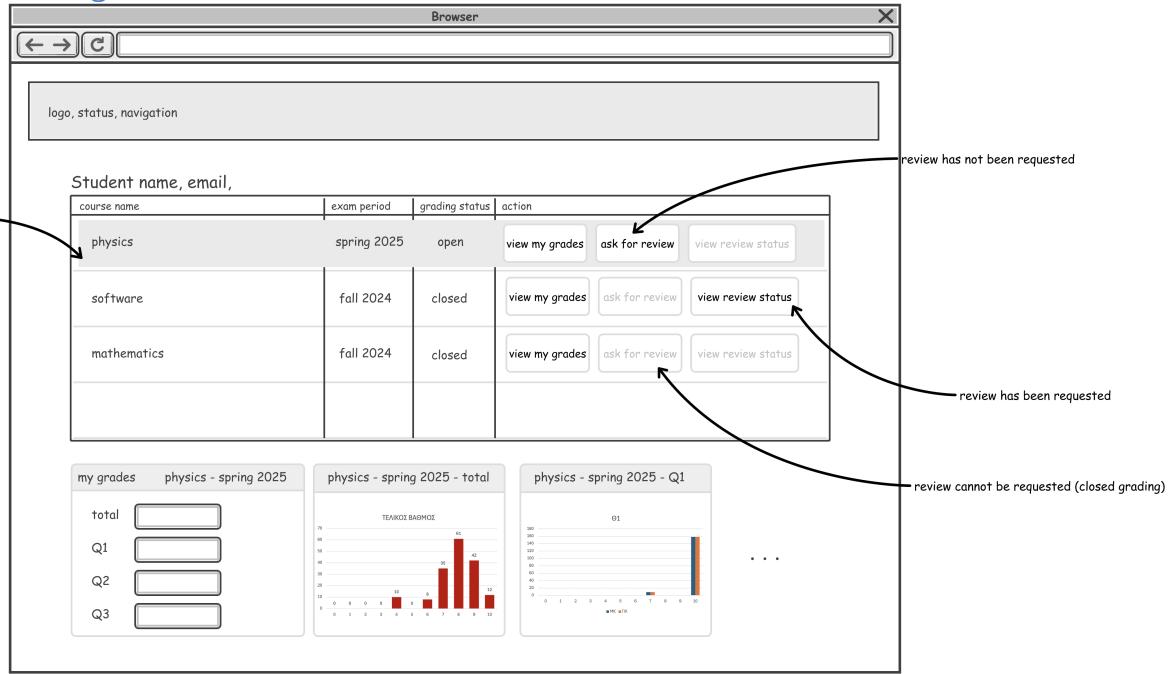
Create list with available (temp) detailed grades for current student

2.7.4 Relationships

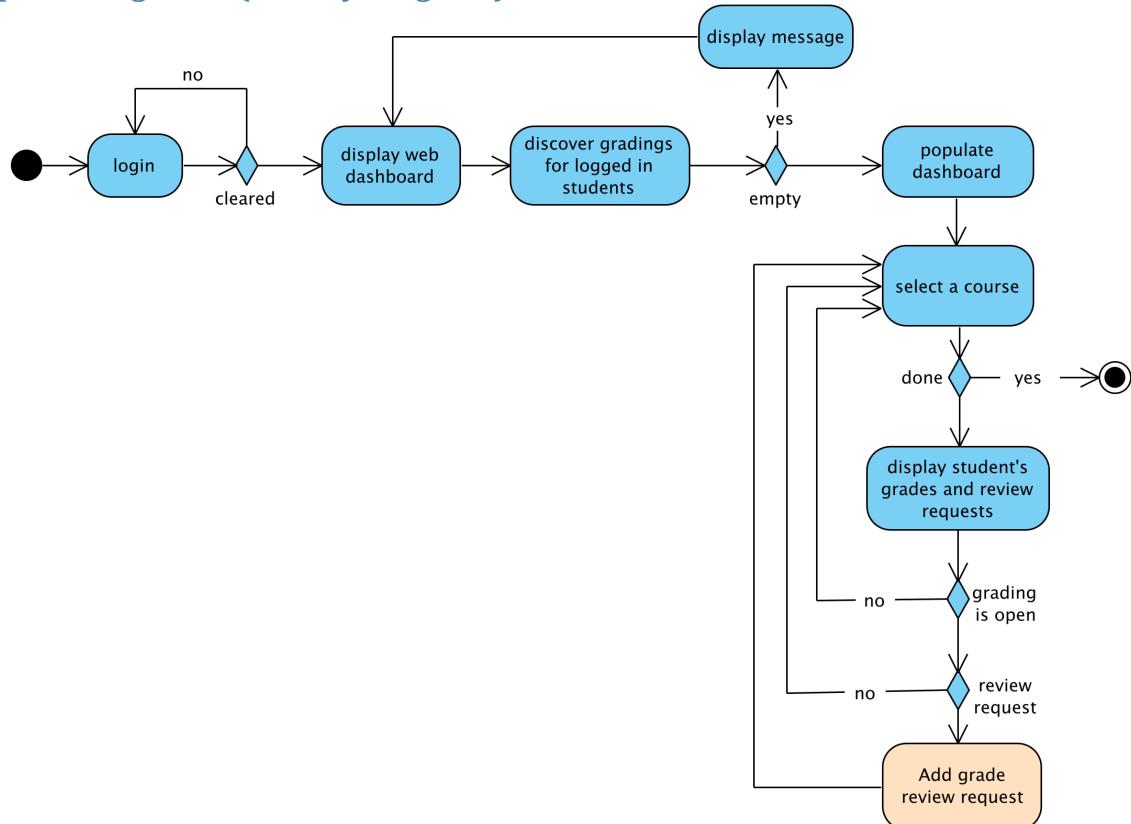
Relationship	From	To
unnamed	View personal grades	Grade review request
unnamed	Student	View personal grades

2.7.5 Sub Diagrams

Access personal grades



Access personal grades (Activity Diagram)



Access personal grades - review request status

The screenshot shows a web browser window titled "Browser". At the top left are navigation buttons for back, forward, and search. The main content area has a header "Student name, email," followed by a table. The table has four columns: "course name", "exam period", "grading status", and "action". There are three rows of data:

course name	exam period	grading status	action
physics	spring 2025	open	view my grades ask for review view review status
software	fall 2024	closed	view my grades ask for review view review status
mathematics	fall 2024	closed	view my grades ask for review view review status

2.7.6 Traceability

Type	Value
Transit From	General flow. Read my grade from dashboard

2.8 Grade review request

ID: UC03

Request for a review of the score.

2.8.1 Details

Level	User
Complexity	Low
Use Case Status	Initial
implementation status	Scheduled
Preconditions	View personal grades
Post-conditions	Reply to review requests

Author VV

Assumptions -

2.8.2 Requirements

Review request form

ID: REQ012

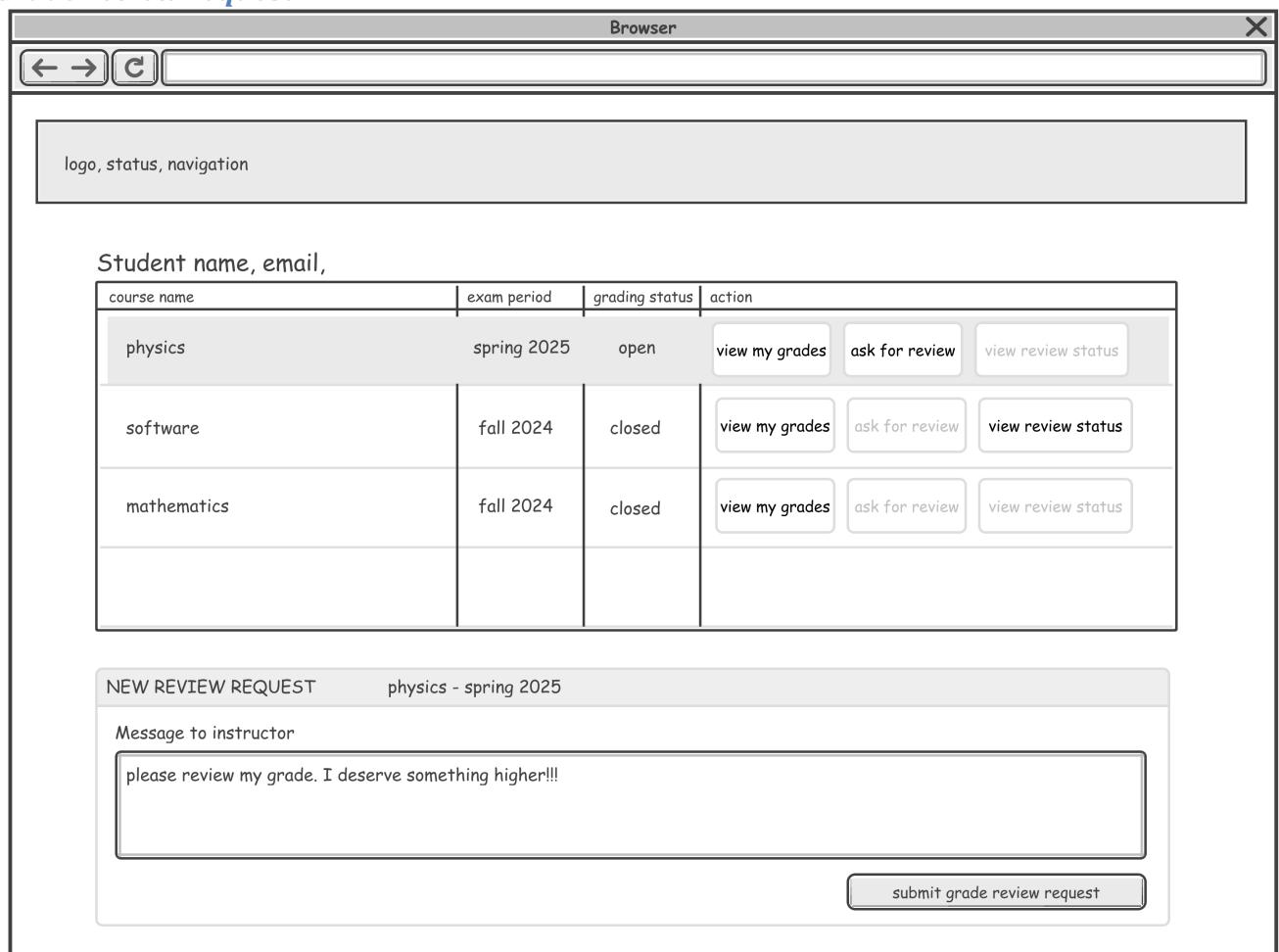
Display a form to submit review requests

2.8.3 Relationships

Relationship	From	To
→ unnamed	 View personal grades	 Grade review request

2.8.4 Sub Diagrams

Grade review request

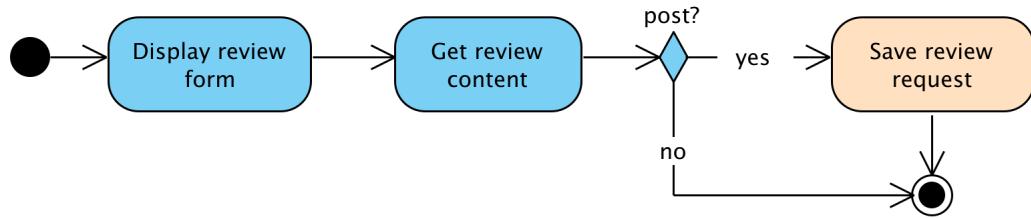


The screenshot shows a web browser window titled "Browser". At the top, there are standard browser controls: back, forward, and search. Below the header is a grey bar containing "logo, status, navigation". The main content area displays a table of courses:

course name	exam period	grading status	action
physics	spring 2025	open	 view my grades  ask for review  view review status
software	fall 2024	closed	 view my grades  ask for review  view review status
mathematics	fall 2024	closed	 view my grades  ask for review  view review status

Below the table, a section titled "NEW REVIEW REQUEST" shows "physics - spring 2025". It contains a text input field labeled "Message to instructor" with the placeholder text "please review my grade. I deserve something higher!!!". At the bottom right is a button labeled "submit grade review request".

Grades review request (Activity Diagram)



2.8.5 Traceability

Type	Value
Transit From	Access personal grades (Activity Diagram) .Add grade review request

2.9 Reply to review requests

ID: UC04

Response to requests for re-examination of scores. When a request is responded to, the provisional records relating to the original analytical score of each student are deleted.

2.9.1 Primary Actors

Instructor

2.9.2 Details

Level	User
Complexity	Low
Use Case Status	Initial
implementation status	Scheduled
Preconditions	Post initial grades.xlsx Grade review request
Post-conditions	Post final grades.xlsx
Author	VV
Assumptions	-

2.9.3 Requirements

Delete temp personal grade details

ID: REQ016

On finalizing grades, delete personal grades from datastore

Review reply form

ID: REQ013

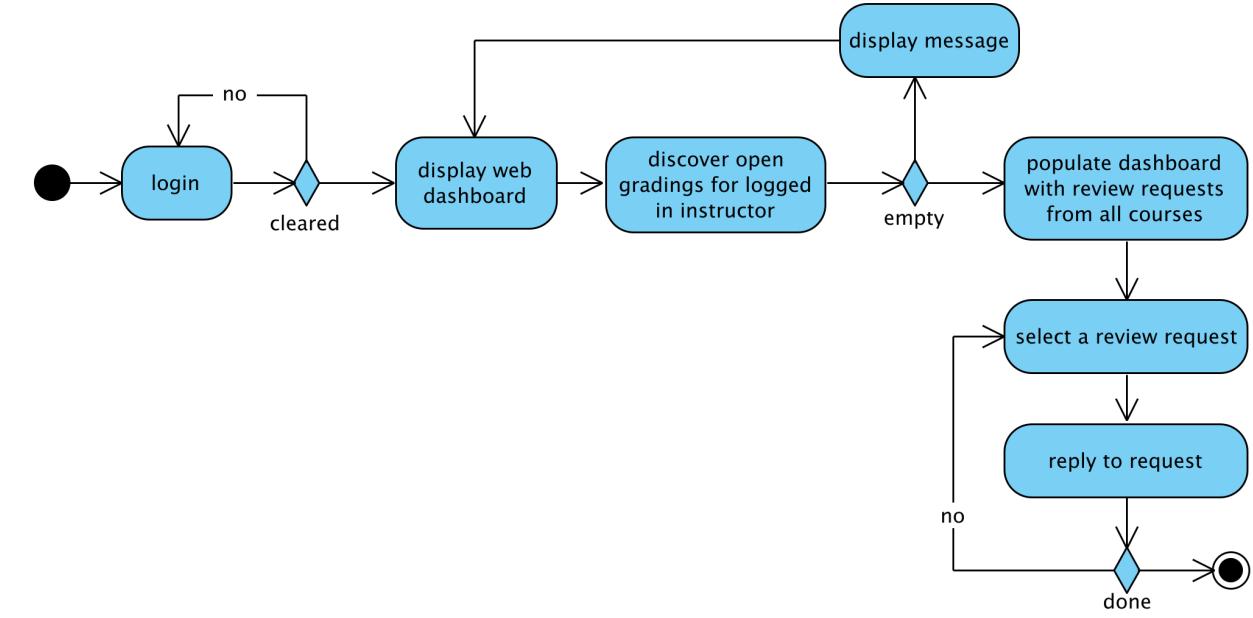
Display a form to reply to review requests

2.9.4 Relationships

Relationship	From	To
— unnamed	Instructor	Reply to review requests

2.9.5 Sub Diagrams

Examine review requests (Activity Diagram)



Reply to review request - step 1

The screenshot shows a web browser window titled "Browser". The header bar includes standard navigation buttons (back, forward, search) and a close button. Below the header is a light gray header area containing the text "logo, status, navigation". The main content area displays a table titled "Instructor name". The table has four columns: "course name", "exam period", "student", and "action". There are three rows of data:

course name	exam period	student	action
software II	spring 2025	john doe	<input type="button" value="Reply"/>
software II	spring 2025	jane doe	<input type="button" value="Reply"/>
software I	fall 2024	george smith	<input type="button" value="Reply"/>

Reply to review request - step 2

Browser

The screenshot shows a web application interface. At the top, there's a header bar with a back/forward button, a search icon, and a close button. Below the header is a light gray navigation bar containing the text "logo, status, navigation". The main content area contains two parts: a table titled "Instructor name" and a detailed reply form.

Instructor name

course name	exam period	student	action
software II	spring 2025	john doe	<button>Reply</button>
software II	spring 2025	jane doe	<button>Reply</button>
software I	fall 2024	george smith	<button>Reply</button>

REPLY TO GRADE REVIEW REQUEST

software II	spring 2025	john doe
Action	Total accept ▾	
instructor's message	<input type="text"/> <input type="button" value="upload reply attachment"/>	

2.9.6 Traceability

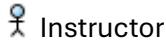
Type	Value
Transit From	General flow.Reply to review requests

2.10. Post final grades xlsx

ID: UC05

Upload final course grade.

2.10.1 Primary Actors



Instructor

2.10.2 Details

Level	N/A
Complexity	N/A
Use Case Status	N/A
implementation status	N/A

Preconditions	 Post initial grades.xlsx  Purchase credits
Post-conditions	N/A
Author	N/A
Assumptions	N/A

2.10.3 Requirements

Calc grade statistics

ID: REQ010

Make grade distributions

Extract grades from excel

ID: REQ007

Parse excel file

Post final grades

ID: REQ014

Upload final grades

Verify excel structure

ID: REQ006

Make sure that excel can be processed

2.10.4 Relationships

Relationship	From	To
— unnamed	 Instructor	 Post final grades.xlsx

2.10.5 Sub Diagrams

Post final grades

Browser

logo, status, navigation

Instructor name

FINAL GRADES POSTING

xlsx file with FINAL grades

select file to upload or drag and drop submit FINAL grades

XLSX file parsing

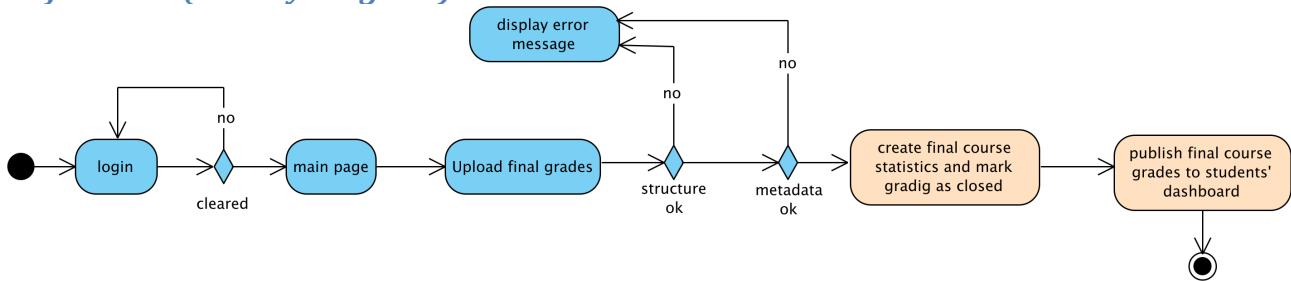
Course: Course name

Period: Exam period

n. of grades N CONFIRM CANCEL

Message area

Post final xlsx (Activity Diagram)



2.10.6 Traceability

Type	Value
Transit From	General flow.post final grades to clearSKY

2.11. clearSKY functional requirements

