

NationalExamination.com

Learning by Practice!!

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Object Oriented Software Engineering

Requirement Analysis Document

Project:

NATIONALEXAMINATION.COM

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1. Introduction

1.1 Purpose of the system

National Exams are standardized exams administered in most countries around the world. They are typically administered at the end of Primary school (Middle School) and high School education, where graduating students in the whole country take the same exams. These exams are of a great significance as students are competitively selected for admissions in high schools and universities solely based on these exams. They are typically managed by the National examination council in given countries.

Unlike in the US and most western countries in the west where student have different facilities where they can learn and practice what they have learned on the internet, students countries in Africa, Asia and South America suffer in most countries face the issue of access to preparation material and access to old national exams and practice exams. When a student is about to take GRE, SAT, ACT, TOEFL or any other standard test there are a lot of facilities in his position that he can exploit in order to not only assess his preparedness, but also to familiarize himself with the test format. It is unfortunate that millions of students in the third world countries such crucial educational infrastructure.

Nationalexamination.com comes in response to the problem of the lack of national exams preparation infrastructure. This website will provide to students access to old exams, practice tests as well as learning resources for students preparing for national exams.

1.2 Scope of the project

NationalExamination.com will focus on providing access to students to practice exams, old National Exams and solutions, as well as learning advices. Though, we know that students need massive educational material, this will not be our primary focus due to the high cost of educational materials.

National Examination.com is part of Standard Learning Project, a project that will be comprised of a national Examination preparation platform, a National Examination administration platform, a national Examination Grading platform and a National Examination Result publication platform.

The domain name NationalExamination.com has been purchased and I am hoping that students will be able to use the website preparing for their next national exams next summer.

1.3 Objectives

The objectives of NationalExamination.com project are:

- Provide an infrastructure for students to access old national exams and solutions
- Provide an infrastructure to students to access practice exams and view solutions
- Promote the culture of learning by practice by organizing online and offline competitions
- Provide a framework to generate offline practice exams

2. Current Systems

Although practice exams and online access to material is not a recent idea, there is no single website that that satisfy all of the objectives of NationalExamination.com project. Substantial investments in preparation platform such as kaplan.com, princetonreview.com, barron.com, etc. have been done in the west to help students prepare for standard examination, but nothing has been done in the third world countries.

3. Proposed System

3.1 Functional requirements

NationalExamination.com will support four actors

- The Student should be able to register, manage his account, view old exams, take practice exams, send a message, view his record and compete.
- The instructor should be able to register, manage his account, view old exams, take practice exams, send message, view record, post an exam or material and organize a competition.
- An admin should be able to register, manage user accounts, manage exams, manage competitions, manage website.

3.2. Nonfunctional requirements

- Low Cost: Students must be able to access most of the information without the help of additional software components. Most material should be able to be accessed for free.

- Extensibility: Instructors should be able to add new competitions, new exams, new learning materials and specify when these will be available to users.
- Scalability: The system must support competition of many users and take in account timing.
- Adaptability: The system should be adaptable from one country to the other without major modifications
- Legal requirements: The system should comply to local legal requirements in different countries.

3.3 System Models

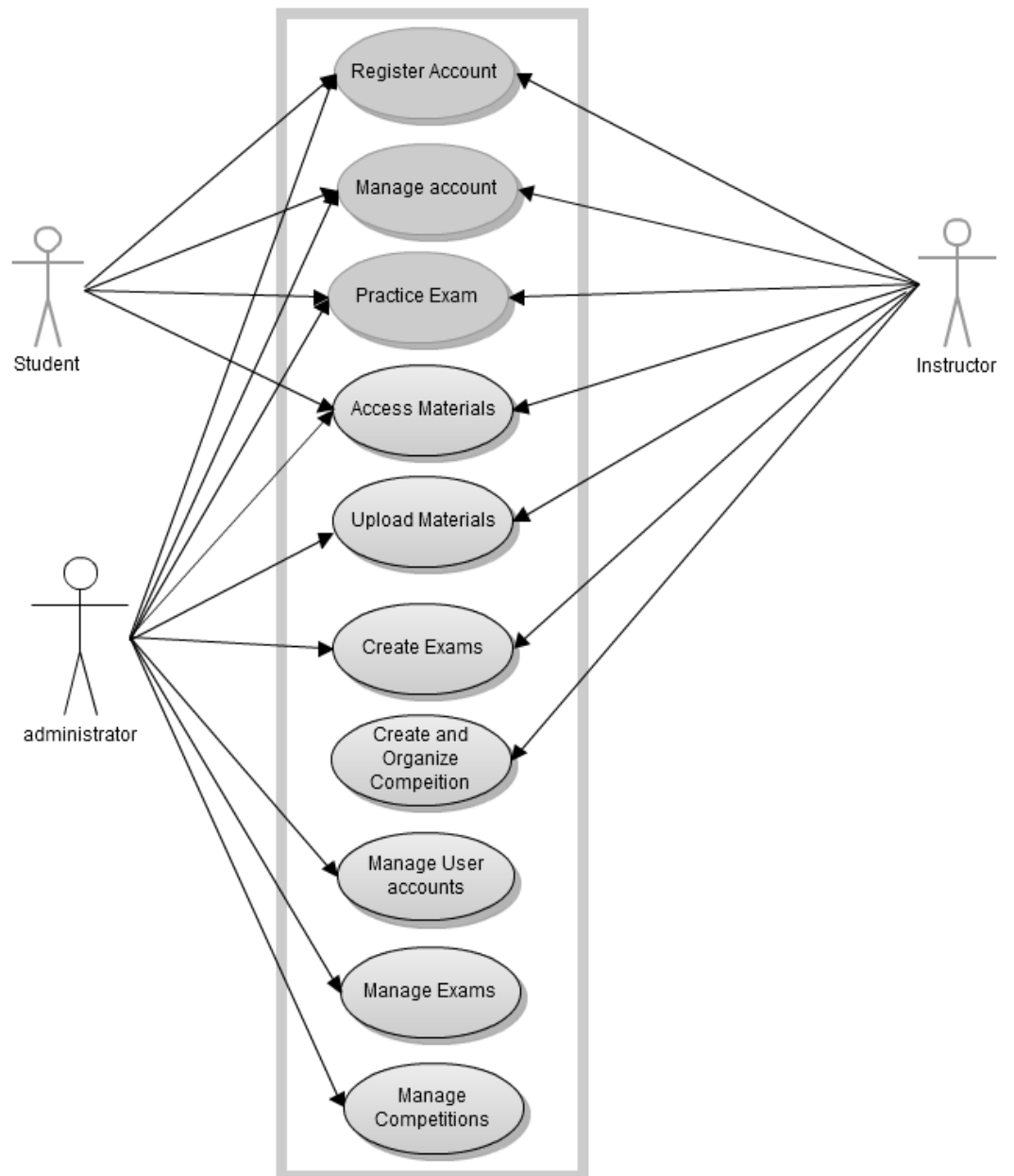
3.3.1 Scenarios

3.3.2 Use Cases model

NationalExamination.com has 10 use cases: register account, manage account, practice exam, access material, upload material, create exam, create and organize competition, manage user accounts, manage exams, manage competitions. In addition, NationalExamaiton.com will have three kinds of actors: students, instructors and administrator.

Students are users who can only access exam and materials on the website, instructors are users who can access and create exams, material and competition while administrators are users who regulate all the information flow on the website. All the three kinds of user work together and are coordinated by the NationalExamination.com system.

Use Cases: NationalExamination.com



Use Case name: Register account

Participant actor: User (Student, instructor or administrator)

Flow of events:

1. The user types in NationalExamination.com on in the browser
2. The user receives an invitation to register account
3. The user clicks on the invitation and the system redirects to the user to the registration page with a form
4. The user fills the form and clicks submit

Entry Condition: The user is on the NationalExamination.com website

Exit Condition: The user account has been registered

Use Case name: Manage Account

Participant actor: User (Student, instructor or administrator)

Flow of events:

5. The user logs into his account
6. The user clicks on the manage account button
7. The system redirects to the user to the account management page
8. The user edit his account and clicks the submit button

Entry Condition: The user is logged on the NationalExamination.com website

Exit Condition: The user account information has been changed

Use Case name: Create exam

Participant actor: User (Student, instructor or administrator)

Flow of events:

1. The user visits the NationalExamination.com website
2. The user logs in his account on the NationalExamination.com website
3. The user clicks on the Create exam button
4. The user is provided with a form where he either copy and paste questions and answers specifying their formats(Multiple choice, short answers, true/ false)
5. The user previews the exam and can edit it if there are errors
6. The user specify when he wants the exam to be available and clicks submit

Entry Condition: The user is on NationalExamination.com website

Exit Condition: The exam has been created

Use Case name: Access material

Participant actor: User (Student, instructor or administrator)

Flow of events:

1. The user visits the NationalExamination.com website
2. The clicks on the learning material button
3. The user is provided few learning material that he can view without logging in, and he is asked to log in to access more material
4. If the user logs in, he accesses all exams otherwise he accesses only few exams

Entry Condition: The user is on NationalExamination.com website

Exit Condition: The user has accessed learning material

Use Case name: Upload material

Participant actor: User (instructor or administrator)

Flow of events:

1. The user visits the NationalExamination.com website
2. The clicks on the upload material button and selects the kind of material that he is going to upload(Learning Material, Learning Skills)
3. The user is provided with a form to fill and is provided an option to browse the material or create the material.
4. The user previews the materials
5. If there are errors, the user edits the materials
6. The user specify when he want the materials to be available to all users and submits

Entry Condition: The user is on NationalExamination.com website

Exit Condition: The material has been uploaded

Use Case name: Create exams

Participant actor: User (instructor or administrator)

Flow of events:

1. The user visits the NationalExamination.com website
2. The clicks on the upload material button and selects the kind of material that he is going to upload(Learning Material, Exams, Learning Skills)
3. The user is provided with a form to fill and is provided an option to browse the material or create the material.

4. The user previews the materials
5. If there are errors, the user edits the materials
6. The user specify when he want the materials to be available to all users and submits

Entry Condition: The user is on NationalExamination.com website

Exit Condition: The material has been uploaded

Use Case name: Create and organize competition

Participant actor: User (instructor or administrator)

Flow of events:

1. The user visits the NationalExamination.com website
2. The user logs in his account on the NationalExamination.com website
3. The user clicks on the create and organize competition button
4. The user is provided with a form where he selects the exam associated with the given competition and precise the competition rules
5. The user previews the competition and can edit it if there are errors
6. The user specify when he wants the competition to be available and clicks submit

Entry Condition: The user is logged in on NationalExamination.com website

Exit Condition: The competition has been created

Use Case name: Manage user accounts

Participant actor: administrator

Flow of events:

1. The administrator visits the NationalExamination.com website
2. The administrator logs in his account on the NationalExamination.com website
3. The administrator modify/deletes an account

Entry Condition: The administrator is logged in on NationalExamination.com website

Exit Condition: The user account has been modified/deleted

Use Case name: Manage exams

Participant actor: administrator

Flow of events:

1. The administrator visits the NationalExamination.com website
2. The administrator logs in his account on the NationalExamination.com website
3. The administrator modify/deletes an exams

Entry Condition: The administrator is logged in on NationalExamination.com website

Exit Condition: The exam has been modified/deleted

Use Case name: Manage competition

Participant actor: administrator

Flow of events:

1. The administrator visits the NationalExamination.com website
2. The administrator logs in his account on the NationalExamination.com website
3. The administrator modify/deletes competition information

Entry Condition: The administrator is logged in on NationalExamination.com website

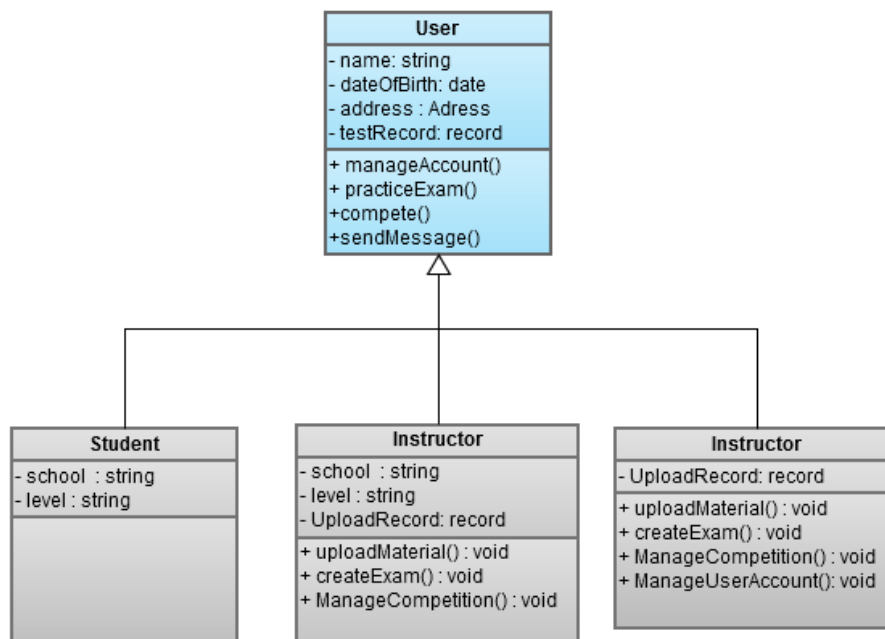
Exit Condition: The competition has been modified/deleted

4. Object Model

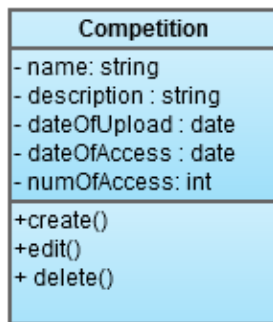
4.1 User Class

This class defines user attributes and behaviors. The three kinds of users:

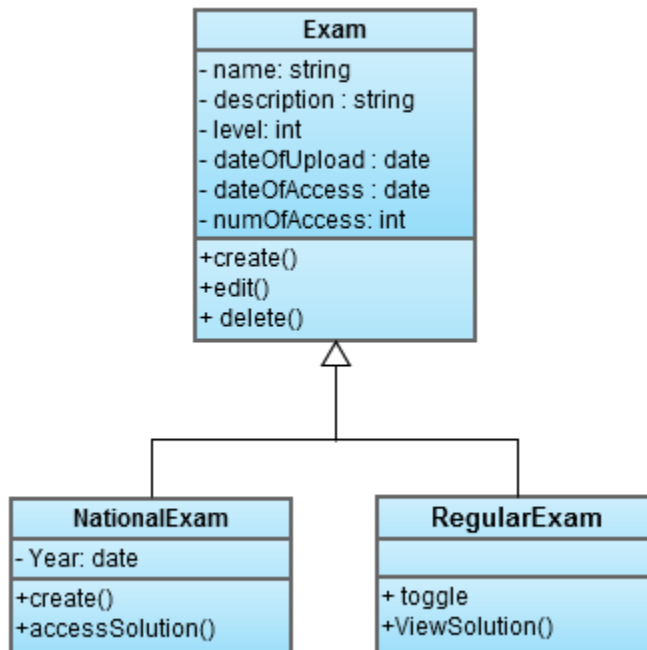
student, instructors and administrators are subclass of the user class.



4.2 Competition Class



4.3 Exam class



4.4 helMaterial class

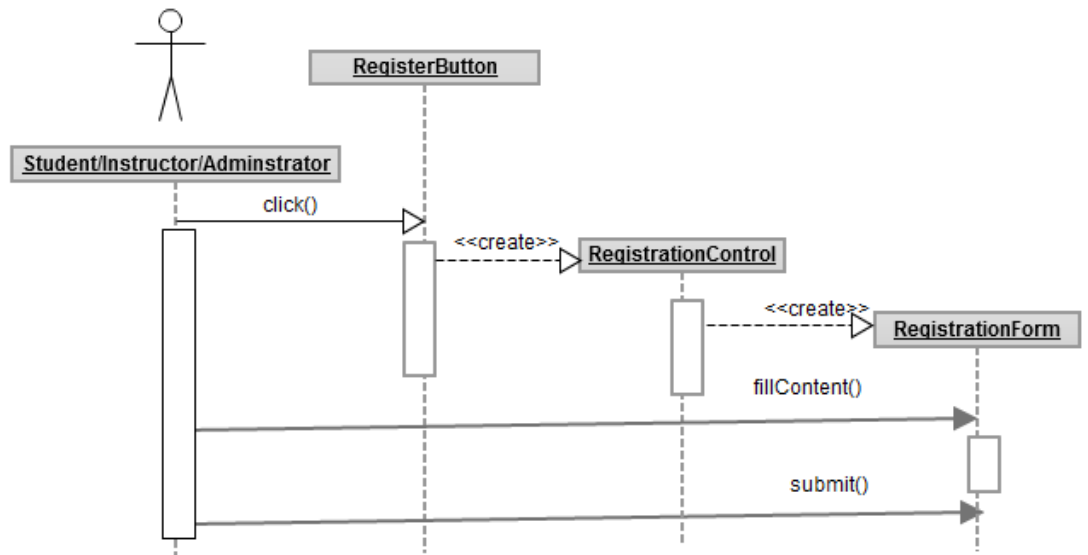
helpMaterial
- name: string - description : string - content: string - level: int - dateOfUpload : date - dateOfAccess : date - numOfAccess: int
+create() +edit() + delete()

4.5 learningMaterial

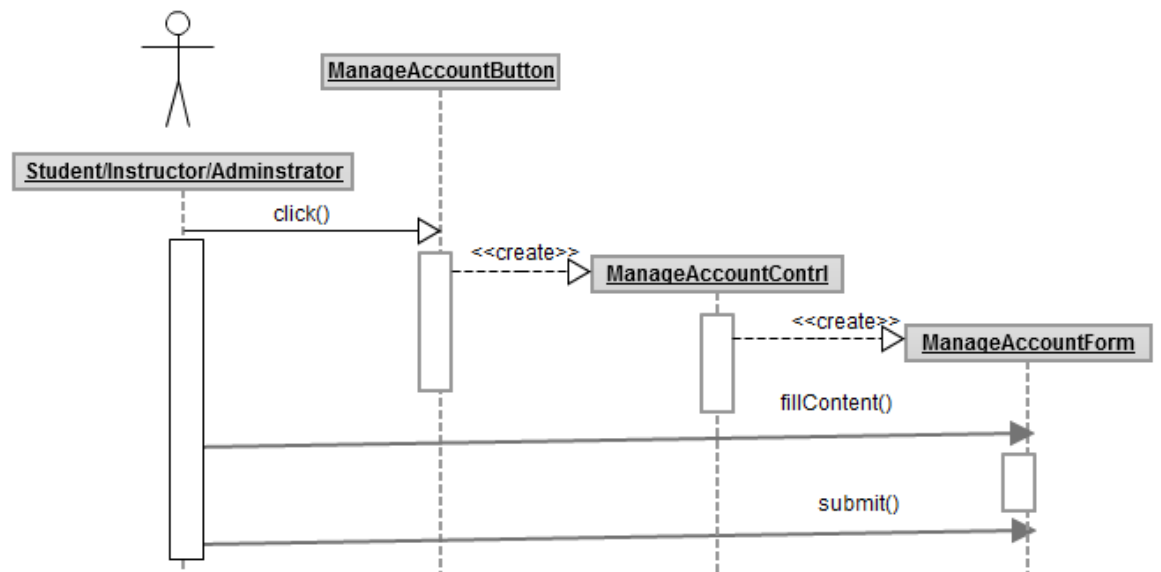
learningMaterial
- name: string - description : string - content: string - level: int - dateOfUpload : date - dateOfAccess : date - numOfAccess: int
+create() +edit() + delete()

5. Dynamic model

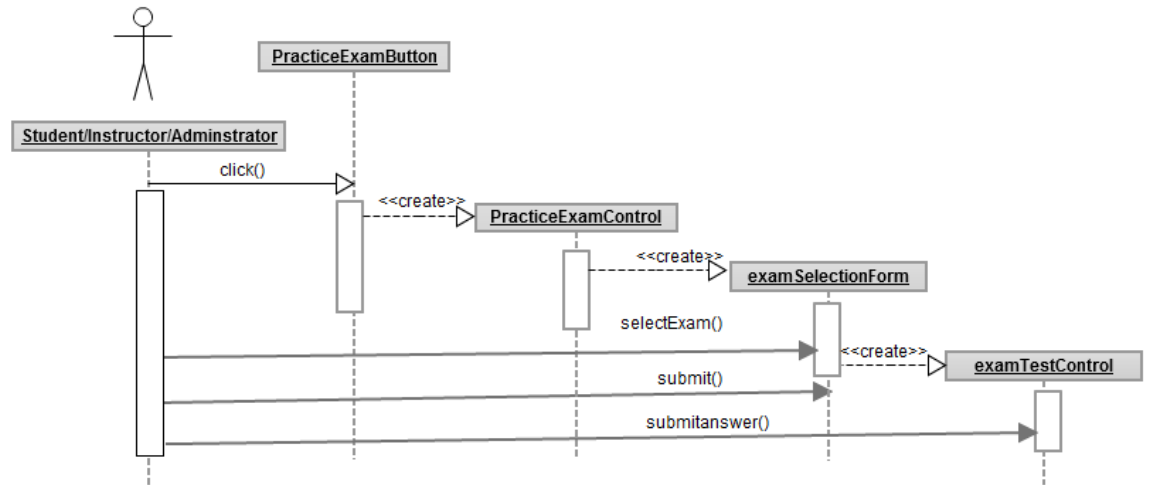
4.1 Register Account



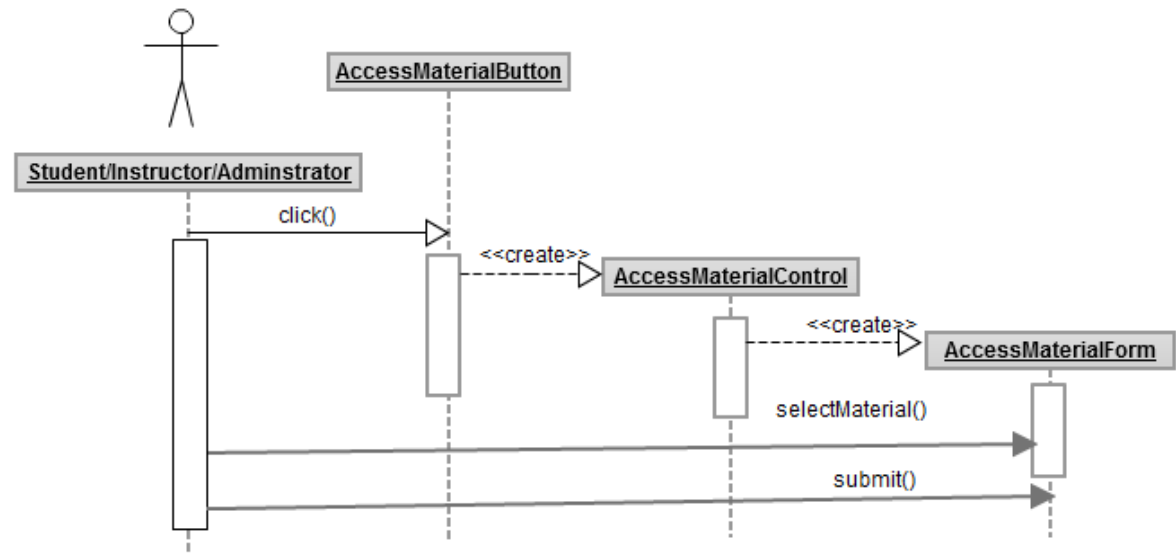
4.2 manage Account



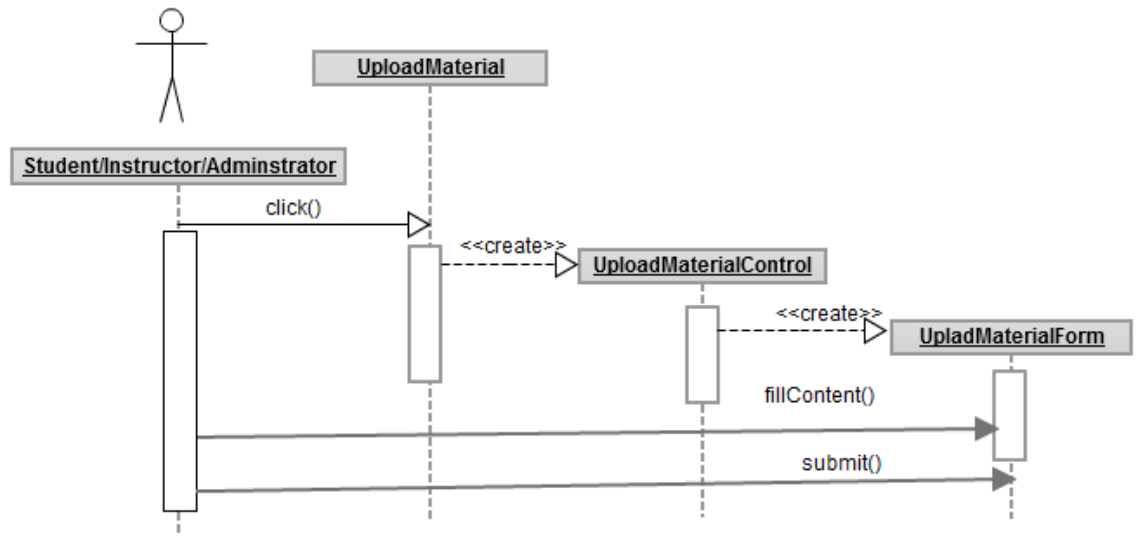
4.3 Practice Exam



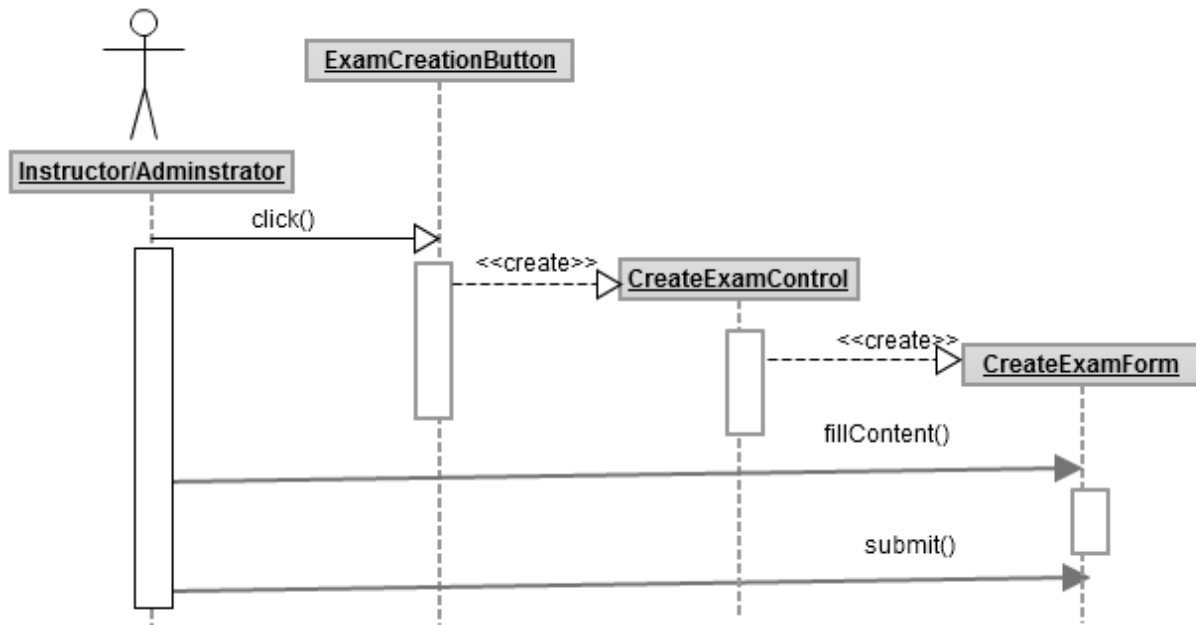
4.4 Access Material



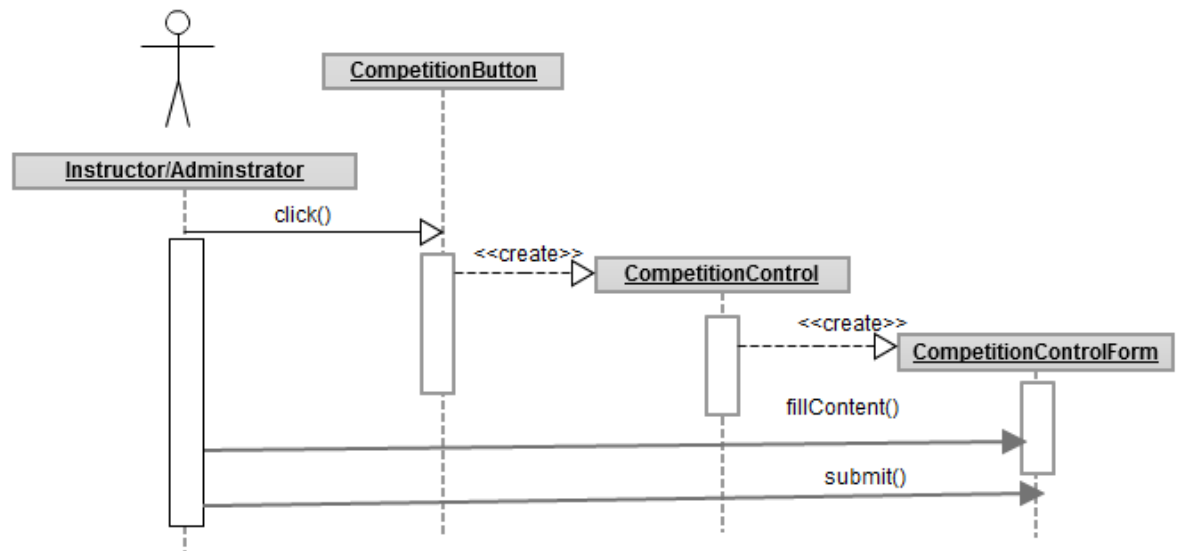
4.5 Upload Material



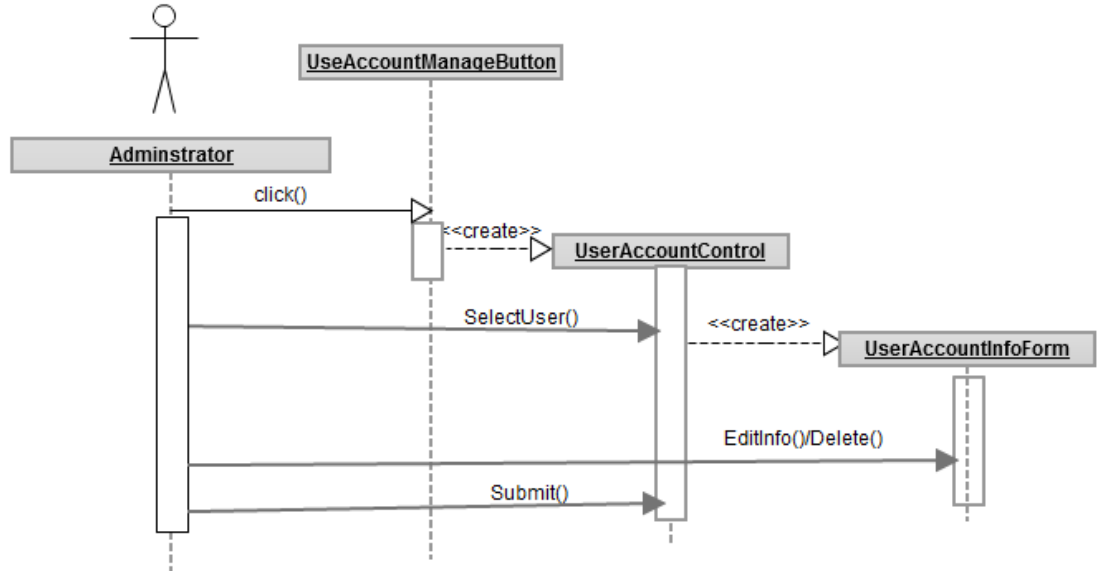
4.6 Create Exam



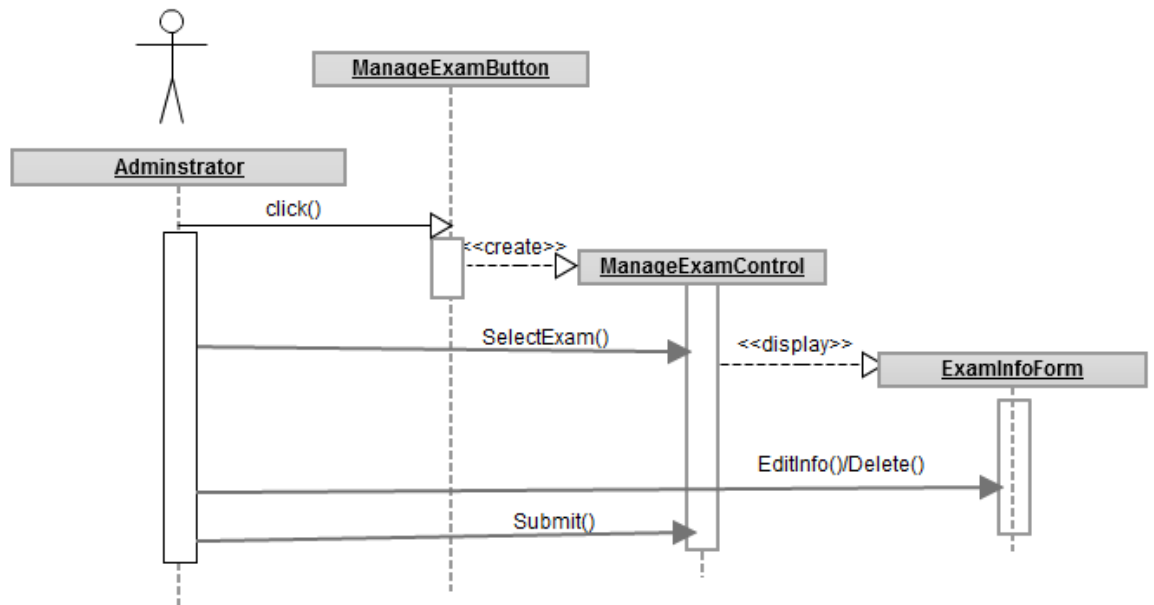
4.7 Create and Organize Competition



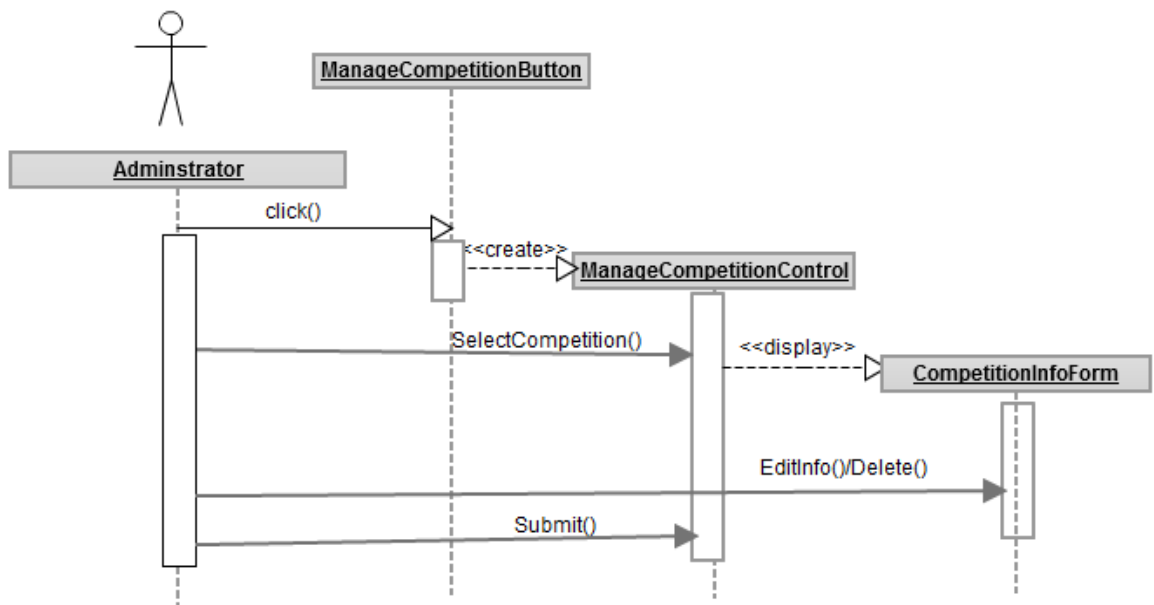
4.8 Manage User Accounts



4.9 Manage Exams



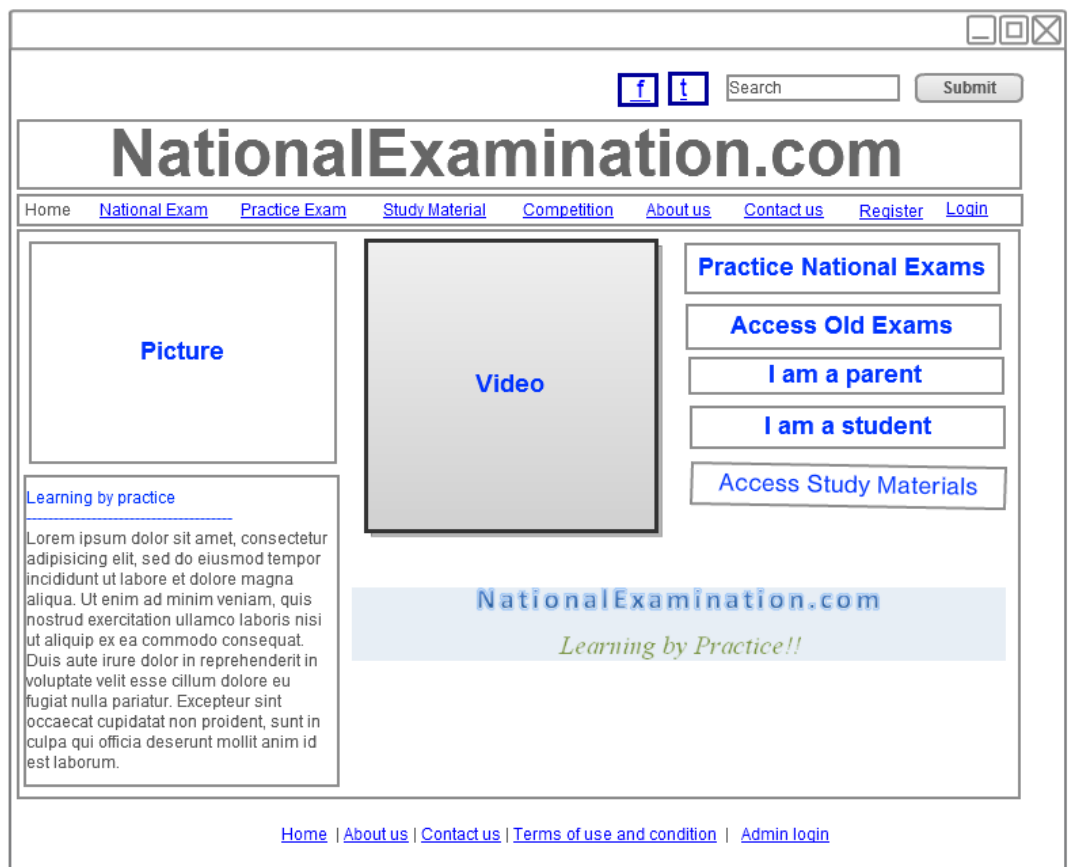
4.10 Manage competitions



5. User Interface

The user interface will be housed through a website, NationalExamination.com. This website will have several menus helping users to navigate the website. Below are provided the initial design of the user interface for home, practice exam and contact us which gives the general overview of how all the pages will look.

5.1 Homepage



5.2 Practice Exam initial page

The screenshot shows a web browser window with the following elements:

- Top right corner: Window control buttons (minimize, maximize, close).
- Header: Social media icons for Facebook and Twitter, a search input field with the text "Search", and a "Submit" button.
- Main Title: "NationalExamination.com" in a large, bold font.
- Navigation Menu: A horizontal list of links: [Home](#), [National Exam](#), [Practice Exam](#), [Study Material](#), [Competition](#), [About us](#), [Contact us](#), [Register](#), and [Login](#).
- Form Area: A large white box containing two dropdown menus labeled "Select level" and "Select exam", each with a downward arrow icon. Below these is a "Submit" button.
- Footer: A light blue banner with the text "NationalExamination.com" and the slogan "Learning by Practice!!" in italics.
- Bottom Footer: A row of links: [Home](#) | [About us](#) | [Contact us](#) | [Terms of use and condition](#) | [Admin login](#).

5.2 Contact us Page

The image shows a web browser window displaying the contact page for National Examination.com. The page features a search bar with social media icons for Facebook and Twitter, and a 'Submit' button. The main content area contains a contact form with fields for 'First Name', 'Last Name', and 'Email Address'. There is a checkbox for 'Add me to your awesome mailing list' which is checked, and a text area for 'How can we provide you with excellent service?'. A 'Submit' button is located below the text area. The footer includes the website name 'National Examination.com' with the tagline 'Learning by Practice!!' and a navigation menu with links for Home, About us, Contact us, Terms of use and condition, and Admin login.

Search

NationalExamination.com

[Home](#) [National Exam](#) [Practice Exam](#) [Study Material](#) [Competition](#) [About us](#) [Contact us](#) [Login](#)

First Name

Last Name

Email Address

Add me to your awesome mailing list

How can we provide you with excellent service?

NationalExamination.com
Learning by Practice!!

[Home](#) | [About us](#) | [Contact us](#) | [Terms of use and condition](#) | [Admin login](#)

6. System Testing

6.1 Unit Testing

The unit testing will primarily consist of testing if all the classes work as required.

Each class will be written in a different file; testing will be done as classes are being constructed. The primary checks for unit testing will be to verify that each class can perform all its functions.

6.2 Integration Testing

Classes will be integrated one by one to make sure that errors are minimized. When errors found, they will be corrected and the integrated code will be tested. Test as you go methodology will be followed to ensure a viable system.

6.3 System Testing

The entire system will be test to demonstrate that it can performs as expected.

Each actor's function will be tested using a pass/fail criteria illustrated by the table below.

Actors	Test	Pass/Fail?
Student	Should be able to <ul style="list-style-type: none">• Register• Manage his account• Compete• Send Message• Practice exam	
Instructor	Should be able to <ul style="list-style-type: none">• Register• Manage his account• Compete• Send Message• Practice exam• Upload material• Create exams• Manage competitions	
Instructors	Should be able to <ul style="list-style-type: none">• Register• Manage his account• Compete• Send Message• Practice exam• Upload material• Create exams• Manage competitions• Manage user Account	

7. Conclusion

The NationalExamination.com project is a highly need driven system. Its main objective is to help students prepare for the national exams at the end of their studies. At the same time, this project will help in the valorization in the exploitation internet in the academia that has been a challenge in a number of countries. In this document, requirement analysis is presented accompanied with various model crucial to the implementation of the system.