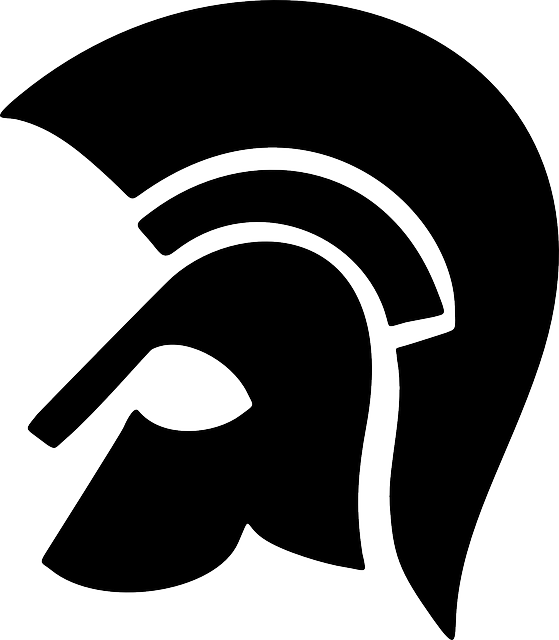
MATHENIAN

Object Model

Yee Studios



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Date: November 11, 2019

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Release #: 1

Version: 0.1

# Signatory Page

This document is accepted by:



This document is submitted by:



# Revision History

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Author | Company | Version | Date | Filename | Comments |
| Yee | Yee Studios | v0.1 | 11/10/2019 | Object Model.docx | Initial creation of document |
| Yee | Yee Studios | v0.2 | 12/08/2019 | Object Model.docx | Separate Executive/Detailed class diagram |

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# 1. Class Diagrams

## Executive



## Detailed



# 2. Class Specifications

|  |
| --- |
| **Class Information** |
| **Class Name: Mathenian**  Abstract Type: Concrete Persistence: Always |

|  |  |  |
| --- | --- | --- |
| **Trace-ability Information** | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 1 | Create Account | 1 |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Public Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| login | App installed | Login page displayed |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Protected Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Private Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attributes** | | | | | |
| **Name** | **Type** | **Object (Y/N)** | **Instance/Static** | **Visibility** | **Description** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

|  |  |
| --- | --- |
| **Concurrency** | |
| **Threading Issue** | **Description** |
|  |  |
|  |  |

|  |  |  |
| --- | --- | --- |
| **Major Exceptions** | | |
| **Name** | **Trigger** | **Action** |
|  |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Instance Information** | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
| 1 | 1 | 1 | 1 |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **General Comments** | | |
| **Author** | **Date** | **Comment** |
| Yee | 11/10/19 | Main app class |
|  |  |  |

|  |
| --- |
| **Class Information** |
| **Class Name: Login Page**  Abstract Type: Concrete Persistence: Always |

|  |  |  |
| --- | --- | --- |
| **Trace-ability Information** | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 01 | Create Account | All |
| 02 | Sign in to Account | All |
| 03 | Sign out of Account | All |
| 09 | Change theme | All |

|  |  |  |
| --- | --- | --- |
| **Public Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| createAccount | None | Account created |
| signIn | Account created | User logged in |
| signOut | Account created | User logged out |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Protected Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Private Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| readAccountFromDB | Account created | Account updated |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attributes** | | | | | |
| **Name** | **Type** | **Object (Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| account | Account | Y | Instance | Private | User account |
|  |  |  |  |  |  |

|  |  |
| --- | --- |
| **Concurrency** | |
| **Threading Issue** | **Description** |
|  |  |
|  |  |

|  |  |  |
| --- | --- | --- |
| **Major Exceptions** | | |
| **Name** | **Trigger** | **Action** |
|  |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Instance Information** | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
| 1 | 1 | 1 | 1 |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **General Comments** | | |
| **Author** | **Date** | **Comment** |
| Yee | 11/10/19 | Login Page |
|  |  |  |

|  |
| --- |
| **Class Information** |
| **Class Name: Subjects Page**  Abstract Type: Concrete Persistence: Always |

|  |  |  |
| --- | --- | --- |
| **Trace-ability Information** | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 04 | Start lesson | All |
| 07 | Start test | All |
| 09 | Change theme | All |

|  |  |  |
| --- | --- | --- |
| **Public Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| startLesson | Account created | Lesson started |
| startTest | Account created | Test started |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Protected Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Private Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attributes** | | | | | |
| **Name** | **Type** | **Object (Y/N)** | **Instance/Static** | **Visibility** | **Description** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

|  |  |
| --- | --- |
| **Concurrency** | |
| **Threading Issue** | **Description** |
| NA |  |
|  |  |

|  |  |  |
| --- | --- | --- |
| **Major Exceptions** | | |
| **Name** | **Trigger** | **Action** |
|  |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Instance Information** | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
| 1 | 1 | 1 | 1 |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **General Comments** | | |
| **Author** | **Date** | **Comment** |
| Yee | 11/10/19 | Subjects Page |
|  |  |  |

|  |
| --- |
| **Class Information** |
| **Class Name: Profile Page**  Abstract Type: Concrete Persistence: Always |

|  |  |  |
| --- | --- | --- |
| **Trace-ability Information** | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 08 | Check Statistics | All |
| 09 | Change Theme | All |

|  |  |  |
| --- | --- | --- |
| **Public Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| checkStatistics | None | Statistics displayed |
| changeTheme | None | Theme updated |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Protected Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Private Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| displayInformation | None | Statistics displayed |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attributes** | | | | | |
| **Name** | **Type** | **Object (Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| statistics | UserStatistics | Y | Instance | Private | Statistics for a given user |
|  |  |  |  |  |  |

|  |  |
| --- | --- |
| **Concurrency** | |
| **Threading Issue** | **Description** |
| NA |  |
|  |  |

|  |  |  |
| --- | --- | --- |
| **Major Exceptions** | | |
| **Name** | **Trigger** | **Action** |
|  |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Instance Information** | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
| 1 | 1 | 1 | 1 |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **General Comments** | | |
| **Author** | **Date** | **Comment** |
| Yee | 11/10/19 | Profile Page |
|  |  |  |

|  |
| --- |
| **Class Information** |
| **Class Name: Account**  Abstract Type: Concrete Persistence: Only when created |

|  |  |  |
| --- | --- | --- |
| **Trace-ability Information** | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 02 |  | All |
| 03 |  | All |
| 06 |  | All |
| 08 |  | All |

|  |  |  |
| --- | --- | --- |
| **Public Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| getAttribute | Attribute must exist | None |
| setAttribute | None | Attribute updated |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Protected Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Private Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attributes** | | | | | |
| **Name** | **Type** | **Object (Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| firstName | String | Y | Instance | Private | User name |
| lastName | String | Y | Instance | Private | User name |
| email | String | Y | Instance | Private | User email |
| dateCreated | Date | Y | Instance | Private | Account creation date |
| lastLoggedIn | Date | Y | Instance | Private | Last successful login |
| statistics | UserStatistics | Y | Instance | Private | Statistics for a given user |

|  |  |
| --- | --- |
| **Concurrency** | |
| **Threading Issue** | **Description** |
| NA |  |
|  |  |

|  |  |  |
| --- | --- | --- |
| **Major Exceptions** | | |
| **Name** | **Trigger** | **Action** |
|  |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Instance Information** | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
| 1 | 1 | 1 | 1 |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **General Comments** | | |
| **Author** | **Date** | **Comment** |
| Yee | 11/10/19 | One account logged in possible at a time |
|  |  |  |

|  |
| --- |
| **Class Information** |
| **Class Name: UserStatistics**  Abstract Type: Concrete Persistence: Only when created |

|  |  |  |
| --- | --- | --- |
| **Trace-ability Information** | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 02 |  | All |
| 03 |  | All |
| 06 |  | All |
| 08 |  | All |

|  |  |  |
| --- | --- | --- |
| **Public Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| getAttribute | Attribute must exist | None |
| setAttribute | None | Attribute updated |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Protected Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Private Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attributes** | | | | | |
| **Name** | **Type** | **Object (Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| dailyQuestionsCompleted | Int | N | Instance | Private | Number of questions completed on a day |
| dailyStreak | Int | N | Instance | Private | Total consecutive days logged in |
| totalQuestionsCompleted | Int | N | Instance | Private | Total questions answered |

|  |  |
| --- | --- |
| **Concurrency** | |
| **Threading Issue** | **Description** |
| NA |  |
|  |  |

|  |  |  |
| --- | --- | --- |
| **Major Exceptions** | | |
| **Name** | **Trigger** | **Action** |
|  |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Instance Information** | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
| 1 | 1 | 1 | 1 |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **General Comments** | | |
| **Author** | **Date** | **Comment** |
| Yee | 11/10/19 | One user statistic per account |
|  |  |  |

|  |
| --- |
| **Class Information** |
| **Class Name: LessonInterface**  Abstract Type: Interface Persistence: NA |

|  |  |  |
| --- | --- | --- |
| **Trace-ability Information** | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Public Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| createQuestionSet | None | Questions generated |
| checkAnswer | User must enter answer | Answer validated |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Protected Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| retrieveQuestionFromDB | None | Question generated |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Private Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attributes** | | | | | |
| **Name** | **Type** | **Object (Y/N)** | **Instance/Static** | **Visibility** | **Description** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

|  |  |
| --- | --- |
| **Concurrency** | |
| **Threading Issue** | **Description** |
| NA |  |
|  |  |

|  |  |  |
| --- | --- | --- |
| **Major Exceptions** | | |
| **Name** | **Trigger** | **Action** |
|  |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Instance Information** | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
| 0 | 0 | 0 | 0 |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **General Comments** | | |
| **Author** | **Date** | **Comment** |
| Yee | 11/10/19 | Interface for Lesson/Test |
|  |  |  |

|  |
| --- |
| **Class Information** |
| **Class Name: Lesson**  Abstract Type: Concrete Persistence: Only when created |

|  |  |  |
| --- | --- | --- |
| **Trace-ability Information** | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 04 | Start Lesson | All |
| 05 | Submit an Answer | All |
| 06 | End Lesson | All |

|  |  |  |
| --- | --- | --- |
| **Public Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| createQuestionSet | None | Questions generated |
| checkAnswer | User must enter answer | Answer validated |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Protected Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| retrieveQuestionFromDB | None | Question generated |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Private Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attributes** | | | | | |
| **Name** | **Type** | **Object (Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| introduction | String | Y | Instance | Public | Introductory lesson |
| questions | List<Question> | Y | Instance | Private | Questions |

|  |  |
| --- | --- |
| **Concurrency** | |
| **Threading Issue** | **Description** |
| NA |  |
|  |  |

|  |  |  |
| --- | --- | --- |
| **Major Exceptions** | | |
| **Name** | **Trigger** | **Action** |
|  |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Instance Information** | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
| 1 | 1 | 1 | 1 |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **General Comments** | | |
| **Author** | **Date** | **Comment** |
| Yee | 11/10/19 | Lesson for a Subject |
|  |  |  |

|  |
| --- |
| **Class Information** |
| **Class Name: Test**  Abstract Type: Concrete Persistence: Only when created |

|  |  |  |
| --- | --- | --- |
| **Trace-ability Information** | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 05 | Submit an Answer | All |
| 06 | End Lesson | All |
| 07 | Start Test | All |

|  |  |  |
| --- | --- | --- |
| **Public Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| createQuestionSet | None | Questions generated |
| checkAnswer | User must enter answer | Answer validated |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Protected Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| retrieveQuestionFromDB | None | Question generated |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Private Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attributes** | | | | | |
| **Name** | **Type** | **Object (Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| questions | List<Question> | Y | Instance | Private | Questions |

|  |  |
| --- | --- |
| **Concurrency** | |
| **Threading Issue** | **Description** |
| NA |  |
|  |  |

|  |  |  |
| --- | --- | --- |
| **Major Exceptions** | | |
| **Name** | **Trigger** | **Action** |
|  |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Instance Information** | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
| 1 | 1 | 1 | 1 |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **General Comments** | | |
| **Author** | **Date** | **Comment** |
| Yee | 11/10/19 | Test for a Subject |
|  |  |  |

|  |
| --- |
| **Class Information** |
| **Class Name: Question**  Abstract Type: Concrete Persistence: Only when created |

|  |  |  |
| --- | --- | --- |
| **Trace-ability Information** | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 04 | Start Lesson | All |
| 05 | Submit an Answer | All |
| 06 | End Lesson | All |
| 07 | Start Test | All |

|  |  |  |
| --- | --- | --- |
| **Public Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| getAttribute | Attribute must exist | None |
| setAttribute | None | Attribute updated |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Protected Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Private Methods** | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attributes** | | | | | |
| **Name** | **Type** | **Object (Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| question | String | Y | Instance | Private | Question |
| answer | String | Y | Instance | Private | Answer to the question |

|  |  |
| --- | --- |
| **Concurrency** | |
| **Threading Issue** | **Description** |
| NA |  |
|  |  |

|  |  |  |
| --- | --- | --- |
| **Major Exceptions** | | |
| **Name** | **Trigger** | **Action** |
|  |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Instance Information** | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
| 10 | 25 | 15 | NA |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **General Comments** | | |
| **Author** | **Date** | **Comment** |
| Yee | 11/10/19 | Math questions |
|  |  |  |