Repository Documentation

This document provides a comprehensive overview of the repository's structure and contents.The first section, titled 'Directory/File Tree', displays the repository's hierarchy in a tree format.In this section, directories and files are listed using tree branches to indicate their structure and relationships.Following the tree representation, the 'File Content' section details the contents of each file in the repository.Each file's content is introduced with a '[File Begins]' marker followed by the file's relative path,and the content is displayed verbatim. The end of each file's content is marked with a '[File Ends]' marker.This format ensures a clear and orderly presentation of both the structure and the detailed contents of the repository.

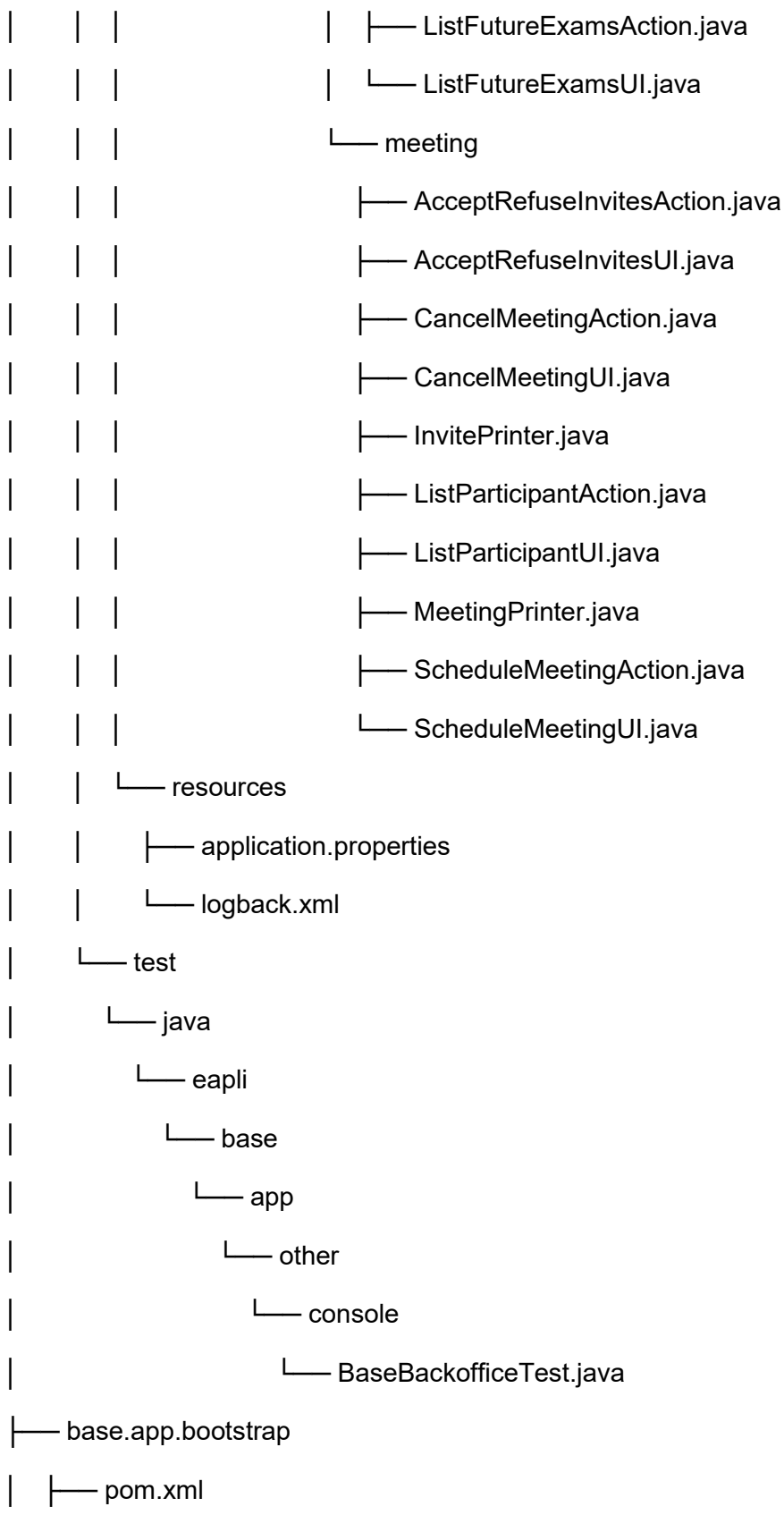
Directory/File Tree Begins -->

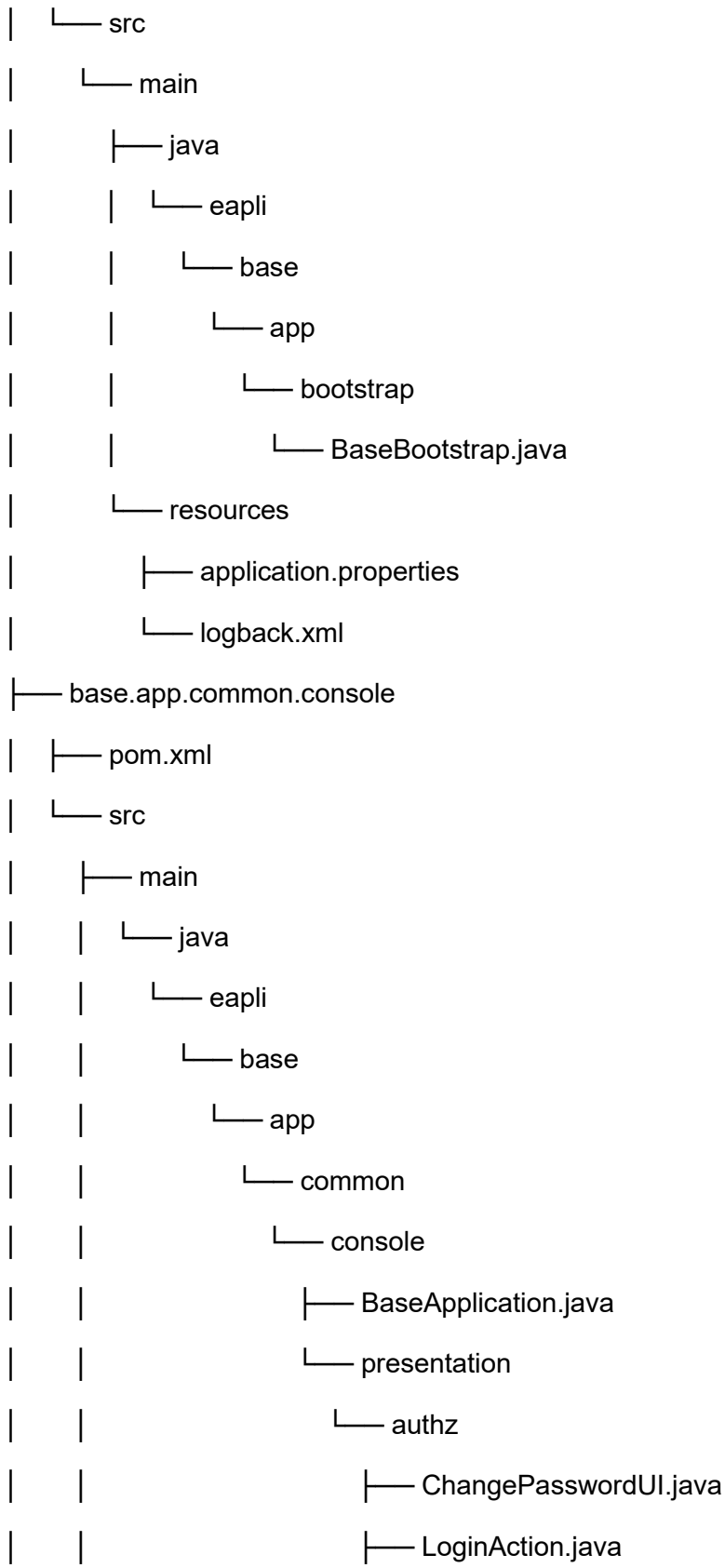
sem4pi-22-23-61-master/

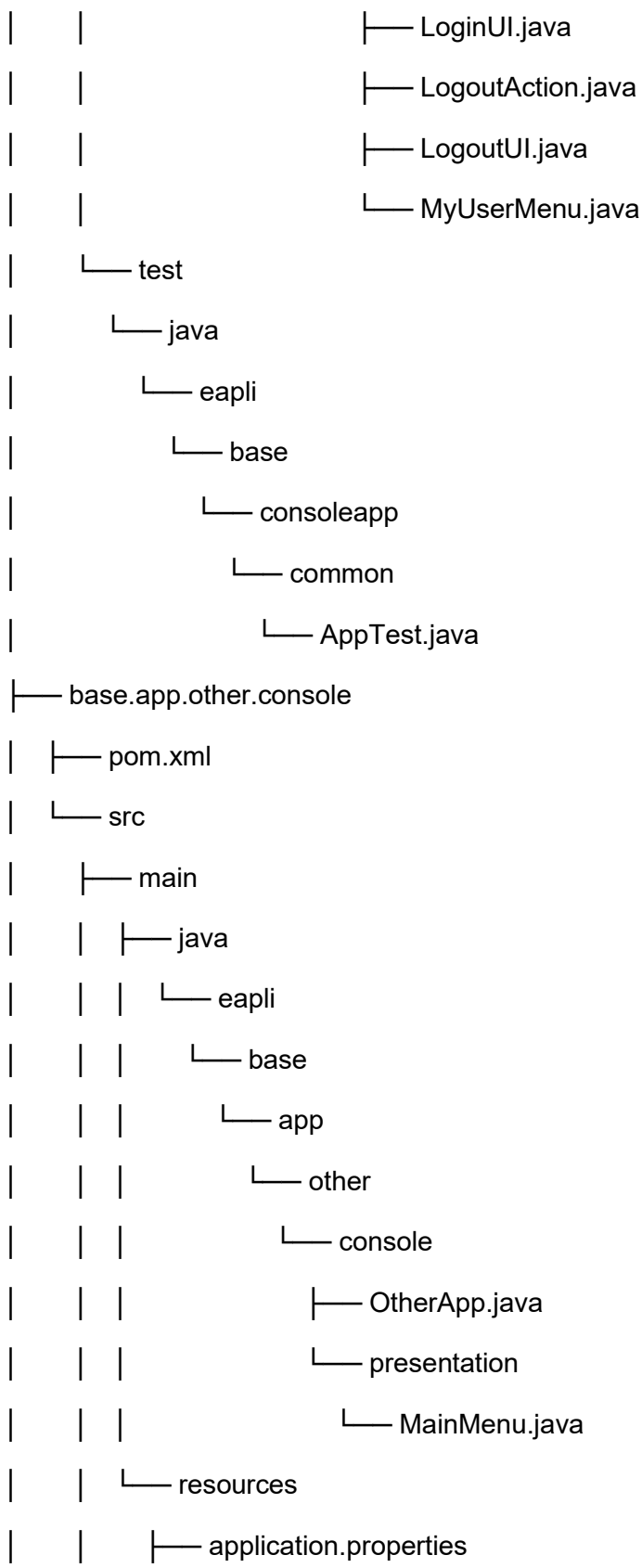
```
└── sem4pi-22-23-61-master
    ├── base.app.backoffice.console
    │   ├── pom.xml
    │   └── src
    │       ├── main
    │       │   ├── java
    │       │   │   └── eapli
    │       │   │       └── base
    │       │   │           └── app
    │       │   │               └── backoffice
    │       │   │                   └── console
    │       │   │                       ├── BaseBackoffice.java
    │       │   │                       └── presentation
    │       │   │                           ├── Classe
    │       │   │                           │   ├── ScheduleClassAction.java
    │       │   │                           │   ├── ScheduleClassUI.java
```

```
│   │   │           │   ├── ScheduleExtraClassAction.java
│   │   │           │   ├── ScheduleExtraClassUI.java
│   │   │           │   ├── UpdateClassAction.java
│   │   │           │   └── UpdateClassScheduleUI.java
│   │   │           ├── MainMenu.java
│   │   │           ├── SharedBoard
│   │   │           │   ├── CreateBoardPostItAction.java
│   │   │           │   ├── CreateBoardPostItUI.java
│   │   │           │   ├── SharedBoardAction.java
│   │   │           │   ├── SharedBoardArchiveAction.java
│   │   │           │   ├── SharedBoardArchiveUI.java
│   │   │           │   ├── SharedBoardListAction.java
│   │   │           │   ├── SharedBoardListUI.java
│   │   │           │   ├── SharedBoardPrinter.java
│   │   │           │   ├── SharedBoardUI.java
│   │   │           │   ├── UndoPostItAction.java
│   │   │           │   ├── UndoPostItUI.java
│   │   │           │   ├── UpdateBoardPostItAction.java
│   │   │           │   └── UpdateBoardPostItUI.java
│   │   │           ├── authz
│   │   │           │   ├── AddUserAction.java
│   │   │           │   ├── AddUserUI.java
│   │   │           │   ├── DeactivateUserAction.java
│   │   │           │   ├── DeactivateUserUI.java
│   │   │           │   ├── ListUsersAction.java
│   │   │           │   ├── ListUsersUI.java
```

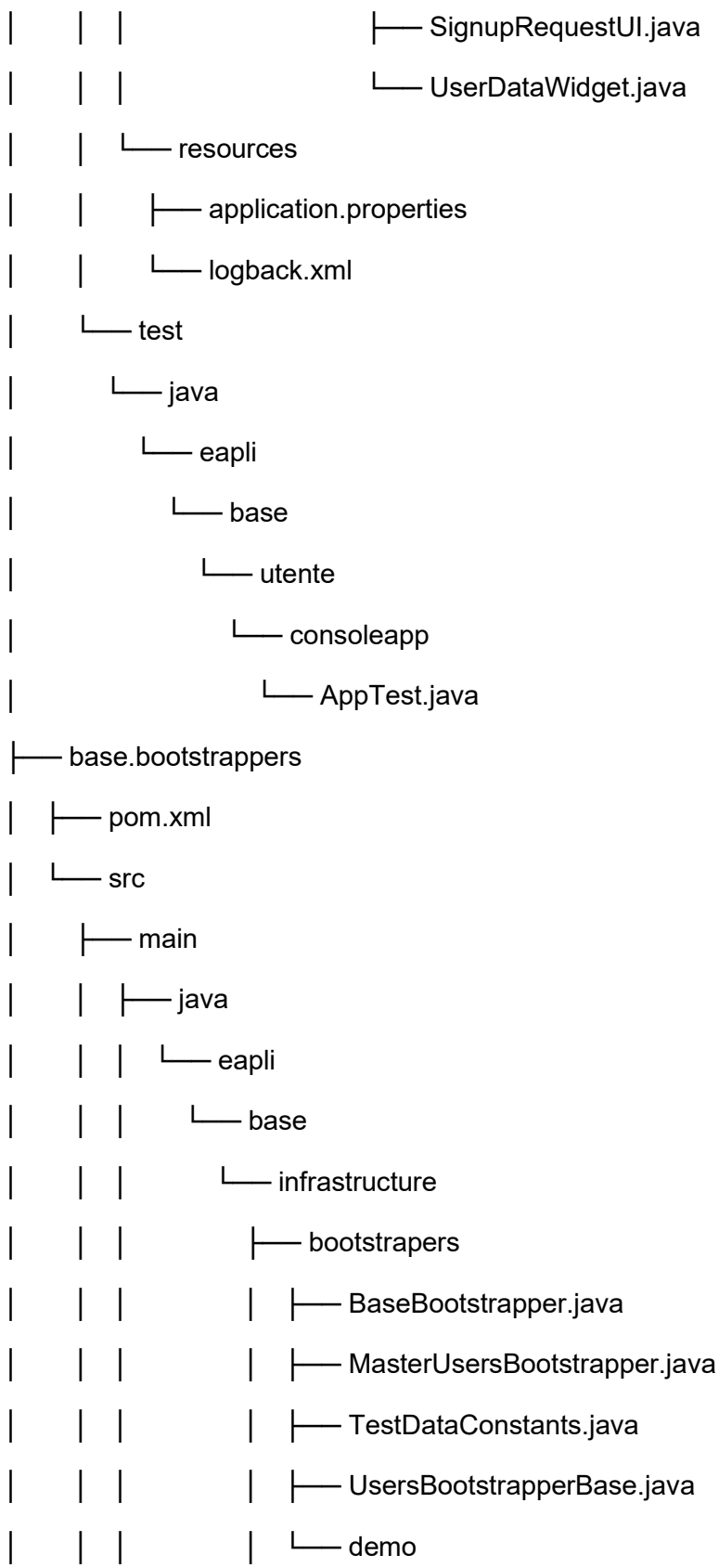
```
│   │   │           │   └── SystemUserPrinter.java
│   │   │           ├── clientuser
│   │   │           │   ├── AcceptRefuseSignupRequestAction.java
│   │   │           │   ├── AcceptRefuseSignupRequestUI.java
│   │   │           │   └── SignupRequestPrinter.java
│   │   │           ├── course
│   │   │           │   ├── CoursePrinter.java
│   │   │           │   ├── CreateCourseAction.java
│   │   │           │   ├── CreateCourseUI.java
│   │   │           │   ├── OpenCloseCourseAction.java
│   │   │           │   ├── OpenCloseCourseUI.java
│   │   │           │   ├── OpenCloseEnrollementsAction.java
│   │   │           │   ├── OpenCloseEnrollementsUI.java
│   │   │           │   └── TeacherPrinter.java
│   │   │           ├── enrollment
│   │   │           │   ├── ApproveEnrollmentAction.java
│   │   │           │   ├── ApproveEnrollmentUI.java
│   │   │           │   ├── BulkEnrollmentUI.java
│   │   │           │   ├── EnrollmentPrinter.java
│   │   │           │   ├── RequestEnrollmentAction.java
│   │   │           │   └── RequestEnrollmentUI.java
│   │   │           ├── exam
│   │   │           │   ├── CreateExamAction.java
│   │   │           │   ├── CreateExamUI.java
│   │   │           │   ├── ListCourseExamsAction.java
│   │   │           │   ├── ListCourseExamsUI.java
```

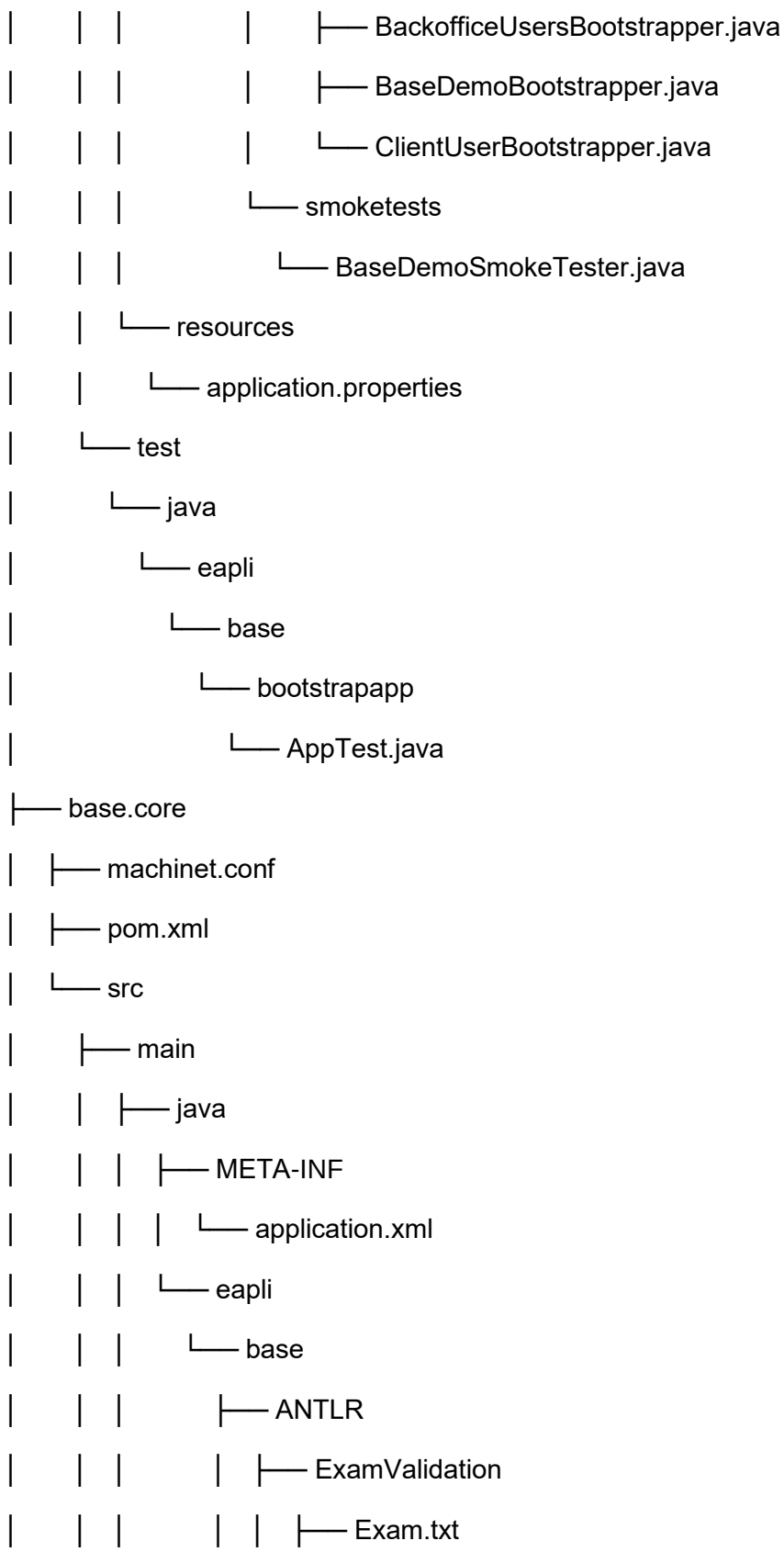

ListFutureExamsAction.java
ListFutureExamsUI.java
meeting
AcceptRefuseInvitesAction.java
AcceptRefuseInvitesUI.java
CancelMeetingAction.java
CancelMeetingUI.java
InvitePrinter.java
ListParticipantAction.java
ListParticipantUI.java
MeetingPrinter.java
ScheduleMeetingAction.java
ScheduleMeetingUI.java
resources
application.properties
logback.xml
test
java
eapli
base
app
other
console
BaseBackofficeTest.java
base.app.bootstrap
pom.xml


└── src
└── main
├── java
└── eapli
└── base
└── app
└── bootstrap
└── BaseBootstrap.java
└── resources
├── application.properties
└── logback.xml
├── base.app.common.console
├── pom.xml
└── src
├── main
└── java
└── eapli
└── base
└── app
└── common
└── console
├── BaseApplication.java
└── presentation
└── authz
├── ChangePasswordUI.java
├── LoginAction.java


LoginUI.java
LogoutAction.java
LogoutUI.java
MyUserMenu.java
test
java
eapli
base
consoleapp
common
AppTest.java
base.app.other.console
pom.xml
src
main
java
eapli
base
app
other
console
OtherApp.java
presentation
MainMenu.java
resources
application.properties

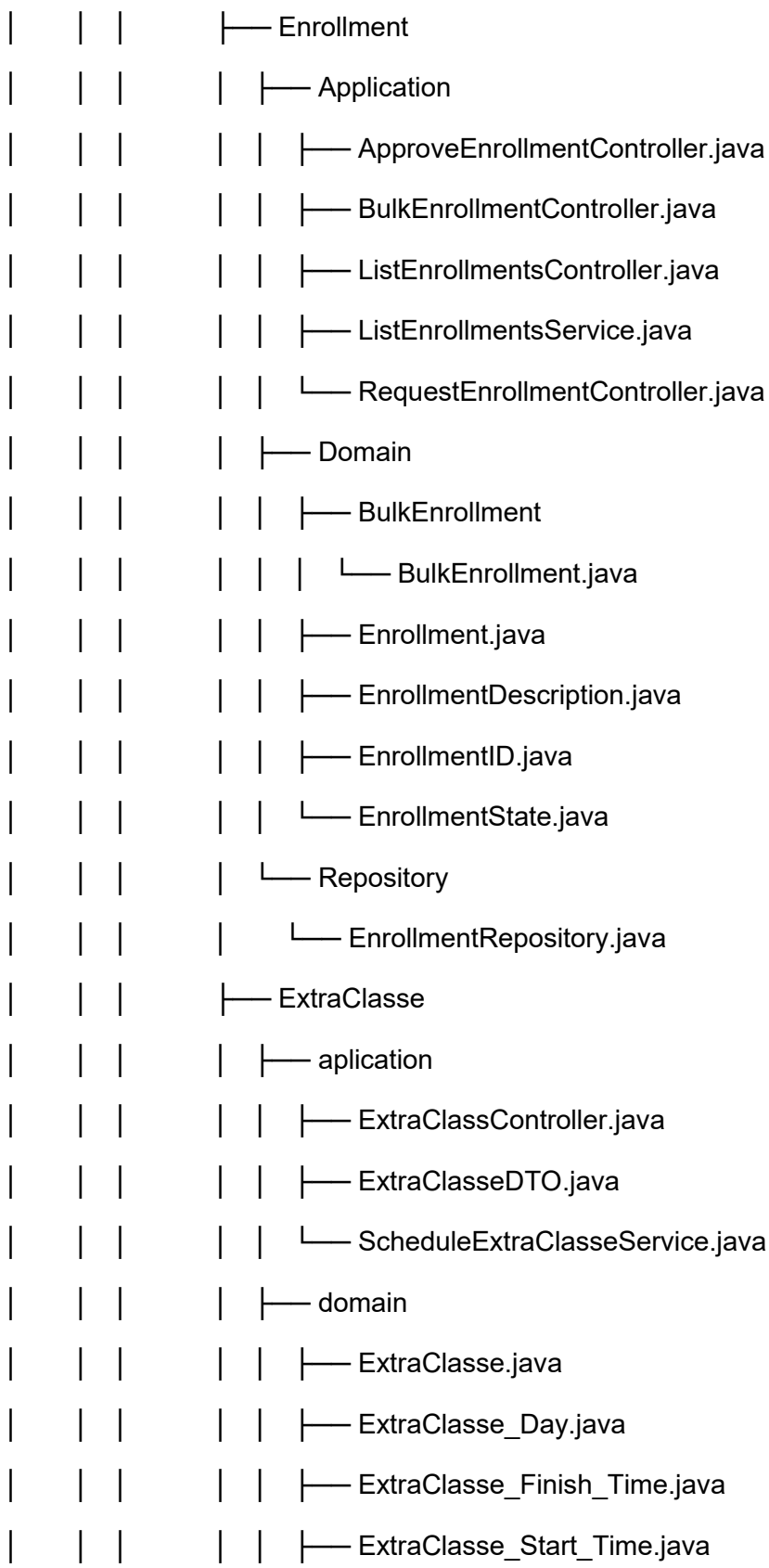
```
│       │       └── logback.xml
│       └── test
│           └── java
│               └── eapli
│                   └── base
│                       └── app
│                           └── other
│                               └── console
│                                   └── OtherAppTest.java
├── base.app.user.console
│   ├── pom.xml
│   └── src
│       ├── main
│       │   ├── java
│       │   │   └── eapli
│       │   │       └── base
│       │   │           └── app
│       │   │               └── user
│       │   │                   └── console
│       │   │                       ├── BaseUserApp.java
│       │   │                       └── presentation
│       │   │                           ├── ClientUserBaseUI.java
│       │   │                           ├── FrontMenu.java
│       │   │                           ├── MainMenu.java
│       │   │                           └── myuser
│       │   │                               ├── SignupRequestAction.java
```


SignupRequestUI.java
UserDataWidget.java
resources
application.properties
logback.xml
test
java
eapli
base
utente
consoleapp
AppTest.java
base.bootstrappers
pom.xml
src
main
java
eapli
base
infrastructure
bootstrapers
BaseBootstrapper.java
MasterUsersBootstrapper.java
TestDataConstants.java
UsersBootstrapperBase.java
demo


BackofficeUsersBootstrapper.java
BaseDemoBootstrapper.java
ClientUserBootstrapper.java
smoketests
BaseDemoSmokeTester.java
resources
application.properties
test
java
eapli
base
bootstrapapp
AppTest.java
base.core
machinet.conf
pom.xml
src
main
java
META-INF
application.xml
eapli
base
ANTLR
ExamValidation
Exam.txt

```
│   │   │   │   ├── ExamFile.txt
│   │   │   │   ├── Exame.g4
│   │   │   │   ├── Exame.interp
│   │   │   │   ├── Exame.tokens
│   │   │   │   ├── ExameBaseListener.txt
│   │   │   │   ├── ExameBaseVisitor.txt
│   │   │   │   ├── ExameLexer.interp
│   │   │   │   ├── ExameLexer.txt
│   │   │   │   ├── ExameListener.txt
│   │   │   │   ├── ExameParser.txt
│   │   │   │   └── ExameVisitor.txt
│   │   │   │   ├── FormativeExamValidation
│   │   │   │   ├── ExameFormativo.g4
│   │   │   │   └── ExameFormativoFile.txt
│   │   │   │   └── QuestionValidation
│   │   │   │       ├── Question.g4
│   │   │   │       └── QuestionFile.txt
│   │   │   ├── AppSettings.java
│   │   │   ├── Application.java
│   │   │   ├── Classe
│   │   │   │   ├── aplication
│   │   │   │   │   ├── ClassController.java
│   │   │   │   │   ├── ClasseDTO.java
│   │   │   │   │   └── ScheduleClassService.java
│   │   │   │   ├── domain
│   │   │   │   │   ├── Classe.java
```

```
│   │   │   │   ├── Classe_Finish_Date.java
│   │   │   │   ├── Classe_Finish_Time.java
│   │   │   │   ├── Classe_Start_Date.java
│   │   │   │   ├── Classe_Start_Time.java
│   │   │   │   ├── Classe_Title.java
│   │   │   │   └── DayOfWeek.java
│   │   │   └── repository
│   │   │       └── ClassRepository.java
│   │   ├── Course
│   │   │   ├── Application
│   │   │   │   ├── CourseController.java
│   │   │   │   ├── CourseService.java
│   │   │   │   ├── CreateCourseController.java
│   │   │   │   ├── ListCoursesController.java
│   │   │   │   ├── ListCoursesService.java
│   │   │   │   ├── OpenCloseCourseController.java
│   │   │   │   └── OpenCloseEnrollementsController.java
│   │   │   ├── Domain
│   │   │   │   ├── Course.java
│   │   │   │   ├── Course_ID.java
│   │   │   │   ├── Course_Name.java
│   │   │   │   ├── Maximum_Number_Of_Students.java
│   │   │   │   ├── Minimum_Number_Of_Students.java
│   │   │   │   └── Small_Textual_Description.java
│   │   │   └── Repository
│   │   │       └── CourseRepository.java
```


Enrollment
Application
ApproveEnrollmentController.java
BulkEnrollmentController.java
ListEnrollmentsController.java
ListEnrollmentsService.java
RequestEnrollmentController.java
Domain
BulkEnrollment
BulkEnrollment.java
Enrollment.java
EnrollmentDescription.java
EnrollmentID.java
EnrollmentState.java
Repository
EnrollmentRepository.java
ExtraClasse
aplication
ExtraClassController.java
ExtraClasseDTO.java
ScheduleExtraClasseService.java
domain
ExtraClasse.java
ExtraClasse_Day.java
ExtraClasse_Finish_Time.java
ExtraClasse_Start_Time.java

```
│   │   │   │   │   └── ExtraClasse_Title.java
│   │   │   │   └── repository
│   │   │   │       └── ExtraClasseRepository.java
│   │   │   ├── Manager
│   │   │   │   └── Manager.java
│   │   │   ├── SharedBoard
│   │   │   │   ├── aplication
│   │   │   │   │   ├── BoardUpdateService.java
│   │   │   │   │   ├── CreateBoardPostItController.java
│   │   │   │   │   ├── CreateBoardPostItService.java
│   │   │   │   │   ├── SharedBoardArchiveController.java
│   │   │   │   │   ├── SharedBoardArchiveService.java
│   │   │   │   │   ├── SharedBoardController.java
│   │   │   │   │   ├── SharedBoardService.java
│   │   │   │   │   ├── UpdateBoardPostItController.java
│   │   │   │   │   └── UpdateBoardPostItService.java
│   │   │   │   ├── domain
│   │   │   │   │   ├── Board.java
│   │   │   │   │   ├── CreateBoardPostItThread.java
│   │   │   │   │   ├── MoveBoardPostItThread.java
│   │   │   │   │   ├── NumberofColumns.java
│   │   │   │   │   ├── NumberofRows.java
│   │   │   │   │   ├── PostIt.java
│   │   │   │   │   ├── SharedBoard.java
│   │   │   │   │   ├── SharedBoardThread.java
│   │   │   │   │   ├── Shared_Board_Title.java
```

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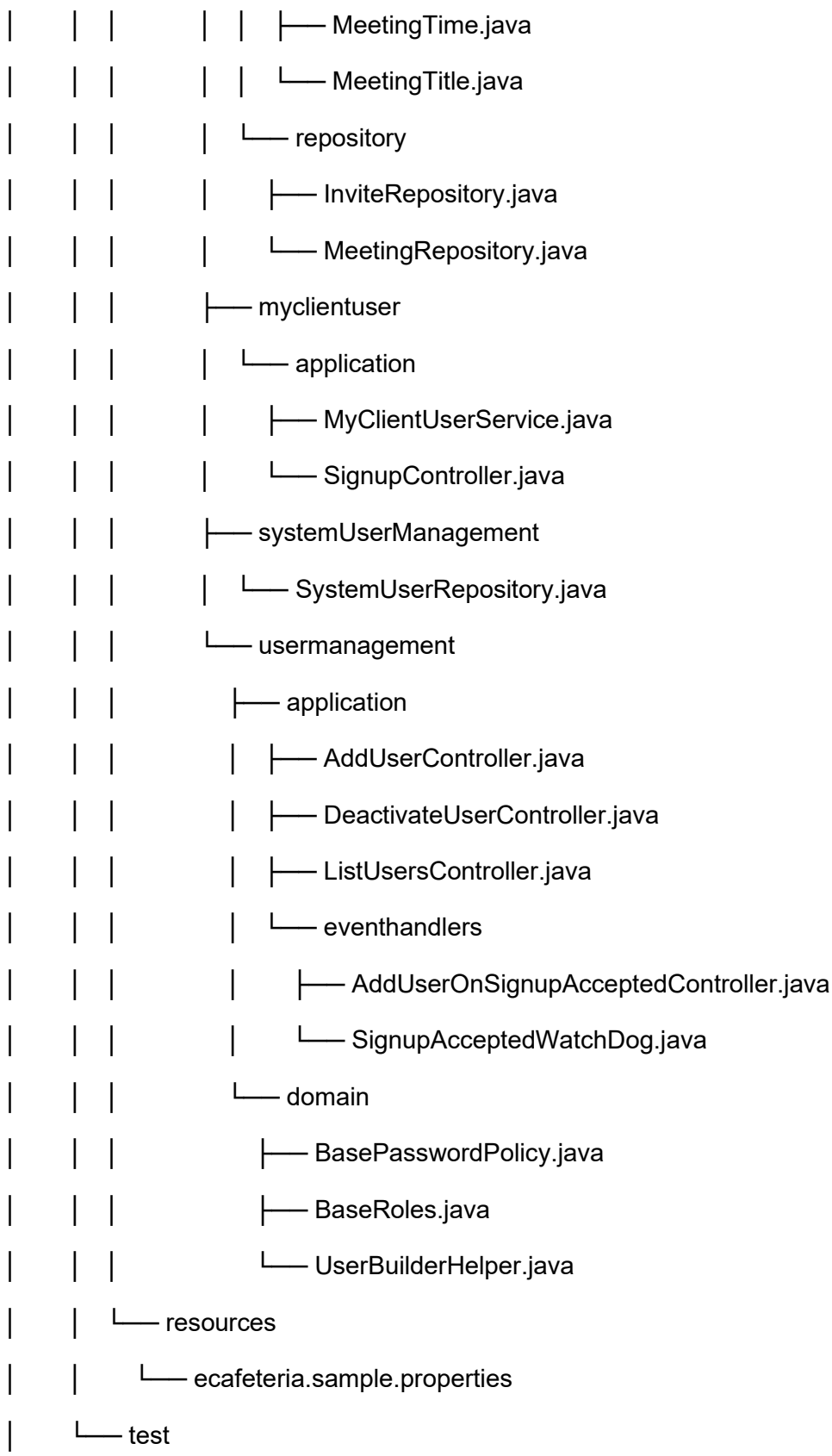
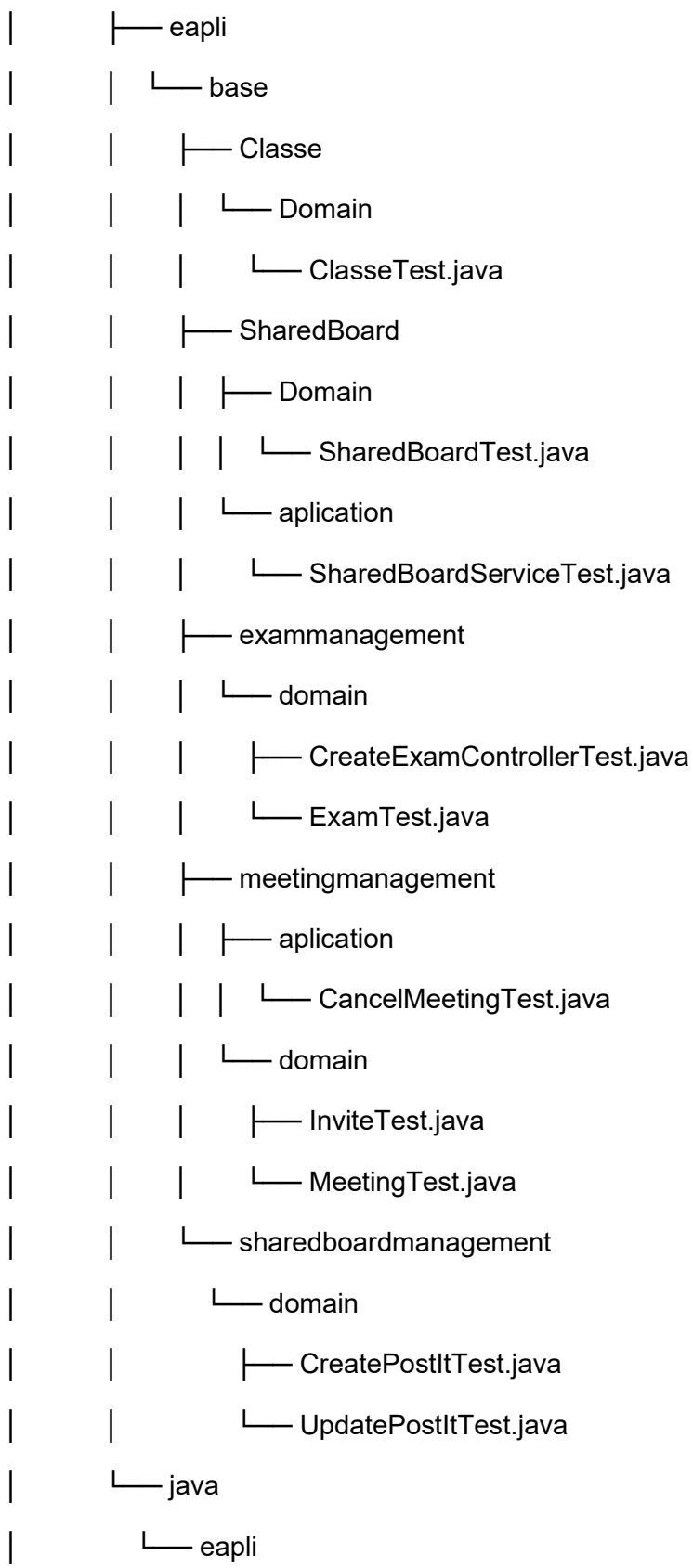
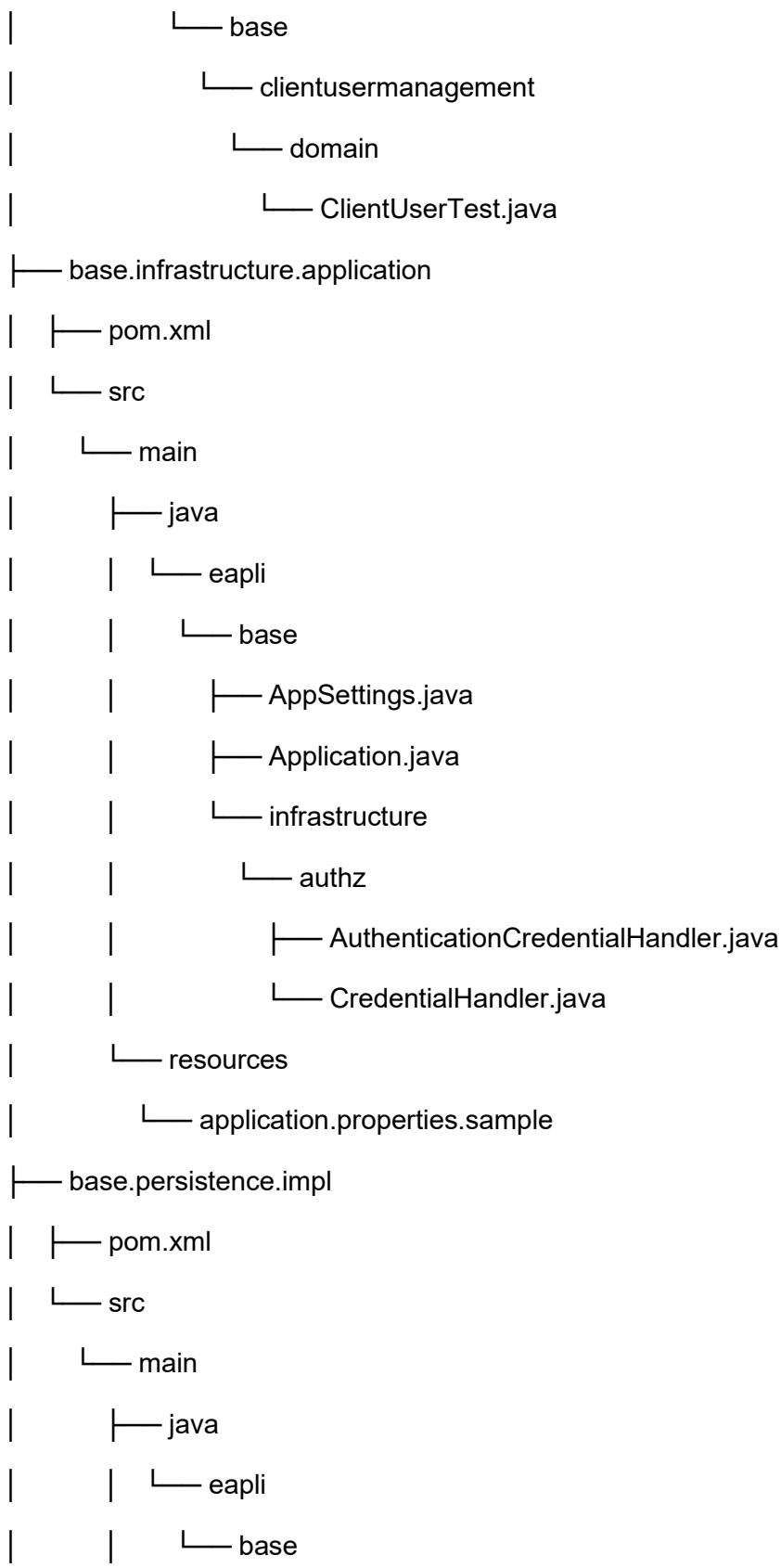
│   │   │   │   ├── UpdateBoardPostItThread.java
│   │   │   │   └── sharedBoardHistory.java
│   │   │   └── repository
│   │   │       └── SharedBoardRepository.java
│   │   ├── Student_Teacher
│   │   │   ├── Date_Of_Birth.java
│   │   │   ├── Student
│   │   │   │   ├── Repository
│   │   │   │   │   └── StudentRepository.java
│   │   │   │   └── domain
│   │   │   │       ├── MechanographicNumber.java
│   │   │   │       └── Student.java
│   │   │   ├── Tax_Payer_Number.java
│   │   │   └── Teacher
│   │   │       ├── Domain
│   │   │       │   ├── Acronym.java
│   │   │       │   └── Teacher.java
│   │   │       └── Repository
│   │   │           └── TeacherRepository.java
│   │   ├── clientusermanagement
│   │   │   ├── application
│   │   │   │   ├── AcceptRefuseSignupFactory.java
│   │   │   │   ├── AcceptRefuseSignupRequestController.java
│   │   │   │   ├── AcceptRefuseSignupRequestControllerEventfullImpl.java
│   │   │   │   ├── AcceptRefuseSignupRequestControllerTxImpl.java
│   │   │   │   ├── ClientUserService.java
```

```
│   │   │   │   ├── ListClientUsersController.java
│   │   │   │   └── eventhandlers
│   │   │   │       ├── AddClientUserOnSignupAcceptedController.java
│   │   │   │       └── NewUserRegisteredFromSignupWatchDog.java
│   │   │   ├── domain
│   │   │   │   ├── ApprovalStatus.java
│   │   │   │   ├── ClientUser.java
│   │   │   │   ├── ClientUserBuilder.java
│   │   │   │   ├── SignupRequest.java
│   │   │   │   ├── SignupRequestBuilder.java
│   │   │   │   └── events
│   │   │   │       ├── NewUserRegisteredFromSignupEvent.java
│   │   │   │       └── SignupAcceptedEvent.java
│   │   │   └── repositories
│   │   │       ├── ClientUserRepository.java
│   │   │       └── SignupRequestRepository.java
│   │   ├── exammanagement
│   │   │   ├── application
│   │   │   │   ├── CreateExamController.java
│   │   │   │   ├── CreateExamService.java
│   │   │   │   ├── ListCourseExamsController.java
│   │   │   │   ├── ListCourseExamsService.java
│   │   │   │   ├── ListFutureExamsController.java
│   │   │   │   └── ListFutureExamsService.java
│   │   │   ├── domain
│   │   │   │   ├── Exam.java
```

```
│   │   │   │   ├── ExamDate.java
│   │   │   │   ├── ExamResult.java
│   │   │   │   ├── ExamTime.java
│   │   │   │   └── ExamTitle.java
│   │   │   │   └── repository
│   │   │   │       └── ExamRepository.java
│   │   │   ├── infrastructure
│   │   │   │   └── persistence
│   │   │   │       ├── PersistenceContext.java
│   │   │   │       └── RepositoryFactory.java
│   │   │   ├── meetingmanagement
│   │   │   │   ├── application
│   │   │   │   │   ├── AcceptRefuseInvitesController.java
│   │   │   │   │   ├── AcceptRefuseInvitesService.java
│   │   │   │   │   ├── CancelMeetingController.java
│   │   │   │   │   ├── CancelMeetingService.java
│   │   │   │   │   ├── ListParticipantController.java
│   │   │   │   │   ├── ListParticipantService.java
│   │   │   │   │   └── ScheduleMeetingController.java
│   │   │   │   ├── domain
│   │   │   │   │   ├── Invite.java
│   │   │   │   │   ├── InviteState.java
│   │   │   │   │   ├── Meeting.java
│   │   │   │   │   ├── MeetingDate.java
│   │   │   │   │   ├── MeetingDuration.java
│   │   │   │   │   ├── MeetingStatus.java
```


MeetingTime.java
MeetingTitle.java
repository
InviteRepository.java
MeetingRepository.java
myclientuser
application
MyClientUserService.java
SignupController.java
systemUserManagement
SystemUserRepository.java
usermanagement
application
AddUserController.java
DeactivateUserController.java
ListUsersController.java
eventhandlers
AddUserOnSignupAcceptedController.java
SignupAcceptedWatchDog.java
domain
BasePasswordPolicy.java
BaseRoles.java
UserBuilderHelper.java
resources
ecafeteria.sample.properties
test


eapli
base
Classe
Domain
ClasseTest.java
SharedBoard
Domain
SharedBoardTest.java
aplication
SharedBoardServiceTest.java
exammanagement
domain
CreateExamControllerTest.java
ExamTest.java
meetingmanagement
aplication
CancelMeetingTest.java
domain
InviteTest.java
MeetingTest.java
sharedboardmanagement
domain
CreatePostItTest.java
UpdatePostItTest.java
java
eapli


base
clientusermanagement
domain
ClientUserTest.java
base.infrastructure.application
pom.xml
src
main
java
eapli
base
AppSettings.java
Application.java
infrastructure
authz
AuthenticationCredentialHandler.java
CredentialHandler.java
resources
application.properties.sample
base.persistence.impl
pom.xml
src
main
java
eapli
base

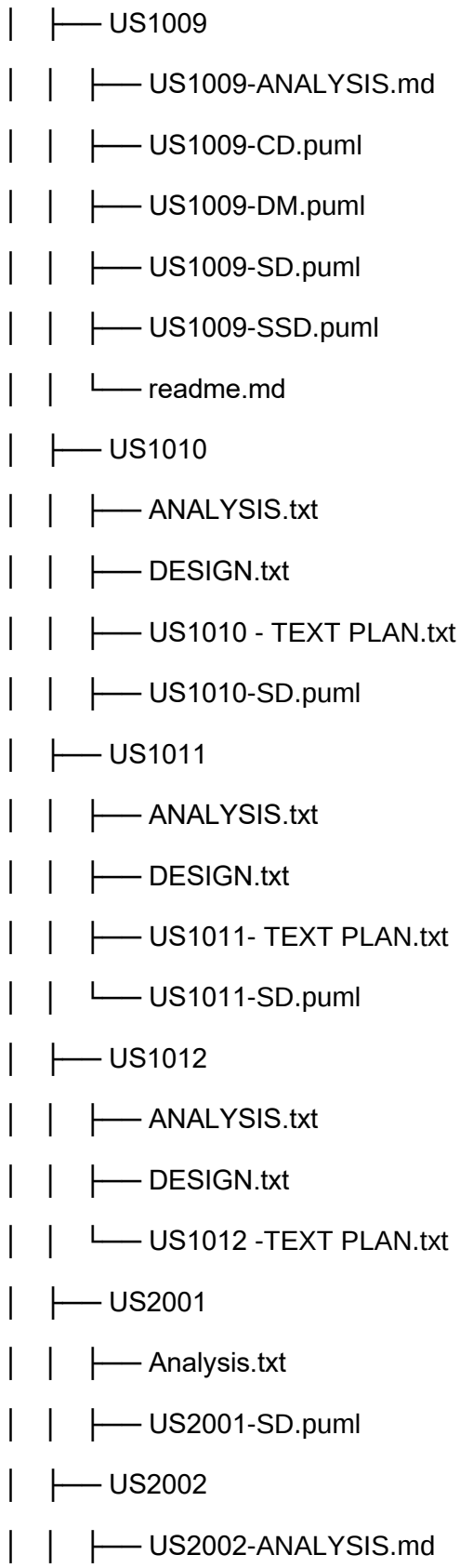
```
│   │   └── persistence
│   │       └── impl
│   │           ├── inmemory
│   │           │   ├── InMemoryClientUserRepository.java
│   │           │   ├── InMemoryExamRepository.java
│   │           │   ├── InMemoryInitializer.java
│   │           │   ├── InMemoryInviteRepository.java
│   │           │   ├── InMemoryRepositoryFactory.java
│   │           │   ├── InMemorySharedBoardRepository.java
│   │           │   └── InMemorySignupRequestRepository.java
│   │           └── jpa
│   │               ├── BaseJpaReportingRepositoryBase.java
│   │               ├── BasepaRepositoryBase.java
│   │               ├── JpaClassRepository.java
│   │               ├── JpaClientUserRepository.java
│   │               ├── JpaCourseRepository.java
│   │               ├── JpaExamRepository.java
│   │               ├── JpaExtraClassRepository.java
│   │               ├── JpaInviteRepository.java
│   │               ├── JpaMeetingRepository.java
│   │               ├── JpaRepositoryFactory.java
│   │               ├── JpaSharedBoardRepository.java
│   │               ├── JpaSignupRequestRepository.java
│   │               ├── JpaStudentRepository.java
│   │               ├── JpaSystemUserRepository.java
│   │               ├── JpaTeacherRepository.java
```

```
│   │   │   └── PersistenceSettings.java
│   │   └── resources
│   │       └── META-INF
│   │           └── persistence.xml
├── base.rcomp
│   ├── Makefile
│   ├── SSL
│   │   ├── Makefile
│   │   ├── check-TLS
│   │   │   ├── CheckServerTLS.java
│   │   │   └── Makefile
│   │   ├── https-server-ajax-voting
│   │   │   ├── HTTPmessage.java
│   │   │   ├── HttpsServerAjaxVoting.java
│   │   │   ├── Makefile
│   │   │   ├── httpAjaxVotingRequest.java
│   │   │   ├── make_cert
│   │   │   └── www
│   │   │       ├── index.html
│   │   │       └── rcomp-ajax.js
│   │   └── tcp-cli-srv
│   │       ├── Makefile
│   │       ├── TcpCliSumTLS.java
│   │       ├── TcpSrvSumTLS.java
│   │       └── make_certs
│   ├── http-server-ajax-voting
```

```
│   │   ├── DemoConsumer.java
│   │   ├── HttpAjaxVotingRequest.java
│   │   ├── HttpServerAjaxVoting.java
│   │   ├── Httpmessage.java
│   │   ├── Makefile
│   │   └── www
│   │       ├── index.html
│   │       └── rcomp-ajax.js
│   ├── http-server-chat
│   │   ├── HttpChatConsumer.java
│   │   ├── HttpChatRequest.java
│   │   ├── HttpServerChat.java
│   │   ├── Makefile
│   │   ├── README
│   │   ├── httpmessage.java
│   │   └── www
│   │       ├── index.html
│   │       └── rcomp-chat.js
│   ├── http-server-form-file-upload
│   │   ├── HTTP.java
│   │   ├── HttpRequest.java
│   │   ├── HttpServerFormFileUpload.java
│   │   ├── Makefile
│   │   └── www
│   │       └── index.html
│   ├── tcp-chat
```

```
│   │   ├── Makefile
│   │   ├── TcpChatCli.java
│   │   ├── TcpChatCliGui.java
│   │   ├── TcpChatSrv.java
│   │   └── TcpChatSrvSingleThread.java
│   ├── tcp-cli-srv
│   │   ├── Makefile
│   │   ├── TcpCliSum.java
│   │   └── TcpSrvSum.java
│   ├── udp-chat
│   │   ├── Makefile
│   │   └── UdpChat.java
│   └── udp-cli-srv
│       ├── Makefile
│       ├── UdpCli.java
│       ├── UdpCliBcast.java
│       ├── UdpCliTo.java
│       ├── UdpSrv.java
│       └── UdpSrvMport.java
├── bitbucket-pipelines.yml
├── docs
│   ├── Divisao_Tarefas
│   │   └── Divisao_Tarefas
│   ├── Domain Model
│   │   └── US-G002
│   │       ├── domain-model.puml
```

```
│   │       └── readme.md
│   ├── Group_Elements
│   │   ├── 1200614
│   │   │   └── readme.md
│   │   ├── 1200801
│   │   │   └── readme.md
│   │   ├── 1200874
│   │   │   └── readme.md
│   │   ├── 1201718
│   │   │   └── readme.md
│   │   └── 1210965
│   │       └── readme.md
│   ├── US1007
│   │   ├── US1007-ANALYSIS.md
│   │   ├── US1007-CD.puml
│   │   ├── US1007-DM.puml
│   │   ├── US1007-SD.puml
│   │   ├── US1007-SSD.puml
│   │   └── readme.md
│   ├── US1008
│   │   ├── US-1008-ANALYSIS.md
│   │   ├── US1008-CD.puml
│   │   ├── US1008-DM.puml
│   │   ├── US1008-SD.puml
│   │   ├── US1008-SSD.puml
│   │   └── readme.md
```


US1009
US1009-ANALYSIS.md
US1009-CD.puml
US1009-DM.puml
US1009-SD.puml
US1009-SSD.puml
readme.md
US1010
ANALYSIS.txt
DESIGN.txt
US1010 - TEXT PLAN.txt
US1010-SD.puml
US1011
ANALYSIS.txt
DESIGN.txt
US1011- TEXT PLAN.txt
US1011-SD.puml
US1012
ANALYSIS.txt
DESIGN.txt
US1012 -TEXT PLAN.txt
US2001
Analysis.txt
US2001-SD.puml
US2002
US2002-ANALYSIS.md

```
│   │   ├── US2002-SD.puml
│   ├── US2003
│   │   ├── US2003-ANALYSIS.md
│   │   ├── US2003-SD.puml
│   ├── US3004
│   │   ├── US3004-ANALYSIS.md
│   │   ├── US3004-CD.puml
│   │   └── US3004-SD.puml
│   ├── US3006
│   │   ├── US3006(ONLY_READ_PERMISSION)-SD.puml
│   │   ├── US3006-ANALYSIS.md
│   │   └── US3006-SD(WRITE_PERMISSION).puml
│   ├── US3007
│   │   ├── US3007-ANALYSIS.md
│   │   ├── US3007-SD(MOVE_POST-IT).puml
│   │   ├── US3007-SD(UPDATE_CREATED_POST-IT).puml
│   ├── US3010
│   │   ├── US3010-ANALYSIS.md
│   │   ├── US3010-CD.puml
│   │   └── US3010-SD.puml
│   ├── US4001
│   │   ├── US4001-ANALYSIS.md
│   │   ├── US4001-SD.puml
│   ├── US4002
│   │   ├── US4002-ANALYSIS.md
│   │   ├── US4002-CD.puml
```

```
│   │   ├── US4002-DM.puml
│   │   └── US4002-SD.puml
│   ├── US4003
│   │   ├── US4003-ANALYSIS.md
│   │   ├── US4003-SD(ACCEPT_INVITE).puml
│   │   ├── US4003-SD(REFUSE_INVITE).puml
│   ├── US4004
│   │   ├── US4004-ANALYSIS.md
│   │   ├── US4004-SD.puml
│   ├── US5002
│   └── readme.md
├── lib
├── libs
│   ├── ModeloConceptual (1).drawio.html
├── license.txt
├── mvnw
├── mvnw.cmd
├── pom.xml
├── readme.md
```

<-- Directory/File Tree Ends

File Content Begins -->

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\pom.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/xsd/maven-4.0.0.xsd">
    <modelVersion>4.0.0</modelVersion>
```

```
    <parent>
        <groupId>eapli</groupId>
        <artifactId>base</artifactId>
        <relativePath>../</relativePath>
        <version>1.4.0-SNAPSHOT</version>
    </parent>

    <artifactId>base.app.backoffice.console</artifactId>
    <packaging>jar</packaging>

    <name>base.app.backoffice.console</name>

    <properties>
        <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
        <project.reporting.outputEncoding>UTF-8</project.reporting.outputEncoding>
    </properties>



    <dependencies>
        <dependency>
            <groupId>eapli</groupId>
            <artifactId>base.app.common.console</artifactId>
            <version>${project.parent.version}</version>
        </dependency>
        <dependency>
            <groupId>eapli</groupId>
            <artifactId>base.persistence.impl</artifactId>
            <version>${project.parent.version}</version>
            <scope>runtime</scope>
        </dependency>
      </dependencies>
</project>
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\pom.xml

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\BaseBackoffice.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
 * MIT License
```

package eapli.base.app.backoffice.console;

import eapli.base.app.backoffice.console.presentation.MainMenu;
import eapli.base.app.common.console.BaseApplication;
import eapli.base.app.common.console.presentation.authz.LoginUI;
import
eapli.base.clientusermanagement.application.eventhandlers.NewUserRegisteredFromSi
gnupWatchDog;
import
eapli.base.clientusermanagement.domain.events.NewUserRegisteredFromSignupEvent;
import eapli.base.clientusermanagement.domain.events.SignupAcceptedEvent;
import eapli.base.infrastructure.authz.AuthenticationCredentialHandler;
import eapli.base.infrastructure.persistence.PersistenceContext;
import
eapli.base.usermanagement.application.eventhandlers.SignupAcceptedWatchDog;
import eapli.base.usermanagement.domain.BasePasswordPolicy;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.domain.model.PlainTextEncoder;
import eapli.framework.infrastructure.pubsub.EventDispatcher;

```
/**
 *
 * @author Paulo Gandra Sousa
 */
@SuppressWarnings("squid:S106")
public final class BaseBackoffice extends BaseApplication {

    /**
     * avoid instantiation of this class.
     */
    private BaseBackoffice() {
    }

    /**
     * @param args
     *            the command line arguments
     */
    public static void main(final String[] args) {

        AuthzRegistry.configure(PersistenceContext.repositories().users(),
                new BasePasswordPolicy(), new PlainTextEncoder());

        new BaseBackoffice().run(args);
    }

    @Override
    protected void doMain(final String[] args) {
        // login and go to main menu
        if (new LoginUI(new AuthenticationCredentialHandler()).show()) {
            // go to main menu
            final MainMenu menu = new MainMenu();
            menu.mainLoop();
        }
    }

    @Override
    protected String appTitle() {
        return "Base Back Office";
    }

    @Override
    protected String appGoodbye() {
        return "Base Back Office";
```

```
    }

    @SuppressWarnings("unchecked")
    @Override
    protected void doSetupEventHandlers(final EventDispatcher dispatcher) {
        dispatcher.subscribe(new NewUserRegisteredFromSignupWatchDog(),
                NewUserRegisteredFromSignupEvent.class);
        dispatcher.subscribe(new SignupAcceptedWatchDog(),
SignupAcceptedEvent.class);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\BaseBackoffice.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\Classe\ScheduleClassAction.java

```
package eapli.base.app.backoffice.console.presentation.Classe;

import eapli.base.Classe.aplication.ClassController;
import eapli.base.app.backoffice.console.presentation.exam.ListFutureExamsUI;
import eapli.framework.actions.Action;

public class ScheduleClassAction implements Action {



    @Override
    public boolean execute() {

        return new ScheduleClassUI().show();

    }
}

    /*

    private final ClassController classController;

    public ScheduleClassAction(ClassController classController) {
        this.classController = classController;
```

```
}

public boolean execute(){
    try {
        new ScheduleClassUI().run();
    } catch (Exception e) {
        throw new RuntimeException(e);
    }
    return true; // Return a boolean indicating if the operation was successful.
}


 */
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\Classe\ScheduleClassAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\Classe\ScheduleClassUI.java

```
package eapli.base.app.backoffice.console.presentation.Classe;

import eapli.base.Classe.aplication.ClassController;
import eapli.base.Classe.domain.*;
import eapli.base.Student_Teacher.Teacher.Domain.Acronym;
import eapli.base.Student_Teacher.Teacher.Domain.Teacher;
import eapli.base.Student_Teacher.Teacher.Repository.TeacherRepository;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.UserSession;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

import java.time.LocalDate;
import java.time.LocalTime;
import java.util.InputMismatchException;
import java.util.List;
import java.util.Scanner;

public class ScheduleClassUI {
```

```
    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    private final UserSession session =
authz.session().orElseThrow(IllegalStateException::new);
    private final SystemUser authenticatedUser = session.authenticatedUser();

    private final ClassController classController = new ClassController(
            AuthzRegistry.authorizationService(),
            PersistenceContext.repositories().classRepository(),
            PersistenceContext.repositories().teacherRepository());

    public boolean show() {
        try {
            Scanner scanner = new Scanner(System.in);

            System.out.println("Enter class title: ");
            Classe_Title title = Classe_Title.valueOf(scanner.nextLine());

            System.out.println("Enter class start time (HH:mm): ");
            LocalTime startTime = LocalTime.parse(scanner.nextLine());
            Classe_Start_Time userInputStartTime = new Classe_Start_Time(startTime);

            System.out.println("Enter class finish time (HH:mm): ");
            LocalTime endTime = LocalTime.parse(scanner.nextLine());
            Classe_Finish_Time userInputEndTime = new Classe_Finish_Time(endTime);

            System.out.println("Enter class start date (YYYY-MM-DD): ");
            LocalDate startDate = LocalDate.parse(scanner.nextLine());
            Classe_Start_Date start_date = new Classe_Start_Date(startDate);

            System.out.println("Enter class finish date (YYYY-MM-DD): ");
            LocalDate finishDate = LocalDate.parse(scanner.nextLine());
            Classe_Finish_Date finish_date = new Classe_Finish_Date(finishDate);

            System.out.println("Enter day of the week (1-7): ");
            int dayOfWeek = scanner.nextInt();
            DayOfWeek userInputDayOfWeek = DayOfWeek.valueOf(dayOfWeek);

            scanner.nextLine(); // Consume the newline character

            System.out.println("Enter teacher acronym: ");
            Acronym teacherAcronym = Acronym.valueOf(scanner.nextLine());

            TeacherRepository teacherRepository =
```

```
PersistenceContext.repositories().teacherRepository();
        List<Teacher> teacherOptional =
teacherRepository.findTeacherByAcronym(teacherAcronym);
        if (teacherOptional.isEmpty()) {
            throw new IllegalArgumentException("No teacher found with the provided
acronym");
        }

        boolean hasConflict = classController.checkClassConflict(new Classe(
                title, start_date, finish_date, userInputStartTime, userInputEndTime,
userInputDayOfWeek, teacherAcronym));
        if (hasConflict) {
            System.out.println("Class conflicts with an existing class.");
            // Handle class conflict, display an error message or take any appropriate
action
        } else {
            // Proceed with scheduling the class
            classController.scheduleClass(
                    title, userInputStartTime, userInputEndTime, start_date, finish_date,
userInputDayOfWeek, teacherAcronym);
            System.out.println("Class scheduled successfully.");
        }
      } catch (InputMismatchException e) {
        System.out.println("Invalid input. Please try again.");
      } catch (IllegalArgumentException e) {
        System.out.println(e.getMessage());
      }
      return false;
   }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\Classe\ScheduleClassUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\Classe\ScheduleExtraClassAction.java

```
package eapli.base.app.backoffice.console.presentation.Classe;

import eapli.base.Classe.aplication.ClassController;
import eapli.base.ExtraClasse.aplication.ExtraClassController;
```

```
import eapli.framework.actions.Action;

public class ScheduleExtraClassAction implements Action {



    @Override
    public boolean execute() {
        try {
            return new ScheduleExtraClassUI().show();
        } catch (Exception e) {
            throw new RuntimeException(e);
        }
    }
}

    /*
    private final ExtraClassController extraClassController;

    public ScheduleExtraClassAction(ExtraClassController extraClassController) {
        this.extraClassController = extraClassController;
    }

    public boolean execute(){
        try {
            new ScheduleExtraClassUI(extraClassController).run();
        } catch (Exception e) {
            throw new RuntimeException(e);
        }
        return true; // Return a boolean indicating if the operation was successful.
    }


     */
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\Classe\ScheduleExtraClassAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\Classe\ScheduleExtraClassUI.java

```
package eapli.base.app.backoffice.console.presentation.Classe;

import eapli.base.Classe.aplication.ClassController;
import eapli.base.Classe.domain.*;
import eapli.base.ExtraClasse.domain.ExtraClasse_Day;
import eapli.base.ExtraClasse.aplication.ExtraClassController;
import eapli.base.ExtraClasse.domain.ExtraClasse;
import eapli.base.ExtraClasse.domain.ExtraClasse_Finish_Time;
import eapli.base.ExtraClasse.domain.ExtraClasse_Start_Time;
import eapli.base.ExtraClasse.domain.ExtraClasse_Title;
import eapli.base.Student_Teacher.Teacher.Domain.Acronym;
import eapli.base.Student_Teacher.Teacher.Domain.Teacher;
import eapli.base.Student_Teacher.Teacher.Repository.TeacherRepository;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.UserSession;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

import java.time.LocalDate;
import java.time.LocalTime;
import java.util.*;

public class ScheduleExtraClassUI {


    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    final UserSession s = authz.session().orElseThrow(IllegalStateException::new);
    final SystemUser myUser = s.authenticatedUser();


    private final ExtraClassController extraClassController = new ExtraClassController(
            AuthzRegistry.authorizationService(),
PersistenceContext.repositories().extraClassRepostory(),
PersistenceContext.repositories().teacherRepository()) ;

    public boolean show() throws Exception {
```

```
        Scanner scanner = new Scanner(System.in);
        scanner.nextLine();


        System.out.println("Enter class title: ");
        ExtraClasse_Title title = ExtraClasse_Title.valueOf(scanner.nextLine());

        System.out.println("Enter class start time (HH:mm): ");
        ExtraClasse_Start_Time startTime =
ExtraClasse_Start_Time.valueOf(LocalTime.parse(scanner.nextLine()));

        System.out.println("Enter class finish time (HH:mm): ");
        ExtraClasse_Finish_Time finishTime =
ExtraClasse_Finish_Time.valueOf(LocalTime.parse(scanner.nextLine()));


        System.out.println("Enter day of the week (1-7): ");
        int dayOfWeek = scanner.nextInt();
        ExtraClasse_Day dayInput = (ExtraClasse_Day)
ExtraClasse_Day.valueOf(dayOfWeek);

        System.out.println("Enter teacher Acronym: ");
        Acronym Acronym =
eapli.base.Student_Teacher.Teacher.Domain.Acronym.valueOf(scanner.nextLine());
        Acronym teacherAcronym = Acronym.valueOf(scanner.nextLine());

        List<Teacher> teacherOptional =
extraClassController.findTeacherByAcronym(teacherAcronym);
        if (teacherOptional.isEmpty()) {
            throw new IllegalArgumentException("No teacher found with provided acronym");
        }

        boolean hasConflict = extraClassController.checkClassConflict(new
ExtraClasse(title,  startTime, finishTime,dayInput, teacherAcronym));
        if (hasConflict) {
            System.out.println("Class conflicts with an existing class.");

        } else {

            extraClassController.scheduleExtraClass(  title,  startTime, finishTime, dayInput,
teacherAcronym);
            System.out.println("Class scheduled successfully.");
```

```
        }
        return false;
    }
    }
```

```
    /*
    private final ExtraClassController extraClassController;

    public ScheduleExtraClassUI(ExtraClassController extraClassController) {
        this.extraClassController = extraClassController;
    }

    public void run() throws Exception {
        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter class ID: ");
        Long id = scanner.nextLong();
        scanner.nextLine();

        System.out.println("Enter class title: ");
        ExtraClasse_Title title = ExtraClasse_Title.from(scanner.nextLine());

        System.out.println("Enter class start time (hh:mm): ");
        String startTimeInput = scanner.nextLine();
        ExtraClasse_Start_Time startTime =
ExtraClasse_Start_Time.from(LocalTime.parse(startTimeInput));

        System.out.println("Enter class finish time (hh:mm): ");
        String finishTimeInput = scanner.nextLine();
        ExtraClasse_Finish_Time finishTime =
ExtraClasse_Finish_Time.from(LocalTime.parse(finishTimeInput));

        System.out.println("Enter day of the week (1-7): ");
        int dayOfWeek = scanner.nextInt();
        DayOfWeek dayInput = DayOfWeek.valueOf(dayOfWeek);
```

```
        System.out.println("Enter teacher acronym: ");
        String teacherAcronymInput = scanner.nextLine();
        Acronym teacherAcronym = Acronym.valueOf(teacherAcronymInput);

        boolean hasConflict = extraClassController.checkClassConflict(new ExtraClasse(id,
title, startTime, finishTime, (ExtraClasse_Day) dayInput, teacherAcronym));
        if (hasConflict) {
            System.out.println("Class conflicts with an existing class.");
            // Handle class conflict, display an error message or take any appropriate action
        } else {
            // Proceed with scheduling the class
            extraClassController.scheduleExtraClass(id, title, startTime, finishTime,
(ExtraClasse_Day) dayInput, teacherAcronym);
            System.out.println("Class scheduled successfully.");
        }
    }

     */
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\Classe\ScheduleExtraClassUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\Classe\UpdateClassAction.java

```
package eapli.base.app.backoffice.console.presentation.Classe;

import eapli.base.Classe.aplication.ClassController;
import eapli.framework.actions.Action;

public class UpdateClassAction implements Action {
    @Override
    public boolean execute() {
        try {
            return new UpdateClassScheduleUI().show();
        } catch (Exception e) {
            throw new RuntimeException(e);
        }
```

```
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\Classe\UpdateClassAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\Classe\UpdateClassScheduleUI.java

```
package eapli.base.app.backoffice.console.presentation.Classe;

import eapli.base.Classe.aplication.ClassController;
import eapli.base.Classe.domain.*;
import eapli.base.Student_Teacher.Teacher.Domain.Teacher;

import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.UserSession;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

import java.time.LocalTime;
import java.util.List;
import java.util.Scanner;

public class UpdateClassScheduleUI {


    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    final UserSession s = authz.session().orElseThrow(IllegalStateException::new);
    final SystemUser myUser = s.authenticatedUser();

    private final ClassController classController = new ClassController(
            AuthzRegistry.authorizationService(),
PersistenceContext.repositories().classRepository(),
PersistenceContext.repositories().teacherRepository());


    public boolean show() throws Exception {
        Teacher teacher = classController.findTeacherBySystemUser(myUser);
          List<Classe> Classes = classController.getAllClasses(teacher.getAcronym());
           for (Classe e : Classes) {
```

```
            System.out.println("Class title: " + e.identity() + "; Class start time : " +
e.getStartTime() + "; Class end time : " + e.getFinishTime());
        }

        System.out.println("Enter class Title: ");
        Scanner scanner = new Scanner(System.in);
        Classe_Title title = Classe_Title.valueOf(scanner.nextLine());
        scanner.nextLine();

        System.out.println("Enter new class start time (HH:mm): ");
        Classe_Start_Time newStartTime =
Classe_Start_Time.valueOf(LocalTime.parse(scanner.nextLine()));

        System.out.println("Enter new class finish time (HH:mm): ");
        Classe_Finish_Time newFinishTime =
Classe_Finish_Time.valueOf(LocalTime.parse(scanner.nextLine()));

        classController.updateClassSchedule(title, newStartTime, newFinishTime);

        System.out.println("Class schedule updated successfully.");
        return false;
    }
}


/*
    public class NoClassesException extends Exception {
        public NoClassesException(String message) {
            super(message);
        }
    }

 */
/*
    public void displayAllClasses() throws NoClassesException {
        List<Classe> allClasses = classController.getAllClasses();

        if (allClasses.isEmpty()) {
            throw new NoClassesException("No classes found!");
        }

        for (Classe classe : allClasses) {
            System.out.println(classe);
        }
```

```
    }


    public void run() throws Exception {
        Scanner scanner = new Scanner(System.in);
        try {
            System.out.println("Existing classes: ");
            displayAllClasses();


            System.out.println("Enter class ID: ");
            Long id = scanner.nextLong();

            scanner.nextLine(); // Consume newline left-over

            System.out.println("Enter new class start time (HH:mm): ");
            Classe_Start_Time newStartTime =
Classe_Start_Time.valueOf(LocalTime.parse(scanner.nextLine()));

            System.out.println("Enter new class finish time (HH:mm): ");
            Classe_Finish_Time newFinishTime =
Classe_Finish_Time.valueOf(LocalTime.parse(scanner.nextLine()));

            classController.updateClassSchedule(id, newStartTime, newFinishTime);

            System.out.println("Class schedule updated successfully.");
            // Display all classes after updating
            System.out.println("Updated classes: ");
            displayAllClasses();

        } catch (NoClassesException e) {
            System.err.println(e.getMessage());
        } catch (Exception e) {
        }
    }

 */
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\Classe\UpdateClassScheduleUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\MainMenu.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
 * MIT License
 *
 * Permission is hereby granted, free of charge, to any person obtaining a copy
 * of this software and associated documentation files (the "Software"), to deal
 * in the Software without restriction, including without limitation the rights
 * to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
 * copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
 *
 * The above copyright notice and this permission notice shall be included in
 * all copies or substantial portions of the Software.
 *
 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR
 * IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY,
 * FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO
EVENT SHALL THE
 * AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES
OR OTHER
 * LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.app.backoffice.console.presentation;

import eapli.base.app.backoffice.console.presentation.Classe.ScheduleClassAction;
import
eapli.base.app.backoffice.console.presentation.Classe.ScheduleExtraClassAction;
import eapli.base.app.backoffice.console.presentation.Classe.UpdateClassAction;
import eapli.base.app.backoffice.console.presentation.SharedBoard.*;
import eapli.base.app.backoffice.console.presentation.authz.AddUserAction;
```

```
import eapli.base.app.backoffice.console.presentation.course.CreateCourseAction;
import eapli.base.app.backoffice.console.presentation.course.OpenCloseCourseAction;
import
eapli.base.app.backoffice.console.presentation.course.OpenCloseEnrollementsAction;
import
eapli.base.app.backoffice.console.presentation.enrollment.ApproveEnrollmentAction;
import
eapli.base.app.backoffice.console.presentation.enrollment.RequestEnrollmentAction;
import eapli.base.app.backoffice.console.presentation.exam.CreateExamAction;
import eapli.base.app.backoffice.console.presentation.exam.ListCourseExamsAction;
import eapli.base.app.backoffice.console.presentation.exam.ListFutureExamsAction;
import
eapli.base.app.backoffice.console.presentation.meeting.AcceptRefuseInvitesAction;
import eapli.base.app.backoffice.console.presentation.meeting.CancelMeetingAction;
import eapli.base.app.backoffice.console.presentation.meeting.ListParticipantAction;
import eapli.base.app.backoffice.console.presentation.meeting.ScheduleMeetingAction;
import eapli.base.app.common.console.presentation.authz.MyUserMenu;
import eapli.base.Application;
import eapli.base.app.backoffice.console.presentation.authz.DeactivateUserAction;
import eapli.base.app.backoffice.console.presentation.authz.ListUsersAction;
import
eapli.base.app.backoffice.console.presentation.clientuser.AcceptRefuseSignupRequest
Action;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.actions.Actions;
import eapli.framework.actions.menu.Menu;
import eapli.framework.actions.menu.MenuItem;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.presentation.console.AbstractUI;
import eapli.framework.presentation.console.ExitWithMessageAction;
import eapli.framework.presentation.console.ShowMessageAction;
import eapli.framework.presentation.console.menu.HorizontalMenuRenderer;
import eapli.framework.presentation.console.menu.MenuItemRenderer;
import eapli.framework.presentation.console.menu.MenuRenderer;
import eapli.framework.presentation.console.menu.VerticalMenuRenderer;

/**
 * TODO split this class in more specialized classes for each menu
 *
 * @author Paulo Gandra Sousa
 *
 * Menu do usuário do backoffice
 */
```

```
public class MainMenu extends AbstractUI {

    private static final String RETURN_LABEL = "Return ";

    private static final int EXIT_OPTION = 0;

    // USERS - MENU
    private static final int ADD_USER_OPTION = 1;
    private static final int LIST_USERS_OPTION = 2;
    private static final int DEACTIVATE_USER_OPTION = 3;
    private static final int ACCEPT_REFUSE_SIGNUP_REQUEST_OPTION = 4;

    // SETTINGS - MENU
    private static final int UNDERDEVELOPMENT_MESSAGE = 1;

    // COURSE - MENU
    private static final int CREATE_COURSE = 1;
    private static final int OpenCloseEnrollement = 2;
    private static final int OpenCloseCourse = 3;

    // EXAMS - MENU
    private static final int CREATE_EXAM = 1;
    private static final int SEE_COURSE_EXAMS = 2;
    private static final int SEE_FUTURE_EXAMS = 3;
    private static final int ADMIN_SEE_FUTURE_EXAMS = 3;

    // CLASS - MENU
    private static final int SCHEDULE_CLASSES = 1;
    private static final int UPDATE_CLASSES = 2;
    private static final int SCHEDULE_EXTRA_CLASS = 3;

    // SHARED BOARD - MENU
    private static final int SHARE_THE_BOARD = 1;
    private static final int LIST_THE_BOARDS = 2;
    private static final int ARCHIVE_BOARD = 3;
    private static final int CREATE_POSTIT = 4;
    private static final int UPDATE_POSTIT = 5;
    private static final int UNDO_POSTIT = 6;

    // ENROLLMENT - MENU
    private static final int REQUEST_ENROLLMENT = 1;
    private static final int ACCEPT_REJECT_ENROLLMENT = 2;

    // MAIN MENU - GERAL
```

```
private static final int MY_USER_OPTION = 1;

// MAIN MENU - ADMINISTRADOR
private static final int USERS_OPTION = 2;
private static final int COURSE_MENU = 3;
private static final int EXAM_MENU = 4;
private static final int CLASS_MENU = 5;
private static final int MEETINGS_MENU = 6;
private static final int ENROLLMENT_MENU = 7;
private static final int SHARED_BOARD_MENU = 8;
private static final int SETTINGS_OPTION = 9;
private static final int SCHEDULE_MEETING = 1;
private static final int LIST_MEETING_INVITES = 2;
private static final int LIST_PARTICIPANTS = 3;

private static final int CANCEL_MEETING = 3;

// MAIN MENU - MANAGER
private static final int USERS_OPTION_MANAGER = 2;
private static final int COURSE_MENU_MANAGER = 3;
private static final int MEETINGS_MENU_MANAGER = 4;
private static final int SHARED_BOARD_MENU_MANAGER = 5;
private static final int SETTINGS_OPTION_MANAGER = 6;

// MAIN MENU - TEACHER
private static final int EXAM_MENU_TEACHER = 2;
private static final int CLASS_MENU_TEACHER = 3;
private static final int MEETINGS_MENU_TEACHER = 4;
private static final int SHARED_BOARD_MENU_TEACHER = 5;

// MAIN MENU - STUDENT
private static final int EXAM_MENU_STUDENT = 2;
private static final int CLASS_MENU_STUDENT = 3;
private static final int MEETINGS_MENU_STUDENT = 4;
private static final int ENROLLMENT_MENU_STUDENT = 5;
private static final int SHARED_BOARD_MENU_STUDENT = 6;

private static final String SEPARATOR_LABEL = "----------";

private final AuthorizationService authz = AuthzRegistry.authorizationService();

@Override
public boolean show() {
    drawFormTitle();
```

```
    return doShow();
}

/**
 * @return true if the user selected the exit option
 */
@Override
public boolean doShow() {
    final Menu menu = buildMainMenu();
    final MenuRenderer renderer;
    if (Application.settings().isMenuLayoutHorizontal()) {
        renderer = new HorizontalMenuRenderer(menu, MenuItemRenderer.DEFAULT);
    } else {
        renderer = new VerticalMenuRenderer(menu, MenuItemRenderer.DEFAULT);
    }
    return renderer.render();
}

@Override
public String headline() {

    return authz.session().map(s -> "Base [ @" + s.authenticatedUser().identity() + " ]")
            .orElse("Base [ ==Anonymous== ]");
}

private Menu buildMainMenu() {
    final Menu mainMenu = new Menu();

    // Opções do Usuário
    final Menu myUserMenu = new MyUserMenu();
    mainMenu.addSubMenu(MY_USER_OPTION, myUserMenu);


    if (!Application.settings().isMenuLayoutHorizontal()) {
        mainMenu.addItem(MenuItem.separator(SEPARATOR_LABEL));
    }

    // Opções do Administrador
    if (authz.isAuthenticatedUserAuthorizedTo(BaseRoles.ADMIN)) {
        final Menu usersMenu = buildUsersMenu();
        mainMenu.addSubMenu(USERS_OPTION, usersMenu);
        final Menu courseMenu = buildCourseMenu();
        mainMenu.addSubMenu(COURSE_MENU, courseMenu);
        final Menu examMenu = buildExamMenu();
```

```
    mainMenu.addSubMenu(EXAM_MENU, examMenu);
    final Menu classMenu = buildClassMenu();
    mainMenu.addSubMenu(CLASS_MENU, classMenu);
    final Menu meetingMenu = buildMeetingMenu();
    mainMenu.addSubMenu(MEETINGS_MENU, meetingMenu);
    final Menu enrollmentMenu = buildEnrollmentMenu();
    mainMenu.addSubMenu(ENROLLMENT_MENU, enrollmentMenu);
    final Menu sharedMenu = buildSharedBoardMenu();
    mainMenu.addSubMenu(SHARED_BOARD_MENU,sharedMenu);
    final Menu settingsMenu = buildAdminSettingsMenu();
    mainMenu.addSubMenu(SETTINGS_OPTION, settingsMenu);
}

// Opções do Manager
if (authz.isAuthenticatedUserAuthorizedTo(BaseRoles.MANAGER)) {
    final Menu usersMenu = buildUsersMenu();
    mainMenu.addSubMenu(USERS_OPTION_MANAGER, usersMenu);
    final Menu courseMenu = buildCourseMenu();
    mainMenu.addSubMenu(COURSE_MENU_MANAGER, courseMenu);
    final Menu meetingMenu = buildMeetingMenu();
    mainMenu.addSubMenu(MEETINGS_MENU_MANAGER, meetingMenu);
    final Menu sharedMenu = buildSharedBoardMenu();
    mainMenu.addSubMenu(SHARED_BOARD_MENU_MANAGER,sharedMenu);
    final Menu settingsMenu = buildAdminSettingsMenu();
    mainMenu.addSubMenu(SETTINGS_OPTION_MANAGER, settingsMenu);
}

// Opções do Teacher
if(authz.isAuthenticatedUserAuthorizedTo(BaseRoles.TEACHER)){
    final Menu examMenu = buildExamMenu();
    mainMenu.addSubMenu(EXAM_MENU_TEACHER, examMenu);
    final Menu classMenu = buildClassMenu();
    mainMenu.addSubMenu(CLASS_MENU_TEACHER, classMenu);
    final Menu meetingMenu = buildMeetingMenu();
    mainMenu.addSubMenu(MEETINGS_MENU_TEACHER, meetingMenu);
    final Menu sharedMenu = buildSharedBoardMenu();
    mainMenu.addSubMenu(SHARED_BOARD_MENU_TEACHER,sharedMenu);
}

// Opções do Student
if(authz.isAuthenticatedUserAuthorizedTo(BaseRoles.STUDENT)){
    final Menu examMenu = buildExamMenu();
    mainMenu.addSubMenu(EXAM_MENU_STUDENT, examMenu);
    final Menu classMenu = buildClassMenu();
```

```
            mainMenu.addSubMenu(CLASS_MENU_STUDENT, classMenu);
            final Menu meetingMenu = buildMeetingMenu();
            mainMenu.addSubMenu(MEETINGS_MENU_STUDENT, meetingMenu);
            final Menu enrollmentMenu = buildEnrollmentMenu();
            mainMenu.addSubMenu(ENROLLMENT_MENU_STUDENT, enrollmentMenu);
            final Menu sharedMenu = buildSharedBoardMenu();
            mainMenu.addSubMenu(SHARED_BOARD_MENU_STUDENT,sharedMenu);
        }

        if (!Application.settings().isMenuLayoutHorizontal()) {
            mainMenu.addItem(MenuItem.separator(SEPARATOR_LABEL));
        }

        mainMenu.addItem(EXIT_OPTION, "Exit", new ExitWithMessageAction("Exiting the
application... Bye!"));

        return mainMenu;
    }

    //Menu do Exam
    private Menu buildExamMenu(){
        final Menu menu = new Menu("Exam >");

        if(authz.isAuthenticatedUserAuthorizedTo(BaseRoles.TEACHER,
BaseRoles.ADMIN)){
            menu.addItem(CREATE_EXAM, "Create a new exam", new
CreateExamAction());
        }

        if(authz.isAuthenticatedUserAuthorizedTo(BaseRoles.TEACHER,
BaseRoles.ADMIN)){
            menu.addItem(SEE_COURSE_EXAMS, "View list of all exams in a course", new
ListCourseExamsAction());
        }

        if(authz.isAuthenticatedUserAuthorizedTo(BaseRoles.STUDENT)){
            menu.addItem(SEE_FUTURE_EXAMS, "View list of all my future exams", new
ListFutureExamsAction());
        }

        // ID Option diferente para o admin para evitar conflitos e erros de execução
        if(authz.isAuthenticatedUserAuthorizedTo(BaseRoles.ADMIN)){
            menu.addItem(ADMIN_SEE_FUTURE_EXAMS, "View list of all my future
exams", new ListFutureExamsAction());
```

```
        }

        menu.addItem(EXIT_OPTION, RETURN_LABEL, Actions.SUCCESS);

        return menu;
    }

    //Menu das Classes
    private Menu buildClassMenu(){
        final Menu menu = new Menu("Class >");
        if(authz.isAuthenticatedUserAuthorizedTo(BaseRoles.TEACHER,
BaseRoles.ADMIN)){
            menu.addItem(SCHEDULE_CLASSES, "Schedule a new class",new
ScheduleClassAction());

        }
        if(authz.isAuthenticatedUserAuthorizedTo(BaseRoles.TEACHER,
BaseRoles.ADMIN)){
            menu.addItem(UPDATE_CLASSES, "Update an existing class", new
UpdateClassAction());

        }
        if(authz.isAuthenticatedUserAuthorizedTo(BaseRoles.TEACHER,
BaseRoles.ADMIN)){
            menu.addItem(SCHEDULE_EXTRA_CLASS, "Schedule a new extra class", new
ScheduleExtraClassAction());

        }
        menu.addItem(EXIT_OPTION, RETURN_LABEL, Actions.SUCCESS);
        return menu;
    }

    // Menu do Course
    private Menu buildCourseMenu() {
        final Menu menu = new Menu("Course >");
        if(authz.isAuthenticatedUserAuthorizedTo(BaseRoles.MANAGER,
BaseRoles.ADMIN)){
            menu.addItem(CREATE_COURSE, "Create a new Course", new
CreateCourseAction());
            menu.addItem(OpenCloseEnrollement, "Open/Close enrollements", new
OpenCloseEnrollementsAction());
            menu.addItem(OpenCloseCourse, "Open/Close course", new
OpenCloseCourseAction());
        }
```

```
        menu.addItem(EXIT_OPTION, RETURN_LABEL, Actions.SUCCESS);

        return menu;
    }

    private Menu buildSharedBoardMenu(){
        final Menu menu = new Menu("SharedBoard >");

        menu.addItem(SHARE_THE_BOARD, "Share the board with someone",new
SharedBoardAction());
        menu.addItem(LIST_THE_BOARDS, "List all the boards",new
SharedBoardListAction());
        menu.addItem(ARCHIVE_BOARD, "Archive the board",new
SharedBoardArchiveAction());
        menu.addItem(CREATE_POSTIT, "Create a post-it in a board", new
CreateBoardPostItAction());
        menu.addItem(UPDATE_POSTIT, "Update a post-it in a board", new
UpdateBoardPostItAction());
        menu.addItem(UNDO_POSTIT, "Undo the last change in a post-it", new
UndoPostItAction());



        return  menu;
    }

    // Menu do Meeting
    private Menu buildMeetingMenu(){
        final Menu menu = new Menu("Meeting >");

        menu.addItem(SCHEDULE_MEETING, "Schedule a meeting", new
ScheduleMeetingAction());
        menu.addItem(LIST_MEETING_INVITES, "View list of meetings I've been invited
to", new AcceptRefuseInvitesAction());
        menu.addItem(LIST_PARTICIPANTS, "List participants", new
ListParticipantAction());
        if(authz.isAuthenticatedUserAuthorizedTo(BaseRoles.ADMIN)) {
            menu.addItem(CANCEL_MEETING, "Cancel the Meeting", new
CancelMeetingAction());
        }
        menu.addItem(EXIT_OPTION, RETURN_LABEL, Actions.SUCCESS);

        return menu;
    }
```

```
    private Menu buildEnrollmentMenu() {
        final Menu menu = new Menu("Enrollment >");
        if(authz.isAuthenticatedUserAuthorizedTo(BaseRoles.STUDENT,
BaseRoles.ADMIN)) {
            menu.addItem(REQUEST_ENROLLMENT, "Request Enrollment",  new
RequestEnrollmentAction());
        }
        if(authz.isAuthenticatedUserAuthorizedTo(BaseRoles.MANAGER,
BaseRoles.ADMIN)) {
            menu.addItem(ACCEPT_REJECT_ENROLLMENT, "Accept / Reject enrollment
requests", new ApproveEnrollmentAction());
        }
        menu.addItem(EXIT_OPTION, RETURN_LABEL, Actions.SUCCESS);

        return menu;
    }

    // Settings do Administrador
    private Menu buildAdminSettingsMenu() {
        final Menu menu = new Menu("Settings >");

        menu.addItem(UNDERDEVELOPMENT_MESSAGE, "Testing Option", new
ShowMessageAction("This option is under development"));
        menu.addItem(EXIT_OPTION, RETURN_LABEL, Actions.SUCCESS);

        return menu;
    }

    private Menu buildUsersMenu() {
        final Menu menu = new Menu("Users >");

        menu.addItem(ADD_USER_OPTION, "Add User", new AddUserAction());
        menu.addItem(LIST_USERS_OPTION, "List all Users", new ListUsersAction());
        menu.addItem(DEACTIVATE_USER_OPTION, "Deactivate User", new
DeactivateUserAction());
        menu.addItem(ACCEPT_REFUSE_SIGNUP_REQUEST_OPTION, "Accept/Refuse
Signup Request", new AcceptRefuseSignupRequestAction());
        menu.addItem(EXIT_OPTION, RETURN_LABEL, Actions.SUCCESS);

        return menu;
    }
```

```
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\MainMenu.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\CreateBoardPostItAction.java

```
package eapli.base.app.backoffice.console.presentation.SharedBoard;

import eapli.framework.actions.Action;

public class CreateBoardPostItAction implements Action {

    @Override
    public boolean execute() {
        return new CreateBoardPostItUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\CreateBoardPostItAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\CreateBoardPostItUI.java

```
package eapli.base.app.backoffice.console.presentation.SharedBoard;

import eapli.base.SharedBoard.aplication.CreateBoardPostItController;
import eapli.base.SharedBoard.aplication.SharedBoardController;
import eapli.base.SharedBoard.domain.NumberofColumns;
import eapli.base.SharedBoard.domain.NumberofRows;
import eapli.base.SharedBoard.domain.SharedBoard;
import eapli.base.SharedBoard.domain.Shared_Board_Title;
import eapli.base.SharedBoard.repository.SharedBoardRepository;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.UserSession;
```

```
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;
import eapli.framework.presentation.console.SelectWidget;

public class CreateBoardPostItUI extends AbstractUI {

    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    final UserSession s = authz.session().orElseThrow(IllegalStateException::new);
    final SystemUser myUser = s.authenticatedUser();

    private final CreateBoardPostItController controller = new
CreateBoardPostItController(
            PersistenceContext.repositories().sharedBoardRepository());
    private final SharedBoardRepository sharedBoardRepository =
PersistenceContext.repositories().sharedBoardRepository();

    @Override
    protected boolean doShow() {
//        Iterable<SharedBoard> sharedBoards =
controller.findBoardsBySystemUser(myUser);
//        final SelectWidget<SharedBoard> selector = new SelectWidget<>("Shared
Boards:", sharedBoards, new SharedBoardPrinter());
//        selector.show();
//        final SharedBoard sharedBoard = selector.selectedElement();
        SharedBoard sharedBoard = new SharedBoard(myUser, new
Shared_Board_Title("Shared Board 1"), new NumberofRows(10), new
NumberofColumns(10));

sharedBoard.shareBoard(myUser,myUser,SharedBoard.AccessType.valueOf("WRITE"))
;
        sharedBoard = sharedBoardRepository.save(sharedBoard);

//        if(sharedBoard!=null){
            if(controller.getBoardAccessType(sharedBoard, myUser)){
                String content = Console.readLine("Type the content of the post-it.");
                controller.createPostIt(content, myUser);
                int row = Console.readInteger("Type the row of the board you wish to put the
post-it.");
                int column = Console.readInteger("Type the column of the board you wish to
put the post-it.");
                try {
                    controller.addPostIt(sharedBoard, row, column);
                } catch (InterruptedException e) {
```

```
                throw new RuntimeException(e);
            }

        }else{
            System.out.println("You don't have permission to write on this board.");
        }

//      }

        return false;
    }

    @Override
    public String headline() {
        return "Create a post-it in a board";
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\CreateBoardPostItUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\SharedBoardAction.java

```
package eapli.base.app.backoffice.console.presentation.SharedBoard;

import eapli.framework.actions.Action;


public class SharedBoardAction implements Action {

    @Override
    public boolean execute() {
        return new SharedBoardUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\SharedBoardAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\SharedBoardArchiveAction.java

```
package eapli.base.app.backoffice.console.presentation.SharedBoard;

import eapli.base.SharedBoard.aplication.SharedBoardArchiveController;
import eapli.base.SharedBoard.aplication.SharedBoardController;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;

import javax.swing.*;
import eapli.framework.actions.Action;
import java.awt.event.ActionEvent;
import java.beans.PropertyChangeListener;

public class SharedBoardArchiveAction implements Action{
    @Override
    public boolean execute() {
        return new SharedBoardArchiveUI().show();
    }

}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\SharedBoardArchiveAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\SharedBoardArchiveUI.java

```
package eapli.base.app.backoffice.console.presentation.SharedBoard;

import eapli.base.SharedBoard.aplication.SharedBoardArchiveController;
import eapli.base.SharedBoard.domain.SharedBoard;
import eapli.base.SharedBoard.domain.Shared_Board_Title;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
```

```
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.UserSession;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;
import eapli.framework.presentation.console.SelectWidget;

public class SharedBoardArchiveUI extends AbstractUI {

    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    final UserSession s = authz.session().orElseThrow(IllegalStateException::new);
    final SystemUser myUser = s.authenticatedUser();


    private final SharedBoardArchiveController controller = new
SharedBoardArchiveController(authz,
PersistenceContext.repositories().sharedBoardRepository(),
PersistenceContext.repositories().systemUserRepository());

    @Override
    public String headline() {
        return "Archive a board";
    }

    @Override
    protected boolean doShow() {
        Iterable<SharedBoard> sharedBoards =
controller.findSharedBoardsByOwner(myUser);
        final SelectWidget<SharedBoard> selector = new SelectWidget<>("Shared
Boards:", sharedBoards, new SharedBoardPrinter());
        selector.show();
        final SharedBoard sharedBoard = selector.selectedElement();
        if(sharedBoard!=null){
            Shared_Board_Title title = Shared_Board_Title.valueOf(Console.readLine("Enter
the title of the board you want to archive: "));
            try {
                controller.archiveBoard(title, myUser.identity());
                System.out.println("Board with title " + title + " has been archived.");
            } catch (IllegalStateException e) {
                System.out.println("Failed to archive board: " + e.getMessage());
            }
        }else{
            System.out.println("No shared board selected. Please select a board to
archive.");
```

```
        }

        return false;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\SharedBoardArchiveUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\SharedBoardListAction.java

```
package eapli.base.app.backoffice.console.presentation.SharedBoard;


import eapli.framework.actions.Action;


public class SharedBoardListAction implements Action {
    @Override
    public boolean execute() {
        return new SharedBoardListUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\SharedBoardListAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\SharedBoardListUI.java

```
    package eapli.base.app.backoffice.console.presentation.SharedBoard;

    import eapli.base.SharedBoard.domain.SharedBoard;
    import eapli.base.infrastructure.persistence.PersistenceContext;
    import eapli.base.SharedBoard.aplication.SharedBoardController;

    import eapli.base.systemUserManagement.SystemUserRepository;
    import eapli.framework.infrastructure.authz.application.AuthorizationService;
    import eapli.framework.infrastructure.authz.application.AuthzRegistry;
```

```
import eapli.framework.infrastructure.authz.application.UserSession;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.presentation.console.AbstractUI;

public class SharedBoardListUI extends AbstractUI {

    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    final UserSession s = authz.session().orElseThrow(IllegalStateException::new);
    final SystemUser myUser = s.authenticatedUser();

    private final SharedBoardController controller = new
SharedBoardController(PersistenceContext.repositories().sharedBoardRepository(),
PersistenceContext.repositories().systemUserRepository());


    @Override
    protected boolean doShow() {
        final Iterable<SharedBoard> sharedBoards =
this.controller.findSharedBoardsByOwner(myUser);
        for(SharedBoard sb : sharedBoards){
            System.out.println("Shared Board title: " + sb.getTitle());
        }
        return false;
    }

    @Override
    public String headline() {
        return "List shared boards";
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\SharedBoardListUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\SharedBoardPrinter.java

```
package eapli.base.app.backoffice.console.presentation.SharedBoard;

import eapli.base.SharedBoard.domain.SharedBoard;
import eapli.framework.visitor.Visitor;
```

```
public class SharedBoardPrinter implements Visitor<SharedBoard> {

    @Override
    public void visit(SharedBoard visitee) {
        System.out.printf(visitee.getTitle().getTitle());
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\SharedBoardPrinter.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\SharedBoardUI.java

```
package eapli.base.app.backoffice.console.presentation.SharedBoard;

import eapli.base.SharedBoard.aplication.SharedBoardController;
import eapli.base.SharedBoard.aplication.SharedBoardService;
import eapli.base.SharedBoard.domain.SharedBoard;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.UserSession;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.presentation.console.AbstractUI;
import eapli.framework.io.util.Console;

public class SharedBoardUI extends AbstractUI {
    private final AuthorizationService authz = AuthzRegistry.authorizationService();

    final UserSession s = authz.session().orElseThrow(IllegalStateException::new);
    final SystemUser myUser = s.authenticatedUser();

    private final SharedBoardController controller = new
SharedBoardController(PersistenceContext.repositories().sharedBoardRepository(),
PersistenceContext.repositories().systemUserRepository());

    @Override
    public String headline() {
        return "Share a board";
    }
```

```
    @Override
    protected boolean doShow() {

        String ownerUsername = myUser.username().toString();
        String sharedBoardTitle = Console.readNonEmptyLine("Enter the title of the shared
board", "Shared board title cannot be empty");
        int numberOfRows = Console.readInteger("Enter the number of rows of the board");
        int numberOfColumns = Console.readInteger("Enter the number of columns for the
board");
        String userToShareUsername = Console.readNonEmptyLine("Enter the username
of the user you want to share the board with: ", "Username cannot be empty");
        String accessType = Console.readNonEmptyLine("Enter the access type for the
user (READ/WRITE): ", "Access type cannot be empty");
        try {
            controller.createSharedBoard(myUser, sharedBoardTitle, numberOfRows,
numberOfColumns);
            controller.shareBoard(ownerUsername, userToShareUsername,
SharedBoard.AccessType.valueOf(accessType.toUpperCase()));
            System.out.println("Shared board with user: " + userToShareUsername + " with "
+ accessType + " access.");
        } catch (IllegalStateException e) {
            System.out.println("Failed to share board: " + e.getMessage());
        } catch (InterruptedException e) {
            throw new RuntimeException(e);
        }

        return false;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\SharedBoardUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\UndoPostItAction.java

```
package eapli.base.app.backoffice.console.presentation.SharedBoard;

import eapli.framework.actions.Action;

public class UndoPostItAction implements Action {
```

```
    @Override
    public boolean execute() {
        return new UndoPostItUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\UndoPostItAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\UndoPostItUI.java

```
package eapli.base.app.backoffice.console.presentation.SharedBoard;

import eapli.base.SharedBoard.aplication.CreateBoardPostItController;
import eapli.base.SharedBoard.domain.SharedBoard;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.UserSession;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;
import eapli.framework.presentation.console.SelectWidget;

public class UndoPostItUI extends AbstractUI {

    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    final UserSession s = authz.session().orElseThrow(IllegalStateException::new);
    final SystemUser myUser = s.authenticatedUser();

    private final CreateBoardPostItController controller = new
CreateBoardPostItController(
            PersistenceContext.repositories().sharedBoardRepository());
    @Override
    protected boolean doShow() {
        Iterable<SharedBoard> sharedBoards =
controller.findBoardsBySystemUser(myUser);
        final SelectWidget<SharedBoard> selector = new SelectWidget<>("Shared
Boards:", sharedBoards, new SharedBoardPrinter());
        selector.show();
        final SharedBoard sharedBoard = selector.selectedElement();
        if(sharedBoard!=null){
```

```
            if(controller.getBoardAccessType(sharedBoard, myUser)) {

                try {
                    controller.undoPostIt();
                } catch (Exception e) {
                    e.printStackTrace();
                }
            }

            else{
                System.out.println("You don't have permission to undo a post it in this board.");
            }

        }

        return false;
    }

    @Override
    public String headline() {
        return "Undo Post it";
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\UndoPostItUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\UpdateBoardPostItAction.java

```
package eapli.base.app.backoffice.console.presentation.SharedBoard;

import eapli.framework.actions.Action;

public class UpdateBoardPostItAction implements Action {

    @Override
    public boolean execute() {
        return new UpdateBoardPostItUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\UpdateBoardPostItAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\UpdateBoardPostItUI.java

```
package eapli.base.app.backoffice.console.presentation.SharedBoard;

import eapli.base.SharedBoard.aplication.CreateBoardPostItController;
import eapli.base.SharedBoard.aplication.UpdateBoardPostItController;
import eapli.base.SharedBoard.domain.*;
import eapli.base.SharedBoard.repository.SharedBoardRepository;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.UserSession;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;
import eapli.framework.presentation.console.SelectWidget;

public class UpdateBoardPostItUI extends AbstractUI {

    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    final UserSession s = authz.session().orElseThrow(IllegalStateException::new);
    final SystemUser myUser = s.authenticatedUser();

    private final UpdateBoardPostItController controller = new
UpdateBoardPostItController(
            PersistenceContext.repositories().sharedBoardRepository());

    private final SharedBoardRepository sharedBoardRepository =
PersistenceContext.repositories().sharedBoardRepository();

    @Override
    protected boolean doShow() {
//        Iterable<SharedBoard> sharedBoards =
controller.findBoardsBySystemUser(myUser);
//        final SelectWidget<SharedBoard> selector = new SelectWidget<>("Shared
Boards:", sharedBoards, new SharedBoardPrinter());
//        selector.show();
//        final SharedBoard sharedBoard = selector.selectedElement();
        SharedBoard sharedBoard = new SharedBoard(myUser, new
```

```
Shared_Board_Title("Shared Board 1"), new NumberofRows(10), new
NumberofColumns(10));

sharedBoard.shareBoard(myUser,myUser,SharedBoard.AccessType.valueOf("WRITE"))
;
        sharedBoard = sharedBoardRepository.save(sharedBoard);
        sharedBoard.getBoard().insertCell(1,1,new PostIt("test",myUser));

        if(sharedBoard!=null){
            if(controller.getBoardAccessType(sharedBoard, myUser)){
                System.out.println("Type \"0\" to update a created post-it or \"1\" to move a
created post-it to a new position.");
                int option=Console.readOption(0,1,0);
                if(option==0){
                    int row = Console.readInteger("Type the row of the board where the post-it
you wish to update is present.");
                    int column = Console.readInteger("Type the column of the board where the
post-it you wish to update is present.");
                    String content = Console.readLine("Type the content of the post-it you wish
to update.");
                    controller.createPostIt(content, myUser);
                    try {
                        controller.updatePostIt(sharedBoard, row, column);
                    } catch (InterruptedException e) {
                        throw new RuntimeException(e);
                    }
                }else{
                    int row = Console.readInteger("Type the current row of the board where the
post-it is present.");
                    int column = Console.readInteger("Type the current column of the board
where the post-it is present.");
                    int newRow = Console.readInteger("Type the new row of the board you
wish to move the post-it.");
                    int newColumn = Console.readInteger("Type the new column of the board
you wish to move the post-it.");
                    try {
                        controller.movePostIt(sharedBoard, row, column, newRow, newColumn,
myUser);
                    } catch (InterruptedException e) {
                        throw new RuntimeException(e);
                    }
                }

            }else{
```

```
                System.out.println("You don't have permission to write on this board.");
            }

        }

        return false;
    }

    @Override
    public String headline() {
        return "Update a post-it in a board";
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\SharedBoard\UpdateBoardPostItUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\authz\AddUserAction.java

```
/*
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TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
 */
package eapli.base.app.backoffice.console.presentation.authz;

import eapli.framework.actions.Action;

/**
 * Menu action for adding a new user to the application. Created by nuno on
 * 22/03/16.
 */
public class AddUserAction implements Action {

    @Override
    public boolean execute() {
        return new AddUserUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\authz\AddUserAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\authz\AddUserUI.java

```
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```

```
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OR OTHER
 * LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.app.backoffice.console.presentation.authz;

import java.util.HashSet;
import java.util.Set;

import eapli.base.usermanagement.application.AddUserController;
import eapli.framework.actions.Actions;
import eapli.framework.actions.menu.Menu;
import eapli.framework.actions.menu.MenuItem;
import eapli.framework.domain.repositories.ConcurrencyException;
import eapli.framework.domain.repositories.IntegrityViolationException;
import eapli.framework.infrastructure.authz.domain.model.Role;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;
import eapli.framework.presentation.console.menu.MenuItemRenderer;
import eapli.framework.presentation.console.menu.MenuRenderer;
import eapli.framework.presentation.console.menu.VerticalMenuRenderer;

/**
 * UI for adding a user to the application.
 * Created by nuno on 22/03/16.
 */
public class AddUserUI extends AbstractUI {

    private final AddUserController theController = new AddUserController();

    @Override
    protected boolean doShow() {
        // FIXME avoid duplication with SignUpUI. reuse UserDataWidget from
```

```
        // UtenteApp
        final String username = Console.readLine("Username");
        final String password = Console.readLine("Password");
        final String firstName = Console.readLine("First Name");
        final String lastName = Console.readLine("Last Name");
        final String email = Console.readLine("E-Mail");

        final Set<Role> roleTypes = new HashSet<>();
        boolean show;
        do {
            show = showRoles(roleTypes);
        } while (!show);

        try {
            this.theController.addUser(username, password, firstName, lastName, email,
roleTypes);
        } catch (final IntegrityViolationException | ConcurrencyException e) {
            System.out.println("That username is already in use.");
        }

        return false;
    }

    private boolean showRoles(final Set<Role> roleTypes) {
        // TODO we could also use the "widget" classes from the framework...
        final Menu rolesMenu = buildRolesMenu(roleTypes);
        final MenuRenderer renderer = new VerticalMenuRenderer(rolesMenu,
MenuItemRenderer.DEFAULT);
        return renderer.render();
    }

    private Menu buildRolesMenu(final Set<Role> roleTypes) {
        final Menu rolesMenu = new Menu();
        int counter = 0;
        rolesMenu.addItem(MenuItem.of(counter++, "USER / NO ROLE",
Actions.SUCCESS));
        for (final Role roleType : theController.getRoleTypes()) {
            rolesMenu.addItem(MenuItem.of(counter++, roleType.toString(), () ->
roleTypes.add(roleType)));
        }
        return rolesMenu;
    }

    @Override
```

```
    public String headline() {
        return "Add User";
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\authz\AddUserUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\authz\DeactivateUserAction.java

```
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 *
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 *
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 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
 */
package eapli.base.app.backoffice.console.presentation.authz;

import eapli.framework.actions.Action;
```

```
/**
 *
 * @author Fernando
 */
public class DeactivateUserAction implements Action {

    @Override
    public boolean execute() {
        return new DeactivateUserUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\authz\DeactivateUserAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\authz\DeactivateUserUI.java

```
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 */
package eapli.base.app.backoffice.console.presentation.authz;

import java.util.ArrayList;
import java.util.List;

import org.slf4j.Logger;
import org.slf4j.LoggerFactory;

import eapli.base.usermanagement.application.DeactivateUserController;
import eapli.framework.domain.repositories.ConcurrencyException;
import eapli.framework.domain.repositories.IntegrityViolationException;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;

/**
 *
 * @author Fernando
 */
@SuppressWarnings("squid:S106")
public class DeactivateUserUI extends AbstractUI {
    private static final Logger LOGGER =
LoggerFactory.getLogger(DeactivateUserUI.class);

    private final DeactivateUserController theController = new DeactivateUserController();

    @Override
    protected boolean doShow() {
        final List<SystemUser> list = new ArrayList<>();
        final Iterable<SystemUser> iterable = this.theController.activeUsers();
        if (!iterable.iterator().hasNext()) {
            System.out.println("There is no registered User");
        } else {
            int cont = 1;
            System.out.println("SELECT User to deactivate\n");
            // FIXME use select widget, see, ChangeDishTypeUI
            System.out.printf("%-6s%-10s%-30s%-30s%n", "Nº:", "Username", "Firstname",
"Lastname");
            for (final SystemUser user : iterable) {
```

```
            list.add(user);
            System.out.printf("%-6d%-10s%-30s%-30s%n", cont, user.username(),
user.name().firstName(),
                    user.name().lastName());
            cont++;
        }
        final int option = Console.readInteger("Enter user nº to deactivate or 0 to finish ");
        if (option == 0) {
            System.out.println("No user selected");
        } else {
            try {
                this.theController.deactivateUser(list.get(option - 1));
            } catch (IntegrityViolationException | ConcurrencyException ex) {
                LOGGER.error("Error performing the operation", ex);
                System.out.println("Unfortunatelly there was an unexpected error in the
application. Please try again and if the problem persists, contact your system
admnistrator.");
            }
        }
    }
    return true;
  }

  @Override
  public String headline() {
    return "Deactivate User";
  }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\authz\DeactivateUserUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\authz\ListUsersAction.java

```
/*
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 */
package eapli.base.app.backoffice.console.presentation.authz;

import eapli.framework.actions.Action;

/**
 *
 * @author losa
 */
public class ListUsersAction implements Action {

    @Override
    public boolean execute() {
        return new ListUsersUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\authz\ListUsersAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\authz\ListUsersUI.java

```
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 */
package eapli.base.app.backoffice.console.presentation.authz;

import eapli.base.usermanagement.application.ListUsersController;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.presentation.console.AbstractListUI;
import eapli.framework.visitor.Visitor;

/**
```

```
 *
 * @author losa
 */
@SuppressWarnings({ "squid:S106" })
public class ListUsersUI extends AbstractListUI<SystemUser> {
    private ListUsersController theController = new ListUsersController();

    @Override
    public String headline() {
        return "List Users";
    }

    @Override
    protected String emptyMessage() {
        return "No data.";
    }

    @Override
    protected Iterable<SystemUser> elements() {
        return theController.allUsers();
    }

    @Override
    protected Visitor<SystemUser> elementPrinter() {
        return new SystemUserPrinter();
    }

    @Override
    protected String elementName() {
        return "User";
    }

    @Override
    protected String listHeader() {
        return String.format("#  %-10s%-30s%-30s", "USERNAME", "F. NAME", "L.
NAME");
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\authz\ListUsersUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\authz\SystemUserPrinter.java

```
/*
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 */
package eapli.base.app.backoffice.console.presentation.authz;

import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.visitor.Visitor;

/**
 *
 * @author Paulo Gandra de Sousa
 *
```

```
 */
@SuppressWarnings({ "squid:S106" })
public class SystemUserPrinter implements Visitor<SystemUser> {

    @Override
    public void visit(final SystemUser visitee) {
        System.out.printf("%-10s%-30s%-30s", visitee.username(),
visitee.name().firstName(), visitee.name().lastName());
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\authz\SystemUserPrinter.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\clientuser\AcceptRefuseSignupRequestAction.java

```
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 */
package eapli.base.app.backoffice.console.presentation.clientuser;

import eapli.framework.actions.Action;

/**
 * Created by AJS on 08/04/2016.
 */
public class AcceptRefuseSignupRequestAction implements Action {

    @Override
    public boolean execute() {
        return new AcceptRefuseSignupRequestUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\clientuser\AcceptRefuseSignupRequestAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\clientuser\AcceptRefuseSignupRequestUI.java

```
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 */
package eapli.base.app.backoffice.console.presentation.clientuser;

import org.slf4j.Logger;
import org.slf4j.LoggerFactory;

import eapli.base.clientusermanagement.application.AcceptRefuseSignupFactory;
import
eapli.base.clientusermanagement.application.AcceptRefuseSignupRequestController;
import eapli.base.clientusermanagement.domain.SignupRequest;
import eapli.framework.domain.repositories.ConcurrencyException;
import eapli.framework.domain.repositories.IntegrityViolationException;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;
import eapli.framework.presentation.console.SelectWidget;

/**
 *
 * Created by AJS on 08/04/2016.
 */
@SuppressWarnings("squid:S106")
public class AcceptRefuseSignupRequestUI extends AbstractUI {
   private static final Logger LOGGER =
LoggerFactory.getLogger(AcceptRefuseSignupRequestUI.class);

   private final AcceptRefuseSignupRequestController theController =
AcceptRefuseSignupFactory
         .build();

   @Override
   protected boolean doShow() {
      final SelectWidget<SignupRequest> selector = new SelectWidget<>("Pending
signups", this.theController.listPendingSignupRequests(), new SignupRequestPrinter());
      selector.show();
      final SignupRequest theSignupRequest = selector.selectedElement();
```

```
        if (theSignupRequest != null) {
            System.out.println("1. Accept Signup Request");
            System.out.println("2. Refuse Signup Request");
            System.out.println("0. Exit");

            final int option = Console.readOption(1, 2, 0);
            try {
                switch (option) {
                case 1:
                    this.theController.acceptSignupRequest(theSignupRequest);
                    break;
                case 2:
                    this.theController.refuseSignupRequest(theSignupRequest);
                    break;
                default:
                    System.out.println("No valid option selected");
                    break;
                }
            } catch (IntegrityViolationException | ConcurrencyException ex) {
                LOGGER.error("Error performing the operation", ex);
                System.out.println("Unfortunatelly there was an unexpected error in the
application. Please try again and if the problem persists, contact your system
admnistrator.");
            }
        }
        return false;
    }

    @Override
    public String headline() {
        return "Accept of Refuse Signup Requests";
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\clientuser\AcceptRefuseSignupRequestUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\clientuser\SignupRequestPrinter.java

```
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```

```
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DEALINGS IN THE SOFTWARE.
 */
package eapli.base.app.backoffice.console.presentation.clientuser;

import eapli.base.clientusermanagement.domain.SignupRequest;
import eapli.framework.visitor.Visitor;

/**
 * Created by AJS on 08/04/2016.
 *
 */
@SuppressWarnings("squid:S106")
class SignupRequestPrinter implements Visitor<SignupRequest> {

    @Override
    public void visit(final SignupRequest visitee) {
        System.out.printf("%-10s%-20s%-10s%n", visitee.identity(), visitee.name(),
                visitee.mecanographicNumber());
    }
```

```
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\clientuser\SignupRequestPrinter.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\course\CoursePrinter.java

```
package eapli.base.app.backoffice.console.presentation.course;

import eapli.base.Course.Domain.Course;
import eapli.framework.visitor.Visitor;

public class CoursePrinter implements Visitor<Course> {

    @Override
    public void visit(final Course visitee) {
        System.out.printf("%-10s%-30s%-4s", visitee.identity(),
visitee.getSmallTextualDescription(), visitee.getTeacherInCharge().toString());
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\course\CoursePrinter.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\course\CreateCourseAction.java

```
package eapli.base.app.backoffice.console.presentation.course;

import eapli.framework.actions.Action;

public class CreateCourseAction implements Action {

    @Override
    public boolean execute() {
        return new CreateCourseUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\course\CreateCourseAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\course\CreateCourseUI.java

```
package eapli.base.app.backoffice.console.presentation.course;

import eapli.base.Course.Application.CreateCourseController;
import eapli.base.Course.Domain.Course;
import eapli.base.Student_Teacher.Teacher.Domain.Teacher;
import eapli.base.exammanagement.domain.Exam;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.framework.domain.repositories.IntegrityViolationException;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;
import eapli.framework.presentation.console.SelectWidget;

public class CreateCourseUI extends AbstractUI {

    // Necessário completar esta US, ainda está incompleta, seguir um padrão
semelhante ao das outras US
    //falta validar os cursos. Verificar se já nao existem
    private final CreateCourseController createCourseController = new
CreateCourseController(PersistenceContext.repositories().courseRepository(),
PersistenceContext.repositories().teacherRepository());
    Course course = new Course();
    @Override
    protected boolean doShow() {
        String name = Console.readLine("Name of the Course:");
        int minNumOfStud = Console.readInteger("Minimum number of students:");
        int maxNumOfStud = Console.readInteger("Maximum number of students:");
        String description = Console.readLine("Course Description:");
        final Iterable<Teacher> teachers = this.createCourseController.listTeachers();
        final SelectWidget<Teacher> selector = new SelectWidget<>("Teachers:",
teachers, new TeacherPrinter());
        selector.show();
        final Teacher teacher = selector.selectedElement();
        if (teacher != null) {
            try {

createCourseController.createCourse(name,minNumOfStud,maxNumOfStud,description
, teacher);
```

```
            } catch (final IntegrityViolationException e) {
                System.out.println("Invalid Course");
            }
        }
        return false;
    }

    @Override
    public String headline() {
        return "Create Course";
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\course\CreateCourseUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\course\OpenCloseCourseAction.java

```
package eapli.base.app.backoffice.console.presentation.course;

import javax.swing.*;
import eapli.framework.actions.Action;

public class OpenCloseCourseAction implements Action {

    @Override
    public boolean execute() {
        return new OpenCloseCourseUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\course\OpenCloseCourseAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\course\OpenCloseCourseUI.java

```
package eapli.base.app.backoffice.console.presentation.course;

import eapli.base.Course.Application.OpenCloseCourseController;
```

```
import eapli.base.Course.Application.OpenCloseEnrollementsController;
import eapli.base.Course.Domain.Course_ID;
import eapli.base.Course.Domain.Course_Name;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.UserSession;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;

import java.sql.SQLOutput;
import java.util.Scanner;

public class OpenCloseCourseUI extends AbstractUI {

    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    final UserSession s = authz.session().orElseThrow(IllegalStateException::new);
    final SystemUser myUser = s.authenticatedUser();

    private final OpenCloseCourseController controller = new
OpenCloseCourseController(
            AuthzRegistry.authorizationService(),
PersistenceContext.repositories().courseRepository());


    @Override
    protected boolean doShow() {
        Scanner scanner = new Scanner(System.in);

        String courseName = Console.readLine("Digite o nome do curso que deseja abrir
ou fechar:");
        Course_Name courseName1 = new Course_Name(courseName);

        System.out.println("Digite 'abrir' para abrir ou 'fechar' para fechar o curso");
        String option = scanner.next();

        if (option.equalsIgnoreCase("abrir")) {
            controller.openCourse(courseName1);
            System.out.println("O curso " + courseName + " foi aberto com sucesso.");
        } else if (option.equalsIgnoreCase("fechar")) {
            controller.closeCourse(courseName1);
            System.out.println("O curso " + courseName + " foi fechado com sucesso.");
        } else {
```

```
            System.out.println("Opção inválida.");
        }
        return false;
    }

    @Override
    public String headline() {
        return "Open/Close Course";
    }

}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\course\OpenCloseCourseUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\course\OpenCloseEnrollementsAction.java

```
package eapli.base.app.backoffice.console.presentation.course;

import eapli.base.app.backoffice.console.presentation.exam.ListCourseExamsUI;
import eapli.framework.actions.Action;
import javax.swing.*;

public class OpenCloseEnrollementsAction implements Action {
    @Override
    public boolean execute() {
        return new OpenCloseEnrollementsUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\course\OpenCloseEnrollementsAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\course\OpenCloseEnrollementsUI.java

```
package eapli.base.app.backoffice.console.presentation.course;

import eapli.base.Course.Application.CreateCourseController;
import eapli.base.Course.Application.OpenCloseEnrollementsController;
```

```
import eapli.base.Course.Domain.Course;
import eapli.base.Course.Domain.Course_ID;
import eapli.base.Course.Domain.Course_Name;
import eapli.base.Student_Teacher.Student.domain.Student;
import eapli.base.exammanagement.application.ListFutureExamsController;
import eapli.base.exammanagement.domain.Exam;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.UserSession;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;

import java.util.Scanner;

public class OpenCloseEnrollementsUI extends AbstractUI {

    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    final UserSession s = authz.session().orElseThrow(IllegalStateException::new);
    final SystemUser myUser = s.authenticatedUser();

    private final OpenCloseEnrollementsController controller = new
OpenCloseEnrollementsController(
            AuthzRegistry.authorizationService(),
PersistenceContext.repositories().courseRepository());


    @Override
    protected boolean doShow() {
        Scanner scanner = new Scanner(System.in);

        String courseName = Console.readLine("Digite o nome do curso para abrir ou
fechar as inscrições: ");
        Course_Name courseName1 = new Course_Name(courseName);

        System.out.print("Digite 'abrir' para abrir as inscrições ou 'fechar' para fechá-las: ");
        String option = scanner.next();

        if (option.equalsIgnoreCase("abrir")) {
            controller.openEnrollments(courseName1);
            System.out.println("As inscrições para o curso " + courseName + " foram abertas
com sucesso.");
        } else if (option.equalsIgnoreCase("fechar")) {
```

```
            controller.closeEnrollments(courseName1);
            System.out.println("As inscrições para o curso " + courseName + " foram
fechadas com sucesso.");
        } else {
            System.out.println("Opção inválida.");
        }

        return false;
    }

    @Override
    public String headline() {
        return "Open/Close enrollements";
    }

}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\course\OpenCloseEnrollementsUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\course\TeacherPrinter.java

```
package eapli.base.app.backoffice.console.presentation.course;

import eapli.base.Student_Teacher.Teacher.Domain.Teacher;
import eapli.framework.visitor.Visitor;

public class TeacherPrinter implements Visitor<Teacher> {

    @Override
    public void visit(Teacher visitee) {
        System.out.printf("Teacher acronym: %s, Date of birth: %s, Tax payer number:
%s\n",
                visitee.getAcronym(), visitee.getDate_of_Birth().getDateOfBirth(),
visitee.getTax_payer_number().getNumber());
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\course\TeacherPrinter.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\enrollment\ApproveEnrollmentAction.java

```
package eapli.base.app.backoffice.console.presentation.enrollment;

import eapli.base.app.backoffice.console.presentation.exam.ListCourseExamsUI;
import eapli.framework.actions.Action;

public class ApproveEnrollmentAction implements Action {
    @Override
    public boolean execute() {
        return new ApproveEnrollmentUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\enrollment\ApproveEnrollmentAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\enrollment\ApproveEnrollmentUI.java

```
package eapli.base.app.backoffice.console.presentation.enrollment;

import eapli.base.Enrollment.Application.ApproveEnrollmentController;
import eapli.base.Enrollment.Application.ListEnrollmentsController;
import eapli.base.Enrollment.Domain.Enrollment;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;
import eapli.framework.presentation.console.SelectWidget;



public class ApproveEnrollmentUI extends AbstractUI {

    private final ListEnrollmentsController listEnrollmentsController = new
ListEnrollmentsController(PersistenceContext.repositories().enrollmentRepository());
```

```
    private final ApproveEnrollmentController controller = new
ApproveEnrollmentController(PersistenceContext.repositories().enrollmentRepository());


    @Override
    protected boolean doShow() {

        final Iterable<Enrollment> enrollments =
this.listEnrollmentsController.listEnrollments();
        final SelectWidget<Enrollment> selector = new SelectWidget<>("Enrollments:",
enrollments, new EnrollmentPrinter());
        selector.show();
        final Enrollment chosenEnrollment = selector.selectedElement();
        int isToBeAccepted = Console.readInteger("Do you want to accept this
enrollment?(1-Accept/0-Reject)");
        controller.approveEnrollment(chosenEnrollment,isToBeAccepted);
        return false;
    }

    @Override
    public String headline() {
        return "--Approve Enrollment UI--";
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\enrollment\ApproveEnrollmentUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\enrollment\BulkEnrollmentUI.java

```
package eapli.base.app.backoffice.console.presentation.enrollment;

import eapli.base.Enrollment.Application.BulkEnrollmentController;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;

public class BulkEnrollmentUI extends AbstractUI {
    private final BulkEnrollmentController bulkEnrollmentController = new
BulkEnrollmentController(PersistenceContext.repositories().enrollmentRepository());
```

```
    @Override
    protected boolean doShow() {
        String csvPath = Console.readLine("Please, indicate the CSV file path which you
pretend to bulk Enroll:");
        bulkEnrollmentController.bulkEnrollment(csvPath);
        return false;
    }

    @Override
    public String headline() {
        return "--Bulk Enrollment UI--";
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\enrollment\BulkEnrollmentUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\enrollment\EnrollmentPrinter.java

```
package eapli.base.app.backoffice.console.presentation.enrollment;

import eapli.base.Enrollment.Domain.Enrollment;
import eapli.framework.visitor.Visitor;

public class EnrollmentPrinter implements Visitor<Enrollment> {

        @Override
        public void visit(final Enrollment visitee) {
            System.out.printf("%-10s%-30s%-4s",
visitee.identity(),visitee.getStudent().toString(),
visitee.getCourse().toString(),visitee.getDescription());
        }
    }
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\enrollment\EnrollmentPrinter.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\enrollment\RequestEnrollmentAction.java

```
package eapli.base.app.backoffice.console.presentation.enrollment;

import eapli.framework.actions.Action;

public class RequestEnrollmentAction implements Action {
    @Override
    public boolean execute() {
        return new RequestEnrollmentUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\enrollment\RequestEnrollmentAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\enrollment\RequestEnrollmentUI.java

```
package eapli.base.app.backoffice.console.presentation.enrollment;

import eapli.base.Course.Application.ListCoursesController;
import eapli.base.Course.Domain.Course;
import eapli.base.Enrollment.Application.RequestEnrollmentController;
import eapli.base.Student_Teacher.Student.domain.Student;
import eapli.base.app.backoffice.console.presentation.course.CoursePrinter;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.UserSession;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;
import eapli.framework.presentation.console.SelectWidget;

public class RequestEnrollmentUI extends AbstractUI {
    private final AuthorizationService authz = AuthzRegistry.authorizationService();
```

```
    private RequestEnrollmentController controller = new
RequestEnrollmentController(PersistenceContext.repositories().enrollmentRepository(),
PersistenceContext.repositories().studentRepository());
    final UserSession s = authz.session().orElseThrow(IllegalStateException::new);
    final SystemUser myUser = s.authenticatedUser();
    private final ListCoursesController listCoursesController = new
ListCoursesController(PersistenceContext.repositories().courseRepository());


    @Override
    protected boolean doShow() {
        Student student = controller.findStudentBySystemUser(myUser);

        final Iterable<Course> courses = this.listCoursesController.listCourses();
        final SelectWidget<Course> selector = new SelectWidget<>("Courses:", courses,
new CoursePrinter());
        selector.show();
        final Course choosenCourse = selector.selectedElement();

        String description = Console.readLine("What is the Enrollment description:");
        controller.requestEnrollment(student, choosenCourse, description);
        return false;
    }

    @Override
    public String headline() {
        return "--Request Enrollment UI--";
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\enrollment\RequestEnrollmentUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\exam\CreateExamAction.java

```
package eapli.base.app.backoffice.console.presentation.exam;

import eapli.framework.actions.Action;

public class CreateExamAction implements Action {
```

```
    @Override
    public boolean execute() {
        return new CreateExamUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\exam\CreateExamAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\exam\CreateExamUI.java

```
package eapli.base.app.backoffice.console.presentation.exam;

import eapli.base.exammanagement.application.CreateExamController;
import eapli.base.exammanagement.domain.Exam;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;
import org.springframework.expression.ParseException;

import java.sql.Time;
import java.text.DateFormat;
import java.text.SimpleDateFormat;
import java.util.Date;

public class CreateExamUI extends AbstractUI {

    private final CreateExamController controller = new CreateExamController();

    @Override
    protected boolean doShow() {
        final String examTitle = Console.readLine("Exam Title");
        final Date examDate = Console.readDate("Exam Date (YYYY/MM/DD)",
"YYYY/MM/dd");
        final Time openTime = readTime("Open Time (HH:mm)");
        final Time closeTime = readTime("Close Time (HH:mm)");

        System.out.println("\n\nSYSTEM: It seems that the create a Course system is not
fully implemented, we will skip this part, it will introduced as 'null', sorry.\n\n");

        Exam newExam = controller.createExam(examTitle,
java.sql.Date.valueOf(String.valueOf(examDate)),
```

```
Time.valueOf(String.valueOf(openTime)), Time.valueOf(String.valueOf(closeTime)),
null);
        if (newExam != null) {
            System.out.println("Exam created successfully:");
            System.out.println(newExam);
        } else {
            System.out.println("Failed to create exam.");
        }

        return false;
    }

    private static Time readTime(String message) {
        String format = "HH:mm";
        DateFormat dateFormat = new SimpleDateFormat(format);
        dateFormat.setLenient(false); // Disallow lenient parsing

        while (true) {
            try {
                String input = Console.readLine(message);
                Date parsedDate = dateFormat.parse(input);
                return new Time(parsedDate.getTime());
            } catch (ParseException | java.text.ParseException e) {
                System.out.println("\nInvalid time format. Please enter the time in the format: "
+ format + " (Hours : Minutes)");
                System.out.println("Example: 10:00\n");
            }
        }
    }

    @Override
    public String headline() {
        return "Create Exam";
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\exam\CreateExamUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\exam\ListCourseExamsAction.java

```
package eapli.base.app.backoffice.console.presentation.exam;

import eapli.framework.actions.Action;

public class ListCourseExamsAction implements Action {

    @Override
    public boolean execute() {
        return new ListCourseExamsUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\exam\ListCourseExamsAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\exam\ListCourseExamsUI.java

```
package eapli.base.app.backoffice.console.presentation.exam;

import eapli.base.Course.Domain.Course;
import eapli.base.app.backoffice.console.presentation.course.CoursePrinter;
import eapli.base.exammanagement.application.ListCourseExamsController;
import eapli.base.exammanagement.domain.Exam;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.presentation.console.AbstractUI;
import eapli.framework.presentation.console.SelectWidget;

import java.util.Iterator;

public class ListCourseExamsUI extends AbstractUI {

    private final ListCourseExamsController controller = new ListCourseExamsController(
            AuthzRegistry.authorizationService(),
```

```
PersistenceContext.repositories().examRepository(),
PersistenceContext.repositories().courseRepository());

    @Override
    public String headline() {
        return "List all exams in a course";
    }

    @Override
    protected boolean doShow() {
        final Iterable<Course> courses = this.controller.listCourses();
        final SelectWidget<Course> selector = new SelectWidget<>("Courses:", courses,
new CoursePrinter());
        selector.show();
        final Course course = selector.selectedElement();
        if (course != null) {
            Iterable<Exam> courseExams = controller.listCourseExams(course);
            for(Exam e : courseExams){
                System.out.println("Exam id: " + e.identity() + "; exam course: " +
e.getExamCourse().getCourseName());
            }
        }
        return false;
    }


}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\exam\ListCourseExamsUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\exam\ListFutureExamsAction.java

```
package eapli.base.app.backoffice.console.presentation.exam;

import eapli.framework.actions.Action;

public class ListFutureExamsAction implements Action {

    @Override
    public boolean execute() {
```

```
        return new ListFutureExamsUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\exam\ListFutureExamsAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\exam\ListFutureExamsUI.java

```
package eapli.base.app.backoffice.console.presentation.exam;

import eapli.base.Student_Teacher.Student.domain.Student;
import eapli.base.exammanagement.application.ListFutureExamsController;
import eapli.base.exammanagement.domain.Exam;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.UserSession;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.presentation.console.AbstractUI;

import java.util.Optional;


public class ListFutureExamsUI extends AbstractUI {

    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    final UserSession s = authz.session().orElseThrow(IllegalStateException::new);
    final SystemUser myUser = s.authenticatedUser();

    private final ListFutureExamsController controller = new ListFutureExamsController(
            AuthzRegistry.authorizationService(),
PersistenceContext.repositories().examRepository(),
PersistenceContext.repositories().studentRepository());


    @Override
    protected boolean doShow() {
        Student student = controller.findStudentBySystemUser(myUser);
        Iterable<Exam> futureExams = controller.listFutureExams(student);
        for(Exam e : futureExams){
```

```
            System.out.println("Exam id: " + e.identity() + "; exam course: " +
e.getExamCourse().getCourseName());
        }
        return false;
    }

    @Override
    public String headline() {
        return "List all future exams";
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\exam\ListFutureExamsUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\AcceptRefuseInvitesAction.java

```
package eapli.base.app.backoffice.console.presentation.meeting;

import eapli.framework.actions.Action;

public class AcceptRefuseInvitesAction implements Action {

    @Override
    public boolean execute() {
        return new AcceptRefuseInvitesUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\AcceptRefuseInvitesAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\AcceptRefuseInvitesUI.java

```
package eapli.base.app.backoffice.console.presentation.meeting;

import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.base.meetingmanagement.application.AcceptRefuseInvitesController;
import eapli.base.meetingmanagement.domain.*;
```

```
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.UserSession;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;
import eapli.framework.presentation.console.SelectWidget;

import java.text.ParseException;
import java.text.SimpleDateFormat;
import java.util.Date;

public class AcceptRefuseInvitesUI extends AbstractUI {

    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    final UserSession s = authz.session().orElseThrow(IllegalStateException::new);
    final SystemUser myUser = s.authenticatedUser();

    private final AcceptRefuseInvitesController controller = new
AcceptRefuseInvitesController(
            AuthzRegistry.authorizationService(),
PersistenceContext.repositories().inviteRepository());

    @Override
    protected boolean doShow() {
        int option;
        do {
//            final Iterable<Invite> invites =
this.controller.invitesReceived(myUser.username());
//            final SelectWidget<Invite> selector = new SelectWidget<>("Invites:", invites,
new InvitePrinter());
//            selector.show();
//            final Invite invite = selector.selectedElement();
            SimpleDateFormat simpleDateFormat = new SimpleDateFormat("hh:mm");
            SimpleDateFormat simpleDateFormat2 = new SimpleDateFormat("dd-MM-
yyyy");
            Date time, date;
            try {
                time = simpleDateFormat.parse("10:30");
                date=simpleDateFormat2.parse("25-06-2023");
            } catch (ParseException e) {
                throw new RuntimeException(e);
            }
            Meeting meeting = new Meeting(new MeetingTitle("meeting1"), myUser, new
```

```
MeetingDuration(30), new MeetingDate(date), new MeetingTime(time));
            Invite invite = new Invite(myUser, myUser, meeting);
            System.out.println(invite.toString());
            if (invite != null) {
                System.out.println("Type \"1\" to accept the meeting invite or \"0\" to refuse
it.");
                int option2 = Console.readOption(0, 1, 0);
                if (option2 == 1){
                    controller.acceptInvite(invite, myUser);
                    System.out.println("Meeting invite accepted.");
                }
                if (option2 == 0){
                    controller.refuseInvite(invite);
                    System.out.println("Meeting invite refused");
                }
            }

            System.out.println("Type \"1\" to accept or refuse another meeting or \"0\" to
leave.");
            option = Console.readOption(0, 1, 0);
        } while (option != 0);

        return false;
    }

    @Override
    public String headline() {
        return "Accept/Refuse meeting invites";
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\AcceptRefuseInvitesUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\CancelMeetingAction.java

```
package eapli.base.app.backoffice.console.presentation.meeting;
import eapli.framework.actions.Action;


public class CancelMeetingAction implements Action {
```

```
    @Override
    public boolean execute() {
        return new CancelMeetingUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\CancelMeetingAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\CancelMeetingUI.java

```
package eapli.base.app.backoffice.console.presentation.meeting;

import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.base.meetingmanagement.application.CancelMeetingController;
import eapli.base.meetingmanagement.domain.Meeting;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.UserSession;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;
import eapli.framework.presentation.console.SelectWidget;

public class CancelMeetingUI extends AbstractUI {

    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    final UserSession s = authz.session().orElseThrow(IllegalStateException::new);
    final SystemUser myUser = s.authenticatedUser();

    private final CancelMeetingController cancelMeetingController = new
CancelMeetingController(
            AuthzRegistry.authorizationService(),
PersistenceContext.repositories().meetingRepository());

    @Override
    public String headline() {
        return "Cancel a meeting";
    }

    @Override
```

```
    protected boolean doShow() {
        final Iterable<Meeting> meetings = cancelMeetingController.allMeetings();
        final SelectWidget<Meeting> selector = new SelectWidget<>("Meetings:",
meetings, new MeetingPrinter());
        selector.show();
        final Meeting meeting = selector.selectedElement();
        if (meeting != null) {
            cancelMeetingController.cancelMeeting(meeting.getMeetingTitle());
            System.out.println("Meeting with ID " + meeting.identity() + " has been
cancelled.");
        }
        return false;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\CancelMeetingUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\InvitePrinter.java

```
package eapli.base.app.backoffice.console.presentation.meeting;

import eapli.base.meetingmanagement.domain.Invite;
import eapli.framework.visitor.Visitor;

public class InvitePrinter implements Visitor<Invite> {

    @Override
    public void visit(Invite visitee) {
        System.out.printf(visitee.toString());
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\InvitePrinter.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\ListParticipantAction.java

```
package eapli.base.app.backoffice.console.presentation.meeting;

import eapli.framework.actions.Action;

public class ListParticipantAction implements Action {

    @Override
    public boolean execute() {
        return new ListParticipantUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\ListParticipantAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\ListParticipantUI.java

```
package eapli.base.app.backoffice.console.presentation.meeting;

import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.base.meetingmanagement.application.ListParticipantController;
import eapli.base.meetingmanagement.domain.Invite;
import eapli.base.meetingmanagement.domain.InviteState;
import eapli.base.meetingmanagement.domain.Meeting;
import eapli.base.meetingmanagement.domain.MeetingTitle;
import eapli.base.meetingmanagement.repository.InviteRepository;
import eapli.base.meetingmanagement.repository.MeetingRepository;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.UserSession;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;
```

```
import java.util.AbstractMap;
import java.util.List;

public class ListParticipantUI extends AbstractUI {

    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    final UserSession s = authz.session().orElseThrow(IllegalStateException::new);
    final SystemUser myUser = s.authenticatedUser();
    MeetingRepository meetingRepository =
PersistenceContext.repositories().meetingRepository();
    InviteRepository inviteRepository =
PersistenceContext.repositories().inviteRepository();


    private final ListParticipantController listParticipantController = new
ListParticipantController(meetingRepository, inviteRepository);

    @Override
    public String headline() {
        return "View participants of a meeting";
    }

    @Override
    protected boolean doShow() {

        final String meetingTitle = Console.readLine("Please enter the meeting title:");
        Meeting meeting = listParticipantController.getMeetingById(new
MeetingTitle(meetingTitle));

        if (meeting == null) {
            System.out.println("No meeting found with the given ID.");
            return false;
        }

        Iterable<Invite> participantsStatus =
listParticipantController.findInvitesByMeeting(meeting);

        System.out.println("Participants and their status:");

        while(participantsStatus.iterator().hasNext()){
            Invite invite = participantsStatus.iterator().next();
            System.out.println("User: " + invite.getReceiver().username().toString() + ",
Status: " + invite.getState());
        }
```

```
        return false;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\ListParticipantUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\MeetingPrinter.java

```
package eapli.base.app.backoffice.console.presentation.meeting;

import eapli.base.meetingmanagement.domain.Meeting;
import eapli.framework.visitor.Visitor;

public class MeetingPrinter implements Visitor<Meeting> {

    @Override
    public void visit(Meeting visitee) {
        System.out.printf("Meeting ID: %s, Date: %s, Time: %s, Duration: %s minutes,
Status: %s\n",
                visitee.identity(), visitee.getMeetingDate(), visitee.getMeetingTime(),
visitee.getMeetingDuration(), visitee.getStatus());
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\MeetingPrinter.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\ScheduleMeetingAction.java

```
package eapli.base.app.backoffice.console.presentation.meeting;

import eapli.framework.actions.Action;

public class ScheduleMeetingAction implements Action {

    @Override
    public boolean execute() {
```

```
        return new ScheduleMeetingUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\ScheduleMeetingAction.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\ScheduleMeetingUI.java

```
package eapli.base.app.backoffice.console.presentation.meeting;

import eapli.base.app.backoffice.console.presentation.authz.SystemUserPrinter;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.base.meetingmanagement.application.ScheduleMeetingController;
import eapli.base.meetingmanagement.domain.*;
import eapli.base.usermanagement.application.ListUsersController;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.UserSession;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;
import eapli.framework.presentation.console.SelectWidget;

import java.util.Date;

public class ScheduleMeetingUI extends AbstractUI {

    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    final UserSession s = authz.session().orElseThrow(IllegalStateException::new);
    final SystemUser myUser = s.authenticatedUser();

    private final ListUsersController usersController = new ListUsersController();

    private final ScheduleMeetingController scheduleMeetingController = new
ScheduleMeetingController(
            AuthzRegistry.authorizationService(),
PersistenceContext.repositories().meetingRepository(),
PersistenceContext.repositories().inviteRepository());

    @Override
```

```
    public String headline() {
        return "Schedule a meeting";
    }

    @Override
    protected boolean doShow() {
        final String title = Console.readLine("Type the meeting title.");
        final Date date = Console.readDate("Type the meeting date (dd-MM-yyyy):", "dd-
MM-yyyy");
        final Date time = Console.readDate("Type the meeting time (HH:mm):", "HH:mm");
        final int duration = Console.readInteger("Type the meeting duration in minutes:");
        Meeting meeting = scheduleMeetingController.saveMeeting(new MeetingTitle(title),
myUser, new MeetingDuration(duration), new MeetingDate(date), new
MeetingTime(time));

        final Iterable<SystemUser> systemUsers = this.usersController.allUsers();
        int option;
        do{
            final SelectWidget<SystemUser> selector = new SelectWidget<>("Users:",
systemUsers, new SystemUserPrinter());
            selector.show();
            final SystemUser systemUser = selector.selectedElement();
            if (systemUser != null) {
                scheduleMeetingController.saveInvite(myUser, systemUser, meeting);
                System.out.println("Invite sent to " + systemUser.username());
            }
            option=Console.readInteger("Type \"0\" to exit or any other button to invite
another user.");
        }while(option!=0);


        return false;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\java\eapli\base\app\backoffice\console\presentation\meeting\ScheduleMeetingUI.java

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\resources\application.properties

```
############################################################
##
```

```
## Base
##
############################################################

persistence.repositoryFactory=eapli.base.persistence.impl.jpa.JpaRepositoryFactory
#persistence.repositoryFactory=eapli.base.persistence.impl.inmemory.InMemoryReposit
oryFactory
ui.menu.layout=horizontal
persistence.persistenceUnit=eapli.base
HighCaloriesDishLimit=300
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\resources\application.properties

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\resources\logback.xml

```
<?xml version="1.0" encoding="UTF-8" ?>

<configuration scan="true" scanPeriod="3 seconds">

	<appender name="STDOUT" class="ch.qos.logback.core.ConsoleAppender">
		<encoder class="ch.qos.logback.classic.encoder.PatternLayoutEncoder">
			<pattern>
				%d{HH:mm:ss.SSS} [%thread] %-5level %logger{32} -
%msg%n
			</pattern>
		</encoder>
	</appender>

	<appender name="FILE"
		class="ch.qos.logback.core.rolling.RollingFileAppender">
		<File>logFile.log</File>
		<rollingPolicy
class="ch.qos.logback.core.rolling.TimeBasedRollingPolicy">
			<FileNamePattern>
				logFile.%d{yyyy-MM-dd_HH-mm}.log.zip
			</FileNamePattern>
		</rollingPolicy>
		<encoder class="ch.qos.logback.classic.encoder.PatternLayoutEncoder">
			<Pattern>
				%d{HH:mm:ss,SSS} [%thread] %-5level %logger{32} -
%msg%n
			</Pattern>
		</encoder>
	</appender>
```

```
	<!-- LOG everything at INFO level -->
	<root level="error">
		<appender-ref ref="STDOUT" />
	</root>

	<!-- specific LOG level -->
	<logger name="eapli.framework" level="debug" additivity="false">
		<appender-ref ref="STDOUT" />
	</logger>
	<logger name="eapli.base" level="info" additivity="false">
		<appender-ref ref="STDOUT" />
	</logger>

	<Logger name="org.hibernate" level="WARN">
		<appender-ref ref="STDOUT" />
	</Logger>
	<Logger name="org.hibernate.SQL" level="error">
		<appender-ref ref="STDOUT" />
	</Logger>
	<Logger name="org.hibernate.type" level="error">
		<appender-ref ref="STDOUT" />
	</Logger>
	<Logger name="org.hibernate.util.DTDEntityResolver" level="error">
		<appender-ref ref="STDOUT" />
	</Logger>
</configuration>
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\main\resources\logback.xml

[File Begins] sem4pi-22-23-61-master\base.app.backoffice.console\src\test\java\eapli\base\app\other\console\BaseBackofficeTest.java

```
package eapli.base.app.other.console;

/**
 * Created by Nuno Bettencourt [NMB] on 03/04/16.
 */
public class BaseBackofficeTest {

}
```

[File Ends] sem4pi-22-23-61-master\base.app.backoffice.console\src\test\java\eapli\base\app\other\console\BaseBackofficeTest.java

[File Begins] sem4pi-22-23-61-master\base.app.bootstrap\pom.xml

```
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/xsd/maven-4.0.0.xsd">
    <modelVersion>4.0.0</modelVersion>

    <parent>
        <groupId>eapli</groupId>
        <artifactId>base</artifactId>
        <relativePath>../</relativePath>
        <version>1.4.0-SNAPSHOT</version>
    </parent>


    <artifactId>base.app.bootstrap</artifactId>
    <packaging>jar</packaging>

    <name>base.app.bootstrap</name>

    <url>http://maven.apache.org</url>

    <properties>
        <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
        <project.reporting.outputEncoding>UTF-8</project.reporting.outputEncoding>
    </properties>

    <dependencies>
        <dependency>
            <groupId>eapli</groupId>
            <artifactId>base.core</artifactId>
            <version>${project.parent.version}</version>
        </dependency>
        <dependency>
            <groupId>eapli</groupId>
            <artifactId>base.bootstrappers</artifactId>
            <version>${project.parent.version}</version>
        </dependency>
        <dependency>
            <groupId>eapli</groupId>
```

```
            <artifactId>base.persistence.impl</artifactId>
            <version>${project.parent.version}</version>
            <scope>runtime</scope>
        </dependency>
        <dependency>
            <groupId>eapli</groupId>
            <artifactId>base.app.common.console</artifactId>
            <version>${project.parent.version}</version>
        </dependency>
    </dependencies>
</project>
```

[File Ends] sem4pi-22-23-61-master\base.app.bootstrap\pom.xml

[File Begins] sem4pi-22-23-61-master\base.app.bootstrap\src\main\java\eapli\base\app\bootstrap\BaseBootstrap.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
 * MIT License
 *
 * Permission is hereby granted, free of charge, to any person obtaining a copy of this software and
 * associated documentation files (the "Software"), to deal in the Software without restriction,
 * including without limitation the rights to use, copy, modify, merge, publish, distribute,
 * sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
 *
 * The above copyright notice and this permission notice shall be included in all copies or
 * substantial portions of the Software.
 *
 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT
 * NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
 * NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
 */
```

```
package eapli.base.app.bootstrap;

import eapli.base.app.common.console.BaseApplication;
import
eapli.base.clientusermanagement.application.eventhandlers.NewUserRegisteredFromSi
gnupWatchDog;
import
eapli.base.clientusermanagement.domain.events.NewUserRegisteredFromSignupEvent;
import eapli.base.clientusermanagement.domain.events.SignupAcceptedEvent;
import eapli.base.infrastructure.bootstrapers.BaseBootstrapper;
import eapli.base.infrastructure.bootstrapers.demo.BaseDemoBootstrapper;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.base.infrastructure.smoketests.BaseDemoSmokeTester;
import
eapli.base.usermanagement.application.eventhandlers.SignupAcceptedWatchDog;
import eapli.base.usermanagement.domain.BasePasswordPolicy;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.domain.model.PlainTextEncoder;
import eapli.framework.infrastructure.pubsub.EventDispatcher;
import eapli.framework.util.ArrayPredicates;

/**
 * Base Bootstrapping data app
 *
 */
@SuppressWarnings("squid:S106")
public final class BaseBootstrap extends BaseApplication {
    /**
     * avoid instantiation of this class.
     */
    private BaseBootstrap() {
    }

    private boolean isToBootstrapDemoData;
    private boolean isToRunSampleE2E;

    public static void main(final String[] args) {

        AuthzRegistry.configure(PersistenceContext.repositories().users(), new
BasePasswordPolicy(),
                new PlainTextEncoder());

        new BaseBootstrap().run(args);
    }
```

```
    @Override
    protected void doMain(final String[] args) {
        handleArgs(args);

        System.out.println("\n\n------- MASTER DATA -------");
        new BaseBootstrapper().execute();

        if (isToBootstrapDemoData) {
            System.out.println("\n\n------- DEMO DATA -------");
            new BaseDemoBootstrapper().execute();
        }
        if (isToRunSampleE2E) {
            System.out.println("\n\n------- BASIC SCENARIO -------");
            new BaseDemoSmokeTester().execute();
        }
    }

    private void handleArgs(final String[] args) {
        isToRunSampleE2E = ArrayPredicates.contains(args, "-smoke:basic");
        if (isToRunSampleE2E) {
            isToBootstrapDemoData = true;
        } else {
            isToBootstrapDemoData = ArrayPredicates.contains(args, "-bootstrap:demo");
        }
    }

    @Override
    protected String appTitle() {
        return "Bootstrapping Base data ";
    }

    @Override
    protected String appGoodbye() {
        return "Bootstrap data done.";
    }

    @SuppressWarnings("unchecked")
    @Override
    protected void doSetupEventHandlers(final EventDispatcher dispatcher) {
        dispatcher.subscribe(new NewUserRegisteredFromSignupWatchDog(),
NewUserRegisteredFromSignupEvent.class);
        dispatcher.subscribe(new SignupAcceptedWatchDog(),
SignupAcceptedEvent.class);
```

```
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.bootstrap\src\main\java\eapli\base\app\bootstrap\BaseBootstrap.java

[File Begins] sem4pi-22-23-61-master\base.app.bootstrap\src\main\resources\application.properties

```
############################################################
##
## Base
##
############################################################

persistence.repositoryFactory=eapli.base.persistence.impl.jpa.JpaRepositoryFactory
#persistence.repositoryFactory=eapli.base.persistence.impl.inmemory.InMemoryRepositoryFactory

ui.menu.layout=horizontal

persistence.persistenceUnit=eapli.base

javax.persistence.schema-generation.database.action=drop-and-create

HighCaloriesDishLimit=300
```

[File Ends] sem4pi-22-23-61-master\base.app.bootstrap\src\main\resources\application.properties

[File Begins] sem4pi-22-23-61-master\base.app.bootstrap\src\main\resources\logback.xml

```
<?xml version="1.0" encoding="UTF-8" ?>

<configuration scan="true" scanPeriod="3 seconds">

        <appender name="STDOUT" class="ch.qos.logback.core.ConsoleAppender">
                <encoder class="ch.qos.logback.classic.encoder.PatternLayoutEncoder">
                        <pattern>
                                %d{HH:mm:ss.SSS} [%thread] %-5level %logger{32} - %msg%n
                        </pattern>
                </encoder>
        </appender>
```

```
	<appender name="FILE"
		class="ch.qos.logback.core.rolling.RollingFileAppender">
		<File>logFile.log</File>
		<rollingPolicy
class="ch.qos.logback.core.rolling.TimeBasedRollingPolicy">
			<FileNamePattern>
				logFile.%d{yyyy-MM-dd_HH-mm}.log.zip
			</FileNamePattern>
		</rollingPolicy>
		<encoder class="ch.qos.logback.classic.encoder.PatternLayoutEncoder">
			<Pattern>
				%d{HH:mm:ss,SSS} [%thread] %-5level %logger{32} -
%msg%n
			</Pattern>
		</encoder>
	</appender>

	<!-- LOG everything at INFO level -->
	<root level="error">
		<appender-ref ref="STDOUT" />
	</root>

	<!-- specific LOG level -->
	<logger name="eapli.framework" level="debug" additivity="false">
		<appender-ref ref="STDOUT" />
	</logger>
	<logger name="eapli.base" level="info" additivity="false">
		<appender-ref ref="STDOUT" />
	</logger>

	<Logger name="org.hibernate" level="WARN">
		<appender-ref ref="STDOUT" />
	</Logger>
	<Logger name="org.hibernate.SQL" level="error">
		<appender-ref ref="STDOUT" />
	</Logger>
	<Logger name="org.hibernate.type" level="error">
		<appender-ref ref="STDOUT" />
	</Logger>
	<Logger name="org.hibernate.util.DTDEntityResolver" level="error">
		<appender-ref ref="STDOUT" />
	</Logger>
</configuration>
```

[File Ends] sem4pi-22-23-61-master\base.app.bootstrap\src\main\resources\logback.xml

[File Begins] sem4pi-22-23-61-master\base.app.common.console\pom.xml

```
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/xsd/maven-4.0.0.xsd">
    <modelVersion>4.0.0</modelVersion>

    <parent>
        <groupId>eapli</groupId>
        <artifactId>base</artifactId>
        <relativePath>../</relativePath>
        <version>1.4.0-SNAPSHOT</version>
    </parent>

    <artifactId>base.app.common.console</artifactId>
    <packaging>jar</packaging>

    <name>base.app.common.console</name>

    <properties>
        <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
        <project.reporting.outputEncoding>UTF-8</project.reporting.outputEncoding>
        <slf4jVersion>1.7.20</slf4jVersion>
    </properties>

    <dependencies>
        <dependency>
            <groupId>junit</groupId>
            <artifactId>junit</artifactId>
            <version>3.8.1</version>
            <scope>test</scope>
        </dependency>
        <dependency>
            <groupId>eapli</groupId>
            <artifactId>base.core</artifactId>
            <version>${project.parent.version}</version>
        </dependency>
    </dependencies>
</project>
```

[File Ends] sem4pi-22-23-61-master\base.app.common.console\pom.xml

[File Begins] sem4pi-22-23-61-master\base.app.common.console\src\main\java\eapli\base\app\common\console\BaseApplication.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
 * MIT License
 *
 * Permission is hereby granted, free of charge, to any person obtaining a copy of this software and
 * associated documentation files (the "Software"), to deal in the Software without restriction,
 * including without limitation the rights to use, copy, modify, merge, publish, distribute,
 * sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
 *
 * The above copyright notice and this permission notice shall be included in all copies or
 * substantial portions of the Software.
 *
 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT
 * NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
 * NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
 */
package eapli.base.app.common.console;

import org.apache.logging.log4j.LogManager;
import org.apache.logging.log4j.Logger;

import eapli.base.Application;
import eapli.framework.infrastructure.pubsub.EventDispatcher;
import eapli.framework.infrastructure.pubsub.impl.inprocess.service.InProcessPubSub;

/**
 *
```

```
 * @author Paulo Gandra Sousa
 */
@SuppressWarnings("squid:S106")
public abstract class BaseApplication {

    // we are assuming we will always use the in process event
    // dispatcher. check the Spring version of the Base project
    // for an alternative
    final EventDispatcher dispatcher = InProcessPubSub.dispatcher();

    protected static final String SEPARATOR_HR =
"=================================";
    private static final Logger LOGGER = LogManager.getLogger(BaseApplication.class);

    /**
     * @param args
     *            the command line arguments
     */
    public void run(final String[] args) {
        printHeader();

        try {
            setupEventHandlers();

            doMain(args);

            printFooter();
        } catch (final Exception e) {
            System.out.println(
                    "Something unexpected has happened and the application will terminate.
Please check the logs.\n");
            LOGGER.error(e);
        } finally {
            clearEventHandlers();
        }

        // exiting the application, closing all threads
        System.exit(0);
    }

    protected void printFooter() {
        System.out.println("\n");
        System.out.println(SEPARATOR_HR);
        System.out.println(appGoodbye());
```

```
        System.out.println(SEPARATOR_HR);
    }

    protected void printHeader() {
        System.out.println(SEPARATOR_HR);
        System.out.println(appTitle() + " " + Application.VERSION);
        System.out.println(Application.COPYRIGHT);
        System.out.println(SEPARATOR_HR);
    }

    private final void clearEventHandlers() {
        try {
            doClearEventHandlers(dispatcher);

            dispatcher.shutdown();
        } catch (final Exception e) {
            LOGGER.error("Unable to cleanup event handlers", e);
        }
    }

    private final void setupEventHandlers() {
        doSetupEventHandlers(dispatcher);
    }

    protected abstract void doMain(final String[] args);

    protected abstract String appTitle();

    protected abstract String appGoodbye();

    protected void doClearEventHandlers(final EventDispatcher dispatcher) {
        // nothing to do
    }

    protected abstract void doSetupEventHandlers(EventDispatcher dispatcher);
}
```

[File Ends] sem4pi-22-23-61-master\base.app.common.console\src\main\java\eapli\base\app\common\console\BaseApplication.java

[File Begins] sem4pi-22-23-61-master\base.app.common.console\src\main\java\eapli\base\app\common\console\presentation\authz\ChangePasswordUI.java

```
/*
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 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
 */
package eapli.base.app.common.console.presentation.authz;

import eapli.framework.domain.repositories.ConcurrencyException;
import eapli.framework.domain.repositories.IntegrityViolationException;
import eapli.framework.infrastructure.authz.application.AuthenticationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;
```

```
/**
 * UI for user login action. Created by nuno on 21/03/16.
 */
@SuppressWarnings("squid:S106")
public class ChangePasswordUI extends AbstractUI {

    private final AuthenticationService authenticationService =
AuthzRegistry.authenticationService();

    @Override
    protected boolean doShow() {
        final String oldPassword = Console.readLine("Old Password:");
        final String newPassword = Console.readLine("New Password:");

        try {
            if (this.authenticationService.changePassword(oldPassword, newPassword)) {
                System.out.println("Password Successfuly changed");
                return true;
            } else {
                System.out.println("Invalid authentication");
                return false;
            }
        } catch (ConcurrencyException | IntegrityViolationException e) {
            System.out.println("An error has occurred> " + e.getLocalizedMessage());
            return false;
        }
    }

    @Override
    public String headline() {
        return "Change Password";
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.common.console\src\main\java\eapli\base\app\common\console\presentation\authz\ChangePasswordUI.java

[File Begins] sem4pi-22-23-61-master\base.app.common.console\src\main\java\eapli\base\app\common\console\presentation\authz\LoginAction.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
```

```
 *
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 *
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HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
 */
package eapli.base.app.common.console.presentation.authz;

import eapli.base.infrastructure.authz.AuthenticationCredentialHandler;
import eapli.framework.actions.Action;
import eapli.framework.infrastructure.authz.domain.model.Role;

/**
 * Menu action for user login. Created by nuno on 20/03/16.
 */
public class LoginAction implements Action {

    private final Role onlyWithThis;

    public LoginAction() {
        onlyWithThis = null;
    }

    /**
```

```
     *
     * @param onlyWithThis
     *            only if the user has this specific action right will be
     *            allowed to login
     */
    public LoginAction(final Role onlyWithThis) {
        this.onlyWithThis = onlyWithThis;
    }

    @Override
    public boolean execute() {
        return new LoginUI(new AuthenticationCredentialHandler(), onlyWithThis).show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.common.console\src\main\java\eapli\base\app\common\console\presentation\authz\LoginAction.java

[File Begins] sem4pi-22-23-61-master\base.app.common.console\src\main\java\eapli\base\app\common\console\presentation\authz\LoginUI.java

```
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 * SOFTWARE.
 */
package eapli.base.app.common.console.presentation.authz;

import eapli.base.infrastructure.authz.CredentialHandler;
import eapli.framework.infrastructure.authz.domain.model.Role;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;

/**
 * UI for user login action.
 *
 * @author nuno on 21/03/16.
 */
@SuppressWarnings("squid:S106")
public class LoginUI extends AbstractUI {

	private Role onlyWithThis;
	private static final int DEFAULT_MAX_ATTEMPTS = 3;
	private final int maxAttempts;

	private final CredentialHandler credentialHandler;

	public LoginUI(CredentialHandler credentialHandler) {
		maxAttempts = DEFAULT_MAX_ATTEMPTS;
		this.credentialHandler = credentialHandler;
	}

	public LoginUI(CredentialHandler credentialHandler, final Role onlyWithThis) {
		this.onlyWithThis = onlyWithThis;
		maxAttempts = DEFAULT_MAX_ATTEMPTS;
		this.credentialHandler = credentialHandler;
	}

	public LoginUI(CredentialHandler credentialHandler, final Role onlyWithThis, final
int maxAttempts) {
		this.onlyWithThis = onlyWithThis;
		this.maxAttempts = maxAttempts;
```

```
		this.credentialHandler = credentialHandler;
	}

	public LoginUI(CredentialHandler credentialHandler, final int maxAttempts) {
		this.maxAttempts = maxAttempts;
		this.credentialHandler = credentialHandler;
	}

	@Override
	protected boolean doShow() {
		var attempt = 1;
		while (attempt <= maxAttempts) {
			final String userName =
Console.readNonEmptyLine("Username:", "Please provide a username");
			final String password = Console.readLine("Password:");

			if (credentialHandler.authenticated(userName, password,
onlyWithThis)) {
				return true;
			}
			System.out.printf("Wrong username or password. You have %d
attempts left.%n%n»»»»»»»»»»»»%n",
					maxAttempts - attempt);
			attempt++;
		}
		System.out.println("Sorry, we are unable to authenticate you. Please
contact your system admnistrator.");
		return false;
	}

	@Override
	public String headline() {
		return "Login";
	}
}
```

[File Ends] sem4pi-22-23-61-master\base.app.common.console\src\main\java\eapli\base\app\common\console\presentation\authz\LoginUI.java

[File Begins] sem4pi-22-23-61-master\base.app.common.console\src\main\java\eapli\base\app\common\console\presentation\authz\LogoutAction.java

```
/*
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 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
 */
package eapli.base.app.common.console.presentation.authz;

import eapli.framework.actions.Action;

/**
 * Menu action for user logout. Created by nuno on 20/03/16.
 */
public class LogoutAction implements Action {
```

```
    @Override
    public boolean execute() {
        // TODO call controller to execute logout
        return false;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.common.console\src\main\java\eapli\base\app\common\console\presentation\authz\LogoutAction.java

[File Begins] sem4pi-22-23-61-master\base.app.common.console\src\main\java\eapli\base\app\common\console\presentation\authz\LogoutUI.java

```
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 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
 */
package eapli.base.app.common.console.presentation.authz;
```

```
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.presentation.console.AbstractUI;

/**
 *
 * @author mcn
 */
public class LogoutUI extends AbstractUI {
    private final AuthorizationService authz = AuthzRegistry.authorizationService();

    @Override
    public String headline() {
        return "Logout sucessful!!\n Make a new Login";
    }

    @Override
    protected boolean doShow() {
        authz.clearSession();
        return true;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.common.console\src\main\java\eapli\base\app\common\console\presentation\authz\LogoutUI.java

[File Begins] sem4pi-22-23-61-master\base.app.common.console\src\main\java\eapli\base\app\common\console\presentation\authz\MyUserMenu.java

```
/*
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 * copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
 *
```

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 * LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.app.common.console.presentation.authz;

import eapli.base.infrastructure.authz.AuthenticationCredentialHandler;
import eapli.framework.actions.Actions;
import eapli.framework.actions.menu.Menu;
import eapli.framework.actions.menu.MenuItem;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.domain.model.Role;

public class MyUserMenu extends Menu {

    private static final String MENU_TITLE = "My account >";

    private static final int EXIT_OPTION = 0;

    // MY USER
    private static final int CHANGE_PASSWORD_OPTION = 1;
    private static final int LOGIN_OPTION = 2;
    private static final int LOGOUT_OPTION = 3;

    private final AuthorizationService authz = AuthzRegistry.authorizationService();

    public MyUserMenu() {
        super(MENU_TITLE);
        buildMyUserMenu(null);
    }
```

```
    public MyUserMenu(final Role onlyWithThis) {
        super(MENU_TITLE);
        buildMyUserMenu(onlyWithThis);
    }

    private void buildMyUserMenu(final Role onlyWithThis) {
        if (authz.hasSession()) {
            addItem(MenuItem.of(CHANGE_PASSWORD_OPTION, "Change password",
new ChangePasswordUI()::show));
            addItem(MenuItem.of(LOGIN_OPTION, "Change user", new LoginUI(new
AuthenticationCredentialHandler(), onlyWithThis)::show));
            addItem(MenuItem.of(LOGOUT_OPTION, "Logout", new LogoutUI()::show));
        } else {
            addItem(MenuItem.of(LOGIN_OPTION, "Login", new LoginUI(new
AuthenticationCredentialHandler(), onlyWithThis)::show));
        }

        addItem(MenuItem.of(EXIT_OPTION, "Return ", Actions.SUCCESS));
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.common.console\src\main\java\eapli\base\app\common\console\presentation\authz\MyUserMenu.java

[File Begins] sem4pi-22-23-61-master\base.app.common.console\src\test\java\eapli\base\consoleapp\common\AppTest.java

```
package eapli.base.consoleapp.common;

import junit.framework.Test;
import junit.framework.TestCase;
import junit.framework.TestSuite;

/**
 * Unit test for simple App.
 */
public class AppTest extends TestCase {

    /**
     * @return the suite of tests being tested
     */
```

```
    public static Test suite() {
        return new TestSuite(AppTest.class);
    }

    /**
     * Create the test case
     *
     * @param testName name of the test case
     */
    public AppTest(String testName) {
        super(testName);
    }

    /**
     * Rigourous Test :-)
     */
    public void testApp() {
        assertTrue(true);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.common.console\src\test\java\eapli\base\consoleapp\common\AppTest.java

[File Begins] sem4pi-22-23-61-master\base.app.other.console\pom.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
         xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/xsd/maven-4.0.0.xsd">
    <modelVersion>4.0.0</modelVersion>

    <parent>
        <groupId>eapli</groupId>
        <artifactId>base</artifactId>
        <relativePath>../</relativePath>
        <version>1.4.0-SNAPSHOT</version>
    </parent>

    <artifactId>base.app.other.console</artifactId>
    <packaging>jar</packaging>

    <name>base.app.other.console</name>
```

```
    <properties>
        <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
        <project.reporting.outputEncoding>UTF-8</project.reporting.outputEncoding>
    </properties>


    <dependencies>
        <dependency>
            <groupId>eapli</groupId>
            <artifactId>base.app.common.console</artifactId>
            <version>${project.parent.version}</version>
        </dependency>
        <dependency>
            <groupId>eapli</groupId>
            <artifactId>base.persistence.impl</artifactId>
            <version>${project.parent.version}</version>
            <scope>runtime</scope>
        </dependency>
    </dependencies>
</project>
```

[File Ends] sem4pi-22-23-61-master\base.app.other.console\pom.xml

[File Begins] sem4pi-22-23-61-master\base.app.other.console\src\main\java\eapli\base\app\other\console\OtherApp.java

```
/*
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```

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 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
 */
package eapli.base.app.other.console;

import eapli.base.app.common.console.presentation.authz.LoginAction;
import eapli.base.app.other.console.presentation.MainMenu;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.base.usermanagement.domain.BasePasswordPolicy;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.domain.model.PlainTextEncoder;

/**
 *
 * @author Paulo Gandra Sousa
 */
@SuppressWarnings("squid:S106")
public final class OtherApp {

    /**
     * Empty constructor is private to avoid instantiation of this class.
     */
    private OtherApp() {
    }

    public static void main(final String[] args) {
        System.out.println("====================================");
        System.out.println("Base POS");
        System.out.println("(C) 2016, 2017, 2018");
        System.out.println("====================================");

        AuthzRegistry.configure(PersistenceContext.repositories().users(),
                new BasePasswordPolicy(), new PlainTextEncoder());

        // login and go to main menu
```

```
        if (new LoginAction(BaseRoles.ADMIN).execute()) {
            final MainMenu menu = new MainMenu();
            menu.mainLoop();
        }

        // exiting the application, closing all threads
        System.exit(0);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.other.console\src\main\java\eapli\base\app\other\console\OtherApp.java

[File Begins] sem4pi-22-23-61-master\base.app.other.console\src\main\java\eapli\base\app\other\console\presentation\MainMenu.java

```
/*
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 * of this software and associated documentation files (the "Software"), to deal
 * in the Software without restriction, including without limitation the rights
 * to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
 * copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
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EXPRESS OR
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 * LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
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DEALINGS IN THE
```

```
 * SOFTWARE.
 */
package eapli.base.app.other.console.presentation;

import eapli.base.app.common.console.presentation.authz.MyUserMenu;
import eapli.base.Application;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.actions.Actions;
import eapli.framework.actions.menu.Menu;
import eapli.framework.actions.menu.MenuItem;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.presentation.console.AbstractUI;
import eapli.framework.presentation.console.ExitWithMessageAction;
import eapli.framework.presentation.console.menu.HorizontalMenuRenderer;
import eapli.framework.presentation.console.menu.MenuItemRenderer;
import eapli.framework.presentation.console.menu.MenuRenderer;
import eapli.framework.presentation.console.menu.VerticalMenuRenderer;

/**
 * TODO split this class in more specialized classes for each menu
 *
 * @author Paulo Gandra Sousa
 */
public class MainMenu extends AbstractUI {

    private static final String SEPARATOR_LABEL = "--------------";

    private static final int EXIT_OPTION = 0;

    // MAIN MENU
    private static final int MY_USER_OPTION = 1;
    private static final int SALES_OPTION = 7;

    private static final int RECHARGE_USER_CARD_OPTION = 1;

    private final AuthorizationService authz = AuthzRegistry.authorizationService();

    private final Menu menu;
    private final MenuRenderer renderer;

    public MainMenu() {
        menu = buildMainMenu();
        renderer = getRenderer(menu);
```

```
    }

    private MenuRenderer getRenderer(final Menu menu) {
        final MenuRenderer theRenderer;
        if (Application.settings().isMenuLayoutHorizontal()) {
            theRenderer = new HorizontalMenuRenderer(menu,
MenuItemRenderer.DEFAULT);
        } else {
            theRenderer = new VerticalMenuRenderer(menu,
MenuItemRenderer.DEFAULT);
        }
        return theRenderer;
    }

    @Override
    public boolean doShow() {
        return renderer.render();
    }

    @Override
    public boolean show() {
        drawFormTitle();
        return doShow();
    }

    @Override
    public String headline() {

        return authz.session().map(s -> "Base [ @" + s.authenticatedUser().identity() + " ]")
                .orElse("Base [ ==Anonymous== ]");
    }

    private Menu buildMainMenu() {
        final Menu mainMenu = new Menu();

        final Menu myUserMenu = new MyUserMenu(BaseRoles.ADMIN);
        mainMenu.addSubMenu(MY_USER_OPTION, myUserMenu);

        if (!Application.settings().isMenuLayoutHorizontal()) {
            mainMenu.addItem(MenuItem.separator(SEPARATOR_LABEL));
        }

        if (authz.isAuthenticatedUserAuthorizedTo(BaseRoles.ADMIN)) {
            final Menu cashierMenu = buildCashierMenu();
```

```
            mainMenu.addSubMenu(SALES_OPTION, cashierMenu);
        }

        if (!Application.settings().isMenuLayoutHorizontal()) {
            mainMenu.addItem(MenuItem.separator(SEPARATOR_LABEL));
        }

        mainMenu.addItem(EXIT_OPTION, "Exit", new ExitWithMessageAction("Bye,
Bye"));

        return mainMenu;
    }

    private Menu buildCashierMenu() {
        final Menu cashierMenu = new Menu("Sales  >");

        cashierMenu.addItem(EXIT_OPTION, "Return", Actions.SUCCESS);

        return cashierMenu;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.other.console\src\main\java\eapli\base\app\other\console\presentation\MainMenu.java

[File Begins] sem4pi-22-23-61-master\base.app.other.console\src\main\resources\application.properties

```
############################################################
##
## Base
##
############################################################

persistence.repositoryFactory=eapli.base.persistence.impl.jpa.JpaRepositoryFactory
#persistence.repositoryFactory=eapli.base.persistence.impl.inmemory.InMemoryRepositoryFactory
ui.menu.layout=horizontal
persistence.persistenceUnit=eapli.base
HighCaloriesDishLimit=300
```

[File Ends] sem4pi-22-23-61-master\base.app.other.console\src\main\resources\application.properties

[File Begins] sem4pi-22-23-61-master\base.app.other.console\src\main\resources\logback.xml

```
<?xml version="1.0" encoding="UTF-8" ?>

<configuration scan="true" scanPeriod="3 seconds">

	<appender name="STDOUT" class="ch.qos.logback.core.ConsoleAppender">
		<encoder class="ch.qos.logback.classic.encoder.PatternLayoutEncoder">
			<pattern>
				%d{HH:mm:ss.SSS} [%thread] %-5level %logger{32} -
%msg%n
			</pattern>
		</encoder>
	</appender>

	<appender name="FILE"
		class="ch.qos.logback.core.rolling.RollingFileAppender">
		<File>logFile.log</File>
		<rollingPolicy
class="ch.qos.logback.core.rolling.TimeBasedRollingPolicy">
			<FileNamePattern>
				logFile.%d{yyyy-MM-dd_HH-mm}.log.zip
			</FileNamePattern>
		</rollingPolicy>
		<encoder class="ch.qos.logback.classic.encoder.PatternLayoutEncoder">
			<Pattern>
				%d{HH:mm:ss,SSS} [%thread] %-5level %logger{32} -
%msg%n
			</Pattern>
		</encoder>
	</appender>

	<!-- LOG everything at INFO level -->
	<root level="error">
		<appender-ref ref="STDOUT" />
	</root>

	<!-- specific LOG level -->
	<logger name="eapli.framework" level="debug" additivity="false">
		<appender-ref ref="STDOUT" />
	</logger>
```

```
        <logger name="eapli.base" level="info" additivity="false">
                <appender-ref ref="STDOUT" />
        </logger>

        <Logger name="org.hibernate" level="WARN">
                <appender-ref ref="STDOUT" />
        </Logger>
        <Logger name="org.hibernate.SQL" level="error">
                <appender-ref ref="STDOUT" />
        </Logger>
        <Logger name="org.hibernate.type" level="error">
                <appender-ref ref="STDOUT" />
        </Logger>
        <Logger name="org.hibernate.util.DTDEntityResolver" level="error">
                <appender-ref ref="STDOUT" />
        </Logger>
</configuration>
```

[File Ends] sem4pi-22-23-61-master\base.app.other.console\src\main\resources\logback.xml

[File Begins] sem4pi-22-23-61-master\base.app.other.console\src\test\java\eapli\base\app\other\console\OtherAppTest.java

```
package eapli.base.app.other.console;

/**
 * Created by Nuno Bettencourt [NMB] on 03/04/16.
 */
public class OtherAppTest {

}
```

[File Ends] sem4pi-22-23-61-master\base.app.other.console\src\test\java\eapli\base\app\other\console\OtherAppTest.java

[File Begins] sem4pi-22-23-61-master\base.app.user.console\pom.xml

```
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/xsd/maven-4.0.0.xsd">
    <modelVersion>4.0.0</modelVersion>

    <parent>
```

```
    <groupId>eapli</groupId>
    <artifactId>base</artifactId>
    <relativePath>../</relativePath>
    <version>1.4.0-SNAPSHOT</version>
  </parent>

  <artifactId>base.app.user.console</artifactId>
  <packaging>jar</packaging>

  <name>base.app.user.console</name>

  <properties>
    <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
    <project.reporting.outputEncoding>UTF-8</project.reporting.outputEncoding>
  </properties>

  <dependencies>
    <dependency>
      <groupId>eapli</groupId>
      <artifactId>base.app.common.console</artifactId>
      <version>${project.parent.version}</version>
    </dependency>
    <dependency>
      <groupId>eapli</groupId>
      <artifactId>base.core</artifactId>
      <version>${project.parent.version}</version>
      <type>jar</type>
    </dependency>
    <dependency>
      <groupId>eapli</groupId>
      <artifactId>base.persistence.impl</artifactId>
      <version>${project.parent.version}</version>
      <scope>runtime</scope>
    </dependency>
    <dependency>
      <groupId>junit</groupId>
      <artifactId>junit</artifactId>
      <version>4.13.1</version>
      <scope>test</scope>
    </dependency>
  </dependencies>
</project>
```

[File Ends] sem4pi-22-23-61-master\base.app.user.console\pom.xml

[File Begins] sem4pi-22-23-61-master\base.app.user.console\src\main\java\eapli\base\app\user\console\BaseUserApp.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
 * MIT License
 *
 * Permission is hereby granted, free of charge, to any person obtaining a copy of this software and
 * associated documentation files (the "Software"), to deal in the Software without restriction,
 * including without limitation the rights to use, copy, modify, merge, publish, distribute,
 * sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
 *
 * The above copyright notice and this permission notice shall be included in all copies or
 * substantial portions of the Software.
 *
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 * NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
 * NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
 */
package eapli.base.app.user.console;

import eapli.base.app.user.console.presentation.FrontMenu;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.base.usermanagement.domain.BasePasswordPolicy;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.domain.model.PlainTextEncoder;

/**
 * Base User App.
 */
```

```
@SuppressWarnings("squid:S106")
public final class BaseUserApp {

    /**
     * Empty constructor is private to avoid instantiation of this class.
     */
    private BaseUserApp() {
    }

    public static void main(final String[] args) {
        System.out.println("====================================");
        System.out.println("Base User App");
        System.out.println("(C) 2016 - 2019");
        System.out.println("====================================");

        AuthzRegistry.configure(PersistenceContext.repositories().users(),
                new BasePasswordPolicy(), new PlainTextEncoder());

        new FrontMenu().show();

        // exiting the application, closing all threads
        System.exit(0);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.user.console\src\main\java\eapli\base\app\user\console\BaseUserApp.java

[File Begins] sem4pi-22-23-61-master\base.app.user.console\src\main\java\eapli\base\app\user\console\presentation\ClientUserBaseUI.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
 * MIT License
 *
 * Permission is hereby granted, free of charge, to any person obtaining a copy of this software and
 * associated documentation files (the "Software"), to deal in the Software without restriction,
 * including without limitation the rights to use, copy, modify, merge, publish, distribute,
 * sublicense, and/or sell copies of the Software, and to permit persons to whom the
```

```
Software is
 * furnished to do so, subject to the following conditions:
 *
 * The above copyright notice and this permission notice shall be included in all copies or
 * substantial portions of the Software.
 *
 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
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 * NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A
PARTICULAR PURPOSE AND
 * NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
 */
package eapli.base.app.user.console.presentation;

import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.presentation.console.AbstractUI;

/**
 *
 * @author mcn
 */
@SuppressWarnings("squid:S106")
public abstract class ClientUserBaseUI extends AbstractUI {

    private final AuthorizationService authz = AuthzRegistry.authorizationService();

    @Override
    public String headline() {

        return authz.session().map(s -> "Base [ @" + s.authenticatedUser().identity() + " ] ")
                .orElse("Base [ ==Anonymous== ]");
    }

    @Override
    protected void drawFormTitle(final String title) {
        final String titleBorder = BORDER.substring(0, 2) + " " + title;
        System.out.println(titleBorder);
        drawFormBorder();
```

```
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.user.console\src\main\java\eapli\base\app\user\console\presentation\ClientUserBaseUI.java

[File Begins] sem4pi-22-23-61-master\base.app.user.console\src\main\java\eapli\base\app\user\console\presentation\FrontMenu.java

```
/*
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 *
 * MIT License
 *
 * Permission is hereby granted, free of charge, to any person obtaining a copy
 * of this software and associated documentation files (the "Software"), to deal
 * in the Software without restriction, including without limitation the rights
 * to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
 * copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
 *
 * The above copyright notice and this permission notice shall be included in
 * all copies or substantial portions of the Software.
 *
 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR
 * IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY,
 * FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO
EVENT SHALL THE
 * AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES
OR OTHER
 * LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.app.user.console.presentation;

import eapli.base.app.common.console.presentation.authz.LoginUI;
import eapli.base.app.user.console.presentation.myuser.SignupRequestAction;
```

```
import eapli.base.infrastructure.authz.AuthenticationCredentialHandler;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.actions.ChainedAction;
import eapli.framework.actions.menu.Menu;
import eapli.framework.presentation.console.AbstractUI;
import eapli.framework.presentation.console.ExitWithMessageAction;
import eapli.framework.presentation.console.menu.MenuItemRenderer;
import eapli.framework.presentation.console.menu.MenuRenderer;
import eapli.framework.presentation.console.menu.VerticalMenuRenderer;

/**
 * @author Paulo Gandra Sousa
 */
public class FrontMenu extends AbstractUI {

    private static final int EXIT_OPTION = 0;

    private static final int LOGIN_OPTION = 1;
    private static final int SIGNUP_OPTION = 2;

    @Override
    public boolean show() {
        drawFormTitle();
        return doShow();
    }

    /**
     * @return true if the user selected the exit option
     */
    @Override
    public boolean doShow() {
        final Menu menu = new Menu();
        menu.addItem(LOGIN_OPTION, "Login", new ChainedAction(new LoginUI(new
AuthenticationCredentialHandler(),
                BaseRoles.CLIENT_USER)::show, () -> {
            new MainMenu().mainLoop();
            return true;
        }));
        //TODO: instead of leaving the app, return to the main menu again
        menu.addItem(SIGNUP_OPTION, "Sign up", new SignupRequestAction());
        menu.addItem(EXIT_OPTION, "Exit", new ExitWithMessageAction("Bye, Bye"));

        final MenuRenderer renderer = new VerticalMenuRenderer(menu,
MenuItemRenderer.DEFAULT);
```

```
        return renderer.render();
    }

    @Override
    public String headline() {
        return "Base";
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.user.console\src\main\java\eapli\base\app\user\console\presentation\FrontMenu.java

[File Begins] sem4pi-22-23-61-master\base.app.user.console\src\main\java\eapli\base\app\user\console\presentation\MainMenu.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
 * MIT License
 *
 * Permission is hereby granted, free of charge, to any person obtaining a copy
 * of this software and associated documentation files (the "Software"), to deal
 * in the Software without restriction, including without limitation the rights
 * to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
 * copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
 *
 * The above copyright notice and this permission notice shall be included in
 * all copies or substantial portions of the Software.
 *
 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR
 * IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY,
 * FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO
EVENT SHALL THE
 * AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES
OR OTHER
 * LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE
```

```
 * SOFTWARE.
 */
package eapli.base.app.user.console.presentation;

import eapli.base.app.common.console.presentation.authz.MyUserMenu;
import eapli.framework.actions.menu.Menu;
import eapli.framework.actions.menu.MenuItem;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.presentation.console.ExitWithMessageAction;
import eapli.framework.presentation.console.menu.MenuItemRenderer;
import eapli.framework.presentation.console.menu.MenuRenderer;
import eapli.framework.presentation.console.menu.VerticalMenuRenderer;

/**
 * @author Paulo Gandra Sousa
 */
class MainMenu extends ClientUserBaseUI {

    private static final String SEPARATOR_LABEL = "----------";

    private static final String RETURN = "Return ";

    private static final String NOT_IMPLEMENTED_YET = "Not implemented yet";

    // EXIT
    private static final int EXIT_OPTION = 0;

    // MAIN MENU
    private static final int MY_USER_OPTION = 1;
    private static final int ACCOUNT_OPTION = 3;
    private static final int SETTINGS_OPTION = 4;

    //EXAMS
    private static final int EXAMS_OPTION = 2;

    // BOOKINGS MENU
    private static final int BOOK_A_MEAL_OPTION = 2;
    private static final int LIST_MY_BOOKINGS_OPTION = 3;

    // ACCOUNT MENU
    private static final int LIST_MOVEMENTS_OPTION = 1;

    // SETTINGS
```

```
    private static final int SET_USER_ALERT_LIMIT_OPTION = 1;

    private final AuthorizationService authz = AuthzRegistry.authorizationService();

    @Override
    public boolean show() {
        drawFormTitle();
        return doShow();
    }

    /**
     * @return true if the user selected the exit option
     */
    @Override
    public boolean doShow() {
        final Menu menu = buildMainMenu();
        final MenuRenderer renderer = new VerticalMenuRenderer(menu,
MenuItemRenderer.DEFAULT);
        return renderer.render();
    }

    private Menu buildMainMenu() {
        final Menu mainMenu = new Menu();

        final Menu myUserMenu = new MyUserMenu();
        mainMenu.addSubMenu(MY_USER_OPTION, myUserMenu);

        mainMenu.addItem(MenuItem.separator(SEPARATOR_LABEL));

        mainMenu.addItem(EXIT_OPTION, "Exit", new ExitWithMessageAction("Bye,
Bye"));

        return mainMenu;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.user.console\src\main\java\eapli\base\app\user\console\presentation\MainMenu.java

[File Begins] sem4pi-22-23-61-master\base.app.user.console\src\main\java\eapli\base\app\user\console\presentation\myuser\SignupRequestAction.java

```
/*
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 *
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 *
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 * associated documentation files (the "Software"), to deal in the Software without restriction,
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 * substantial portions of the Software.
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 * NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
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 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
 */
package eapli.base.app.user.console.presentation.myuser;

import eapli.framework.actions.Action;

/**
 *
 * @author Jorge Santos ajs@isep.ipp.pt
 */
public class SignupRequestAction implements Action {
```

```
    @Override
    public boolean execute() {
        return new SignupRequestUI().show();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.user.console\src\main\java\eapli\base\app\user\console\presentation\myuser\SignupRequestAction.java

[File Begins] sem4pi-22-23-61-master\base.app.user.console\src\main\java\eapli\base\app\user\console\presentation\myuser\SignupRequestUI.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
 * MIT License
 *
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 * associated documentation files (the "Software"), to deal in the Software without restriction,
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 * sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
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 * substantial portions of the Software.
 *
 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT
 * NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
 * NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
 */
package eapli.base.app.user.console.presentation.myuser;
```

```
import org.slf4j.Logger;
import org.slf4j.LoggerFactory;

import eapli.base.myclientuser.application.SignupController;
import eapli.framework.domain.repositories.ConcurrencyException;
import eapli.framework.domain.repositories.IntegrityViolationException;
import eapli.framework.io.util.Console;
import eapli.framework.presentation.console.AbstractUI;

/**
 *
 * @author Jorge Santos ajs@isep.ipp.pt
 */
@SuppressWarnings("squid:S106")
public class SignupRequestUI extends AbstractUI {
   private static final Logger LOGGER =
LoggerFactory.getLogger(SignupRequestUI.class);

   private final SignupController theController = new SignupController();

   @Override
   protected boolean doShow() {
      final UserDataWidget userData = new UserDataWidget();

      userData.show();

      final String mecanographicNumber = Console.readLine("Mecanographic Number");

      try {
         this.theController.signup(userData.username(), userData.password(),
               userData.firstName(), userData.lastName(), userData.email(),
               mecanographicNumber);
      } catch (final IntegrityViolationException | ConcurrencyException e) {
         LOGGER.error("Error performing the operation", e);
         System.out.println(
               "Unfortunatelly there was an unexpected error in the application. Please try
again and if the problem persists, contact your system admnistrator.");
      }

      return true;
   }

   @Override
```

```
    public String headline() {
        return "Sign Up";
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.user.console\src\main\java\eapli\base\app\user\console\presentation\myuser\SignupRequestUI.java

[File Begins] sem4pi-22-23-61-master\base.app.user.console\src\main\java\eapli\base\app\user\console\presentation\myuser\UserDataWidget.java

```
/*
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 *
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 * associated documentation files (the "Software"), to deal in the Software without restriction,
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 *
 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT
 * NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
 * NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
 */
package eapli.base.app.user.console.presentation.myuser;

import eapli.framework.io.util.Console;
```

```
/**
 * TODO move to console.common to allow reuse from both backoffice and UtenteApp
 *
 * widget for reading user data Jorge Santos ajs@isp.ipp.pt
 */
class UserDataWidget {

    private String username;
    private String password;
    private String firstName;
    private String lastName;
    private String email;

    public void show() {
        this.username = Console.readLine("Username");
        this.password = Console.readLine("Password");
        this.firstName = Console.readLine("First Name");
        this.lastName = Console.readLine("Last Name");
        this.email = Console.readLine("E-Mail");
    }

    public String username() {
        return this.username;
    }

    public String password() {
        return this.password;
    }

    public String firstName() {
        return this.firstName;
    }

    public String lastName() {
        return this.lastName;
    }

    public String email() {
        return this.email;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.user.console\src\main\java\eapli\base\app\user\console\presentation\myuser\UserDataWidget.java

[File Begins] sem4pi-22-23-61-master\base.app.user.console\src\main\resources\application.properties

```
############################################################
##
## Base
##
############################################################

persistence.repositoryFactory=eapli.base.persistence.impl.jpa.JpaRepositoryFactory
#persistence.repositoryFactory=eapli.base.persistence.impl.inmemory.InMemoryRepositoryFactory
persistence.persistenceUnit=eapli.base
ui.menu.layout=vertical
HighCaloriesDishLimit=300
```

[File Ends] sem4pi-22-23-61-master\base.app.user.console\src\main\resources\application.properties

[File Begins] sem4pi-22-23-61-master\base.app.user.console\src\main\resources\logback.xml

```
<?xml version="1.0" encoding="UTF-8" ?>

<configuration scan="true" scanPeriod="3 seconds">

	<appender name="STDOUT" class="ch.qos.logback.core.ConsoleAppender">
		<encoder class="ch.qos.logback.classic.encoder.PatternLayoutEncoder">
			<pattern>
				%d{HH:mm:ss.SSS} [%thread] %-5level %logger{32} - %msg%n
			</pattern>
		</encoder>
	</appender>

	<appender name="FILE"
		class="ch.qos.logback.core.rolling.RollingFileAppender">
		<File>logFile.log</File>
		<rollingPolicy
class="ch.qos.logback.core.rolling.TimeBasedRollingPolicy">
			<FileNamePattern>
				logFile.%d{yyyy-MM-dd_HH-mm}.log.zip
			</FileNamePattern>
		</rollingPolicy>
```

```
            <encoder class="ch.qos.logback.classic.encoder.PatternLayoutEncoder">
                <Pattern>
                    %d{HH:mm:ss,SSS} [%thread] %-5level %logger{32} -
%msg%n
                </Pattern>
            </encoder>
        </appender>

        <!-- LOG everything at INFO level -->
        <root level="error">
            <appender-ref ref="STDOUT" />
        </root>

        <!-- specific LOG level -->
        <logger name="eapli.framework" level="debug" additivity="false">
            <appender-ref ref="STDOUT" />
        </logger>
        <logger name="eapli.base" level="info" additivity="false">
            <appender-ref ref="STDOUT" />
        </logger>

        <Logger name="org.hibernate" level="WARN">
            <appender-ref ref="STDOUT" />
        </Logger>
        <Logger name="org.hibernate.SQL" level="error">
            <appender-ref ref="STDOUT" />
        </Logger>
        <Logger name="org.hibernate.type" level="error">
            <appender-ref ref="STDOUT" />
        </Logger>
        <Logger name="org.hibernate.util.DTDEntityResolver" level="error">
            <appender-ref ref="STDOUT" />
        </Logger>
</configuration>
```

[File Ends] sem4pi-22-23-61-master\base.app.user.console\src\main\resources\logback.xml

[File Begins] sem4pi-22-23-61-master\base.app.user.console\src\test\java\eapli\base\utente\consoleapp\AppTest.java

```
package eapli.base.utente.consoleapp;

import junit.framework.Test;
import junit.framework.TestCase;
import junit.framework.TestSuite;
```

```
/**
 * Unit test for simple App.
 */
public class AppTest extends TestCase {

    /**
     * Create the test case
     *
     * @param testName name of the test case
     */
    public AppTest(String testName) {
        super(testName);
    }

    /**
     * @return the suite of tests being tested
     */
    public static Test suite() {
        return new TestSuite(AppTest.class);
    }

    /**
     * Rigourous Test :-)
     */
    public void testApp() {
        assertTrue(true);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.app.user.console\src\test\java\eapli\base\utente\consoleapp\AppTest.java

[File Begins] sem4pi-22-23-61-master\base.bootstrappers\pom.xml

```
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
         xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/xsd/maven-4.0.0.xsd">
    <modelVersion>4.0.0</modelVersion>

    <parent>
        <groupId>eapli</groupId>
        <artifactId>base</artifactId>
        <relativePath>../</relativePath>
        <version>1.4.0-SNAPSHOT</version>
```

```
    </parent>

    <artifactId>base.bootstrappers</artifactId>
    <packaging>jar</packaging>

    <name>base.bootstrapper</name>

    <properties>
        <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
        <project.reporting.outputEncoding>UTF-8</project.reporting.outputEncoding>
    </properties>

    <dependencies>
        <dependency>
            <groupId>junit</groupId>
            <artifactId>junit</artifactId>
            <version>4.12</version>
            <scope>test</scope>
        </dependency>
        <dependency>
            <groupId>eapli</groupId>
            <artifactId>base.core</artifactId>
            <version>${project.parent.version}</version>
        </dependency>
    </dependencies>
</project>
```

[File Ends] sem4pi-22-23-61-master\base.bootstrappers\pom.xml

[File Begins] sem4pi-22-23-61-master\base.bootstrappers\src\main\java\eapli\base\infrastructure\bootstrapers\BaseBootstrapper.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
 * MIT License
 *
 * Permission is hereby granted, free of charge, to any person obtaining a copy
 * of this software and associated documentation files (the "Software"), to deal
 * in the Software without restriction, including without limitation the rights
 * to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
 * copies of the Software, and to permit persons to whom the Software is
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 *
```

```
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OR OTHER
 * LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.infrastructure.bootstrapers;

import eapli.base.Classe.domain.*;
import eapli.base.Classe.repository.ClassRepository;
import eapli.base.Course.Domain.*;
import eapli.base.Course.Repository.CourseRepository;
import eapli.base.SharedBoard.domain.NumberofColumns;
import eapli.base.SharedBoard.domain.NumberofRows;
import eapli.base.SharedBoard.domain.SharedBoard;
import eapli.base.SharedBoard.domain.Shared_Board_Title;
import eapli.base.SharedBoard.repository.SharedBoardRepository;
import eapli.base.Student_Teacher.Date_Of_Birth;
import eapli.base.Student_Teacher.Student.Repository.StudentRepository;
import eapli.base.Student_Teacher.Student.domain.MechanographicNumber;
import eapli.base.Student_Teacher.Student.domain.Student;
import eapli.base.Student_Teacher.Tax_Payer_Number;
import eapli.base.Student_Teacher.Teacher.Domain.Acronym;
import eapli.base.Student_Teacher.Teacher.Domain.Teacher;
import eapli.base.Student_Teacher.Teacher.Repository.TeacherRepository;
import eapli.base.exammanagement.domain.Exam;
import eapli.base.exammanagement.domain.ExamDate;
import eapli.base.exammanagement.domain.ExamTime;
import eapli.base.exammanagement.domain.ExamTitle;
import eapli.base.exammanagement.repository.ExamRepository;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.base.usermanagement.domain.UserBuilderHelper;
```

```
import eapli.framework.actions.Action;
import eapli.framework.domain.repositories.ConcurrencyException;
import eapli.framework.domain.repositories.IntegrityViolationException;
import eapli.framework.infrastructure.authz.application.AuthenticationService;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.model.SystemUserBuilder;
import eapli.framework.infrastructure.authz.domain.repositories.UserRepository;
import eapli.framework.strings.util.Strings;
import eapli.framework.validations.Invariants;
import org.slf4j.Logger;
import org.slf4j.LoggerFactory;

import javax.persistence.Persistence;
import java.text.ParseException;
import java.text.SimpleDateFormat;
import java.time.LocalDate;
import java.time.LocalTime;
import java.util.Date;

/**
 * Base Bootstrapping data app
 *
 * @author Paulo Gandra de Sousa
 *
 * Classe destinada a criar um utilizador pelo bootstrap.
 */
@SuppressWarnings("squid:S106")
public class BaseBootstrapper implements Action {
    private static final Logger LOGGER =
LoggerFactory.getLogger(BaseBootstrapper.class);

    private static final String ADMIN = "admin";
    private static final String ADMIN_PWD = "Password1";
    private static final String USER = "user";
    private static final String USER_PWD = "userA1";
    private static final String MANAGER = "manager";
    private static final String MANAGER_PWD = "managerA1";
    private static final String TEACHER = "teacher";
    private static final String TEACHER_PWD = "teacherA1";
    private static final String STUDENT = "student";
    private static final String STUDENT_PWD = "studentA1";
```

```
    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    private final AuthenticationService authenticationService =
AuthzRegistry.authenticationService();
    private final UserRepository userRepository =
PersistenceContext.repositories().users();
    private final TeacherRepository teacherRepository =
PersistenceContext.repositories().teacherRepository();
    private final StudentRepository studentRepository =
PersistenceContext.repositories().studentRepository();
    private final CourseRepository courseRepository =
PersistenceContext.repositories().courseRepository();
    private final ExamRepository examRepository =
PersistenceContext.repositories().examRepository();
    private final ClassRepository classeRepository =
PersistenceContext.repositories().classRepository();
    private final SharedBoardRepository sharedBoardRepository =
PersistenceContext.repositories().sharedBoardRepository();

    private SystemUser user1;
    private SystemUser user2;
    private Teacher teacher;

    @Override
    public boolean execute() {
        // declare bootstrap actions
        final Action[] actions = { new MasterUsersBootstrapper(), };

        registerAdmin();
        registerUser();
        registerManager();
        registerTeacher();
        registerStudent();
        registerSharedBoard();
        try {
            registerCourseExams();
            registerClass1();
        } catch (ParseException e) {
            throw new RuntimeException(e);
        }
        authenticateForBootstrapping();

        // execute all bootstrapping
        boolean ret = true;
        for (final Action boot : actions) {
```

```
            System.out.println("Bootstrapping " + nameOfEntity(boot) + "...");
            ret &= boot.execute();
        }
        return ret;
    }

    /**
     * register a power user directly in the persistence layer as we need to
     * circumvent authorisations in the Application Layer
     */
    private boolean registerUser() {
        final SystemUserBuilder userBuilder = UserBuilderHelper.builder();
        userBuilder.withUsername(USER).withPassword(USER_PWD).withName("Joao",
"Martins")
                .withEmail("joaomartins@email.org").withRoles(BaseRoles.CLIENT_USER);
        final SystemUser newUser = userBuilder.build();

        SystemUser poweruser;
        try {
            poweruser = userRepository.save(newUser);
            assert poweruser != null;
            return true;
        } catch (ConcurrencyException | IntegrityViolationException e) {
            // ignoring exception. assuming it is just a primary key violation
            // due to the tentative of inserting a duplicated user
            LOGGER.warn("Assuming {} already exists (activate trace log for details)",
newUser.username());
            LOGGER.trace("Assuming existing record", e);
            return false;
        }
    }

    private boolean registerAdmin() {
        final SystemUserBuilder userBuilder = UserBuilderHelper.builder();

userBuilder.withUsername(ADMIN).withPassword(ADMIN_PWD).withName("Developer"
, "Administrator")
                .withEmail("admin@email.org").withRoles(BaseRoles.ADMIN);
        final SystemUser newUser = userBuilder.build();

        SystemUser poweruser;
        try {
            poweruser = userRepository.save(newUser);
            assert poweruser != null;
```

```
            return true;
        } catch (ConcurrencyException | IntegrityViolationException e) {
            // ignoring exception. assuming it is just a primary key violation
            // due to the tentative of inserting a duplicated user
            LOGGER.warn("Assuming {} already exists (activate trace log for details)",
newUser.username());
            LOGGER.trace("Assuming existing record", e);
            return false;
        }
    }

    private boolean registerManager() {
        final SystemUserBuilder userBuilder = UserBuilderHelper.builder();

userBuilder.withUsername(MANAGER).withPassword(MANAGER_PWD).withName("M
ain", "Manager")
                .withEmail("mainmanager@email.org").withRoles(BaseRoles.MANAGER);
        final SystemUser newUser = userBuilder.build();

        SystemUser manager;
        try {
            manager = userRepository.save(newUser);
            assert manager != null;
            return true;
        } catch (ConcurrencyException | IntegrityViolationException e) {
            // ignoring exception. assuming it is just a primary key violation
            // due to the tentative of inserting a duplicated user
            LOGGER.warn("Assuming {} already exists (activate trace log for details)",
newUser.username());
            LOGGER.trace("Assuming existing record", e);
            return false;
        }
    }

    private boolean registerTeacher() {
        LocalDate date = LocalDate.of(1990,10,10);

        final SystemUserBuilder userBuilder = UserBuilderHelper.builder();

userBuilder.withUsername(TEACHER).withPassword(TEACHER_PWD).withName("Mai
n", "Teacher")
                .withEmail("mainteacher@email.org").withRoles(BaseRoles.TEACHER);
        final SystemUser newUser = userBuilder.build();
```

```
        teacher=new Teacher(newUser, new Acronym("ABC"), new
Tax_Payer_Number("123456789"), new Date_Of_Birth(date));
        try {
            user1 = userRepository.save(newUser);
            teacherRepository.save(teacher);
            assert user1 != null;
            return true;
        } catch (ConcurrencyException | IntegrityViolationException e) {
            // ignoring exception. assuming it is just a primary key violation
            // due to the tentative of inserting a duplicated user
            LOGGER.warn("Assuming {} already exists (activate trace log for details)",
newUser.username());
            LOGGER.trace("Assuming existing record", e);
            return false;
        }
    }

    private boolean registerStudent() {
        LocalDate date = LocalDate.of(2002,10,10);

        final SystemUserBuilder userBuilder = UserBuilderHelper.builder();

userBuilder.withUsername(STUDENT).withPassword(STUDENT_PWD).withName("Mai
n", "Student")
                .withEmail("mainstudent@email.org").withRoles(BaseRoles.STUDENT);
        final SystemUser newUser = userBuilder.build();

        try {
            user2 = userRepository.save(newUser);
            studentRepository.save(new Student(newUser, new
MechanographicNumber("1200801"), new Tax_Payer_Number("123456789"), new
Date_Of_Birth(date)));
            assert user2 != null;
            return true;
        } catch (ConcurrencyException | IntegrityViolationException e) {
            // ignoring exception. assuming it is just a primary key violation
            // due to the tentative of inserting a duplicated user
            LOGGER.warn("Assuming {} already exists (activate trace log for details)",
newUser.username());
            LOGGER.trace("Assuming existing record", e);
            return false;
        }
    }
```

```
    private boolean registerSharedBoard(){
        SharedBoard sharedBoard = new SharedBoard(user1, new
Shared_Board_Title("title"), new NumberofRows(10), new NumberofColumns(10));
        sharedBoard.shareBoard(user1, user2, SharedBoard.AccessType.WRITE);

        sharedBoardRepository.save(sharedBoard);
        return false;
    }

    private boolean registerCourseExams() throws ParseException {

//        EntityManagerFactory emf =
Persistence.createEntityManagerFactory(Application.settings().getPersistenceUnitName
());
//        EntityManager em = emf.createEntityManager();
        Course course = new Course(new Course_Name("INF"), new
Maximum_Number_Of_Students(200), new Minimum_Number_Of_Students(20), new
Small_Textual_Description("desc"), teacher);
//        em.getTransaction().begin();
//        em.persist(course);
//        em.getTransaction().commit();
//        em.close();
//        emf.close();

        try {
            course = courseRepository.save(course);
            assert course != null;
            registerExam1(course);
            registerExam2(course);
            return true;
        } catch (ConcurrencyException | IntegrityViolationException e) {
            // ignoring exception. assuming it is just a primary key violation
            // due to the tentative of inserting a duplicated user
            LOGGER.warn("Assuming {} already exists (activate trace log for details)",
course.getCourseName());
            LOGGER.trace("Assuming existing record", e);
            return false;
        }
    }

    private boolean registerExam1(Course course) throws ParseException {
        SimpleDateFormat simpleDateFormat = new SimpleDateFormat("hh:mm");
        Date open = simpleDateFormat.parse("09:30");
```

```
        Date close = simpleDateFormat.parse("10:30");
        SimpleDateFormat simpleDateFormat2 = new SimpleDateFormat("dd-MM-yyyy");
        Date date = simpleDateFormat2.parse("10-08-2023");

        Exam exam = new Exam(new ExamTitle("exam_title1"), new ExamDate(date), new
ExamTime(open, close), course);   //after current time


        try {
            exam = examRepository.save(exam);
            assert exam != null;
            return true;
        } catch (ConcurrencyException | IntegrityViolationException e) {
            // ignoring exception. assuming it is just a primary key violation
            // due to the tentative of inserting a duplicated user
            LOGGER.warn("Assuming {} already exists (activate trace log for details)",
exam.identity());
            LOGGER.trace("Assuming existing record", e);
            return false;
        }

    }

    private boolean registerExam2(Course course) throws ParseException {
        SimpleDateFormat simpleDateFormat = new SimpleDateFormat("hh:mm");
        Date open = simpleDateFormat.parse("09:30");
        Date close = simpleDateFormat.parse("10:30");
        SimpleDateFormat simpleDateFormat2 = new SimpleDateFormat("dd-MM-yyyy");
        Date date2 = simpleDateFormat2.parse("10-05-2023");

        Exam exam2 = new Exam(new ExamTitle("exam_title2"), new ExamDate(date2),
new ExamTime(open, close), course); //before current time
        try {
            exam2 = examRepository.save(exam2);
            assert exam2 != null;
            return true;
        } catch (ConcurrencyException | IntegrityViolationException e) {

            LOGGER.warn("Assuming {} already exists (activate trace log for details)",
exam2.identity());
            LOGGER.trace("Assuming existing record", e);
            return false;
        }
    }
```

```
    private boolean registerClass1() throws ParseException {

        LocalTime startTime = LocalTime.parse("09:00");
        LocalTime finishTime = LocalTime.parse("10:30");

        LocalDate date = LocalDate.parse("10-06-2023");
        DayOfWeek dayOfWeek = new DayOfWeek(1);

        Classe classe = new Classe(new Classe_Title("Class 1"), new
Classe_Start_Date(date), new Classe_Finish_Date(date),
                new Classe_Start_Time(startTime), new Classe_Finish_Time(finishTime),
dayOfWeek,
                new Acronym("C1"));

        try {
            classe = classeRepository.save(classe);
            assert classe != null;
            return true;
        } catch (ConcurrencyException | IntegrityViolationException e) {

            LOGGER.warn("Assuming {} already exists (activate trace log for details)",
classe.identity());
            LOGGER.trace("Assuming existing record", e);
            return false;
        }
    }
    private boolean registerClass2() throws ParseException {

        LocalTime startTime = LocalTime.parse("11:00");
        LocalTime finishTime = LocalTime.parse("12:30");

        LocalDate date = LocalDate.parse("11-06-2023");
        DayOfWeek dayOfWeek = new DayOfWeek(2);

        Classe classe = new Classe(new Classe_Title("Class 2"), new
Classe_Start_Date(date), new Classe_Finish_Date(date),
                new Classe_Start_Time(startTime), new Classe_Finish_Time(finishTime),
dayOfWeek,
                new Acronym("C2"));

        try {
            classe = classeRepository.save(classe);
            assert classe != null;
            return true;
```

```
        } catch (ConcurrencyException | IntegrityViolationException e) {
            // ignoring exception. assuming it is just a primary key violation
            // due to the tentative of inserting a duplicated class
            LOGGER.warn("Assuming {} already exists (activate trace log for details)",
classe.identity());
            LOGGER.trace("Assuming existing record", e);
            return false;
        }
    }



    /**
     * authenticate a super user to be able to register new users
     *
     */
    protected void authenticateForBootstrapping() {
        authenticationService.authenticate(MANAGER, MANAGER_PWD);
        Invariants.ensure(authz.hasSession());
    }

    private String nameOfEntity(final Action boot) {
        final String name = boot.getClass().getSimpleName();
        return Strings.left(name, name.length() - "Bootstrapper".length());
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.bootstrappers\src\main\java\eapli\base\infrastructure\bootstrapers\BaseBootstrapper.java

[File Begins] sem4pi-22-23-61-master\base.bootstrappers\src\main\java\eapli\base\infrastructure\bootstrapers\MasterUsersBootstrapper.java

```
/*
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software and
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restriction,
```

```
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HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
 */
package eapli.base.infrastructure.bootstrapers;

import java.util.HashSet;
import java.util.Set;

import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.actions.Action;
import eapli.framework.infrastructure.authz.domain.model.Role;

/**
 * @author Paulo Gandra Sousa
 * Edited by João Cruz
 *
 * Classe destinada a criar um utilizador para apresentação do projeto em forma de
bootstrapper.
 */
public class MasterUsersBootstrapper extends UsersBootstrapperBase implements
Action {

    @Override
    public boolean execute() {
        registerAdmin("Desenvolvedor", TestDataConstants.PASSWORD1,
"Desenvolvedor", "LAPR4", "desenvolvedor.lapr4@local"); // Administrador
        registerManager("JoaoSimoes", TestDataConstants.PASSWORD1, "Joao",
"Simoes", "joao.simoes@local"); // Manager 1
```

```
        registerManager("HenriqueMedina", TestDataConstants.PASSWORD1, "Henrique",
"Medina", "henrique.medina@local"); // Manager 2
        registerTeacher("LuisFabiano", TestDataConstants.PASSWORD1, "Luis",
"Fabiano", "luis.fabiano@local"); // Teacher 1
        registerTeacher("AlexandreMatias", TestDataConstants.PASSWORD1,
"Alexandre", "Matias", "alexandre.matias@local"); // Teacher 2
        registerStudent("RicardoFilipe", TestDataConstants.PASSWORD1, "Ricardo",
"Filipe", "ricardo.filipe@local"); // Student 1
        registerStudent("JoseAfonso", TestDataConstants.PASSWORD1, "Jose", "Afonso",
"jose.afonso@local"); // Student 2
        return true;
    }

    /**
     *
     */
    private void registerAdmin(final String username, final String password, final String
firstName, final String lastName, final String email) {
        final Set<Role> roles = new HashSet<>();
        roles.add(BaseRoles.ADMIN);

        registerUser(username, password, firstName, lastName, email, roles);
    }

    private void registerManager(final String username, final String password, final String
firstName, final String lastName, final String email) {
        final Set<Role> roles = new HashSet<>();
        roles.add(BaseRoles.MANAGER);

        registerUser(username, password, firstName, lastName, email, roles);
    }

    private void registerTeacher(final String username, final String password, final String
firstName, final String lastName, final String email) {
        final Set<Role> roles = new HashSet<>();
        roles.add(BaseRoles.TEACHER);

        registerUser(username, password, firstName, lastName, email, roles);
    }

    private void registerStudent(final String username, final String password, final String
firstName, final String lastName, final String email) {
        final Set<Role> roles = new HashSet<>();
        roles.add(BaseRoles.STUDENT);
```

```
        registerUser(username, password, firstName, lastName, email, roles);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.bootstrappers\src\main\java\eapli\base\infrastructure\bootstrapers\MasterUsersBootstrapper.java

[File Begins] sem4pi-22-23-61-master\base.bootstrappers\src\main\java\eapli\base\infrastructure\bootstrapers\TestDataConstants.java

```
/*
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 *
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 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
 */
package eapli.base.infrastructure.bootstrapers;

import java.util.Calendar;
```

```
import eapli.framework.time.util.Calendars;

public final class TestDataConstants {

    public static final String USER_TEST1 = "user1";
    public static final String MANAGER_TEST1 = "manager1";
    public static final String TEACHER_TEST1 = "teacher1";
    public static final String STUDENT_TEST1 = "student1";

    @SuppressWarnings("squid:S2068")
    public static final String PASSWORD1 = "Password1";

    @SuppressWarnings("squid:S2885")
    public static final Calendar DATE_TO_BOOK = Calendars.of(2017, 12, 01);

    private TestDataConstants() {
        // ensure utility
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.bootstrappers\src\main\java\eapli\base\infrastructure\bootstrapers\TestDataConstants.java

[File Begins] sem4pi-22-23-61-master\base.bootstrappers\src\main\java\eapli\base\infrastructure\bootstrapers\UsersBootstrapperBase.java

```
/*
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 *
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 *
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software and
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```

```
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PARTICULAR PURPOSE AND
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HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
 */
package eapli.base.infrastructure.bootstrapers;

import java.util.Set;

import org.slf4j.Logger;
import org.slf4j.LoggerFactory;

import eapli.base.usermanagement.application.AddUserController;
import eapli.base.usermanagement.application.ListUsersController;
import eapli.framework.domain.repositories.ConcurrencyException;
import eapli.framework.domain.repositories.IntegrityViolationException;
import eapli.framework.infrastructure.authz.domain.model.Role;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.model.Username;

/**
 * Classe destinada a listar os utilizadores.
 */

public class UsersBootstrapperBase {
    private static final Logger LOGGER =
LoggerFactory.getLogger(UsersBootstrapperBase.class);

    final AddUserController userController = new AddUserController();
    final ListUsersController listUserController = new ListUsersController();

    public UsersBootstrapperBase() {
        super();
    }

    /**
```

```
     * @param username
     * @param password
     * @param firstName
     * @param lastName
     * @param email
     * @param roles
     */
    protected SystemUser registerUser(final String username, final String password, final String firstName,
            final String lastName, final String email, final Set<Role> roles) {
        SystemUser u = null;
        try {
            u = userController.addUser(username, password, firstName, lastName, email, roles);
            LOGGER.debug("»»» %s", username);
        } catch (final IntegrityViolationException | ConcurrencyException e) {
            // assuming it is just a primary key violation due to the tentative
            // of inserting a duplicated user. let's just lookup that user
            u = listUserController.find(Username.valueOf(username)).orElseThrow(() -> e);
        }
        return u;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.bootstrappers\src\main\java\eapli\base\infrastructure\bootstrapers\UsersBootstrapperBase.java

[File Begins] sem4pi-22-23-61-master\base.bootstrappers\src\main\java\eapli\base\infrastructure\bootstrapers\demo\BackofficeUsersBootstrapper.java

```
/*
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 *
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```

```
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 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
 */
package eapli.base.infrastructure.bootstrapers.demo;

import java.util.HashSet;
import java.util.Set;

import eapli.base.infrastructure.bootstrapers.UsersBootstrapperBase;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.actions.Action;
import eapli.framework.infrastructure.authz.domain.model.Role;

/**
 * @author Paulo Gandra Sousa
 */
public class BackofficeUsersBootstrapper extends UsersBootstrapperBase implements
Action {

    @SuppressWarnings("squid:S2068")
    private static final String PASSWORD1 = "Password1";

    @Override
    public boolean execute() {
        registerStudent("student", PASSWORD1, "Johny", "Cash",
"johny.doe@emai.l.com");
        registerTeacher("teacher", PASSWORD1, "Oven", "Stove",
"Oven.and.stove@emai.l.com");
        registerManager("manager", PASSWORD1, "Master", "Chef",
"master.chef@emai.l.com");
        return true;
```

```
    }

    private void registerStudent(final String username, final String password,
            final String firstName, final String lastName, final String email) {
        final Set<Role> roles = new HashSet<>();
        roles.add(BaseRoles.STUDENT);

        registerUser(username, password, firstName, lastName, email, roles);
    }

    private void registerTeacher(final String username, final String password,
            final String firstName, final String lastName, final String email) {
        final Set<Role> roles = new HashSet<>();
        roles.add(BaseRoles.TEACHER);

        registerUser(username, password, firstName, lastName, email, roles);
    }

    private void registerManager(final String username, final String password,
            final String firstName, final String lastName, final String email) {
        final Set<Role> roles = new HashSet<>();
        roles.add(BaseRoles.MANAGER);

        registerUser(username, password, firstName, lastName, email, roles);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.bootstrappers\src\main\java\eapli\base\infrastructure\bootstrapers\demo\BackofficeUsersBootstrapper.java

[File Begins] sem4pi-22-23-61-master\base.bootstrappers\src\main\java\eapli\base\infrastructure\bootstrapers\demo\BaseDemoBootstrapper.java

```
/*
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 *
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 *
 * Permission is hereby granted, free of charge, to any person obtaining a copy
 * of this software and associated documentation files (the "Software"), to deal
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```

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 * FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO
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 * AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES
OR OTHER
 * LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.infrastructure.bootstrapers.demo;

import eapli.base.infrastructure.bootstrapers.BaseBootstrapper;
import eapli.framework.actions.Action;
import eapli.framework.infrastructure.authz.application.AuthenticationService;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.strings.util.Strings;
import eapli.framework.validations.Invariants;

/**
 * Base Bootstrapping data app
 *
 * @todo avoid duplication with {@link BaseBootstrapper}
 * @author Paulo Gandra de Sousa
 *
 * Classe destinada a criar os utilizadores necessários para o funcionamento da
aplicação.
 */
@SuppressWarnings("squid:S106")
public class BaseDemoBootstrapper implements Action {

    private static final String POWERUSER_A1 = "poweruserA1";
    private static final String POWERUSER = "poweruser";
```

```
    private static final String MANAGER = "manager";

    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    private final AuthenticationService authenticationService =
AuthzRegistry.authenticationService();

    @Override
    public boolean execute() {
        // declare bootstrap actions
        final Action[] actions = { new BackofficeUsersBootstrapper(),
                new ClientUserBootstrapper(), };

        authenticateForBootstrapping();

        // execute all bootstrapping
        boolean ret = true;
        for (final Action boot : actions) {
            System.out.println("Bootstrapping " + nameOfEntity(boot) + "...");
            ret &= boot.execute();
        }
        return ret;
    }

    /**
     * authenticate a super user to be able to register new users
     *
     */
    protected void authenticateForBootstrapping() {
        authenticationService.authenticate(POWERUSER, MANAGER);
        Invariants.ensure(authz.hasSession());
    }

    private String nameOfEntity(final Action boot) {
        final String name = boot.getClass().getSimpleName();
        return Strings.left(name, name.length() - "Bootstrapper".length());
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.bootstrappers\src\main\java\eapli\base\infrastructure\bootstrapers\demo\BaseDemoBootstrapper.java

[File Begins] sem4pi-22-23-61-master\base.bootstrappers\src\main\java\eapli\base\infrastructure\bootstrapers\demo\ClientUserBootstrapper.java

```
/*
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 *
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 * associated documentation files (the "Software"), to deal in the Software without
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EXPRESS OR IMPLIED, INCLUDING BUT
 * NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A
PARTICULAR PURPOSE AND
 * NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
 */
package eapli.base.infrastructure.bootstrapers.demo;

import org.slf4j.Logger;
import org.slf4j.LoggerFactory;

import eapli.base.clientusermanagement.application.AcceptRefuseSignupFactory;
import
eapli.base.clientusermanagement.application.AcceptRefuseSignupRequestController;
import eapli.base.clientusermanagement.domain.SignupRequest;
```

```
import eapli.base.infrastructure.bootstrapers.TestDataConstants;
import eapli.base.myclientuser.application.SignupController;
import eapli.framework.actions.Action;
import eapli.framework.domain.repositories.ConcurrencyException;
import eapli.framework.domain.repositories.IntegrityViolationException;

/**
 *
 * @author Paulo Sousa
 * Edited by João Cruz
 */
public class ClientUserBootstrapper implements Action {
    private static final Logger LOGGER =
LoggerFactory.getLogger(ClientUserBootstrapper.class);

    private final SignupController signupController = new SignupController();
    private final AcceptRefuseSignupRequestController acceptController =
AcceptRefuseSignupFactory.build();

    @Override
    public boolean execute() {
        signupAndApprove(TestDataConstants.USER_TEST1, "Password1", "John",
"Smith", "john@smith.com", TestDataConstants.USER_TEST1);
        signupAndApprove(TestDataConstants.MANAGER_TEST1, "Password1", "Calvin",
"Smith", "calvin@smith.com", TestDataConstants.MANAGER_TEST1);
        signupAndApprove(TestDataConstants.TEACHER_TEST1, "Password1", "Elsa",
"Smith", "elsa@smith.com", TestDataConstants.TEACHER_TEST1);
        signupAndApprove(TestDataConstants.STUDENT_TEST1, "Password1", "Joseph",
"Smith", "joseph@smith.com", TestDataConstants.STUDENT_TEST1);
        signupAndApprove("isep959", "Password1", "Mary", "Smith", "mary@smith.com",
"isep959");
        return true;
    }

    private SignupRequest signupAndApprove(final String username, final String
password, final String firstName, final String lastName, final String email, final String
mecanographicNumber) {
        SignupRequest request = null;
        try {
            request = signupController.signup(username, password, firstName, lastName,
email, mecanographicNumber);
            acceptController.acceptSignupRequest(request);
        } catch (final ConcurrencyException | IntegrityViolationException e) {
            // ignoring exception. assuming it is just a primary key violation
```

```
            // due to the tentative of inserting a duplicated user
            LOGGER.warn("Assuming {} already exists (activate trace log for details)",
username);
            LOGGER.trace("Assuming existing record", e);
        }
        return request;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.bootstrappers\src\main\java\eapli\base\infrastructure\bootstrapers\demo\ClientUserBootstrapper.java

[File Begins] sem4pi-22-23-61-master\base.bootstrappers\src\main\java\eapli\base\infrastructure\smoketests\BaseDemoSmokeTester.java

```
/*
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 * sublicense, and/or sell copies of the Software, and to permit persons to whom the
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 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
```

```
 */
package eapli.base.infrastructure.smoketests;

import eapli.framework.actions.Action;

/**
 * execute simple smoke tests on the application layer. we are assuming that the
 * bootstrappers mainly test the "register" use cases and some of the "finders"
 * to support those "register", so this class will focus mainly on executing the
 * other application methods
 *
 */
@SuppressWarnings("squid:S1126")
public class BaseDemoSmokeTester implements Action {

    @Override
    public boolean execute() {
        // TODO: Add your smoke test execute here
        return true;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.bootstrappers\src\main\java\eapli\base\infrastructure\smoketests\BaseDemoSmokeTester.java

[File Begins] sem4pi-22-23-61-master\base.bootstrappers\src\main\resources\application.properties

```
############################################################
##
## Base
##
############################################################

persistence.repositoryFactory=eapli.base.persistence.impl.jpa.JpaRepositoryFactory
#persistence.repositoryFactory=eapli.base.persistence.impl.inmemory.InMemoryRepositoryFactory
ui.menu.layout=horizontal
persistence.persistenceUnit=eapli.base
HighCaloriesDishLimit=300
```

[File Ends] sem4pi-22-23-61-master\base.bootstrappers\src\main\resources\application.properties

[File Begins] sem4pi-22-23-61-master\base.bootstrappers\src\test\java\eapli\base\bootstrapapp\AppTest.java

```
package eapli.base.bootstrapapp;

import junit.framework.Test;
import junit.framework.TestCase;
import junit.framework.TestSuite;

/**
 * Unit test for simple App.
 */
public class AppTest extends TestCase {

    /**
     * @return the suite of tests being tested
     */
    public static Test suite() {
        return new TestSuite(AppTest.class);
    }

    /**
     * Create the test case
     *
     * @param testName name of the test case
     */
    public AppTest(String testName) {
        super(testName);
    }

    /**
     * Rigourous Test :-)
     */
    public void testApp() {
        assertTrue(true);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.bootstrappers\src\test\java\eapli\base\bootstrapapp\AppTest.java

[File Begins] sem4pi-22-23-61-master\base.core\machinet.conf

```
### Please DO NOT modify the contents of this file. For internal purpose only
root=7e80baff-8cf9-3f44-88ad-a7f2e412d186
rootId=c683d734-742d-3f4d-b526-21d8142491be
```

[File Ends] sem4pi-22-23-61-master\base.core\machinet.conf

[File Begins] sem4pi-22-23-61-master\base.core\pom.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/xsd/maven-4.0.0.xsd">
    <modelVersion>4.0.0</modelVersion>

    <parent>
        <groupId>eapli</groupId>
        <artifactId>base</artifactId>
        <relativePath>../</relativePath>
        <version>1.4.0-SNAPSHOT</version>
    </parent>

    <artifactId>base.core</artifactId>
    <packaging>jar</packaging>

    <name>base.core</name>

    <properties>
        <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
        <project.reporting.outputEncoding>UTF-8</project.reporting.outputEncoding>
    </properties>

    <dependencies>
                <dependency>
                        <groupId>eapli</groupId>
                        <artifactId>base.infrastructure.application</artifactId>
                        <version>${project.parent.version}</version>
                </dependency>
    </dependencies>
</project>
```

[File Ends] sem4pi-22-23-61-master\base.core\pom.xml

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\META-INF\application.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<application xmlns="http://xmlns.jcp.org/xml/ns/javaee"
	xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
	xsi:schemaLocation="http://xmlns.jcp.org/xml/ns/javaee
http://xmlns.jcp.org/xml/ns/javaee/application_8.xsd"
	version="8">

</application>
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\META-INF\application.xml

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\Exam.txt

```
package eapli.base.ANTLR.ExamValidation;

import java.io.*;

import eapli.base.ANTLR.ExamValidation.ExamBaseVisitor;
import eapli.base.ANTLR.ExamValidation.ExamLexer;
import eapli.base.ANTLR.ExamValidation.ExamParser;
import eapli.base.ANTLR.ExamValidation.ExamVisitor;
import org.antlr.v4.runtime.*;
import org.antlr.v4.runtime.tree.*;

public class Exam {
    public static void main(String[] args) throws IOException {
        FileInputStream fis = new FileInputStream(new File("teste.txt"));
        ExamLexer lexer = new ExamLexer(new ANTLRInputStream(fis));
        CommonTokenStream tokens = new CommonTokenStream(lexer);
        ExamParser parser = new ExamParser(tokens);
        ParseTree tree = parser.prog(); // parse

        ExamVisitor<?> visitor = new ExamBaseVisitor<>(); // Replace with your custom
visitor
        visitor.visit(tree);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\Exam.txt

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\ExamFile.txt

```
Teste: {
   ID: 1,
   Título: Exame Final de Literatura Inglesa.
   Secção ID: 1, {
      Descrição Textual: Analise de Poesia.
      Dificuldade: 3
      Limite de Perguntas: 5
      Perguntas:
         Pergunta
         ID: 1,
         Enunciado: Qual e o tema do poema 'O Corvo'?
         Tipo de Pergunta: Escolha Múltipla
            Opções: [
               Opção 1: Amor;
               Opção 2: Desespero;
               Opção 3: Esperanca;
               Opção 4: Alegria;
               ]
            Resposta: 2
               Cotação: 2
               Dificuldade: 2
         Pergunta
            ID: 2,
            Enunciado: Identifica o dispositivo poetico usado na frase 'Ser ou nao ser'.
            Tipo de Pergunta: Resposta Curta
            Resposta: Metafora.
               Cotação: 3
               Dificuldade: 1
            }
   Secção
      ID: 2, {
      Descrição Textual: Analise de Prosa.
      Dificuldade: 2
      Limite de Perguntas: 3
      Perguntas:
         Pergunta
            ID: 3,
            Enunciado: Autor do romance 'Orgulho e Preconceito' e ___1___ ___2___?
            Tipo de Pergunta: Palavras em Falta
```

Resposta: {
Resposta 1: Jane
Resposta 2: Austen
}
Cotação: 4
Dificuldade: 2

Pergunta
ID: 4,
Enunciado: Explique o significado da luz verde em 'O Grande Gatsby'.
Tipo de Pergunta: Resposta Curta
Resposta: Simboliza a esperanca e o Sonho Americano.
Cotação: 1
Dificuldade: 3
Pergunta
ID: 5,
Enunciado: Quantos campeonatos tem o Benfica?
Tipo de Pergunta: Numérica
Resposta: 38
Cotação: 1
Dificuldade: 3
Pergunta
ID: 6,
Enunciado: ceu e azul?
Tipo de Pergunta: Verdadeiro ou Falso
Resposta: Verdadeiro
Cotação: 1
Dificuldade: 3
Pergunta
ID: 7,
Enunciado: Conecte a tabela correspondente!
Tipo de Pergunta : Correspondência
Tabela A: [
Enunciado 1: APROG.
Enunciado 2: Chocolate.
]
Tabela B: [
Enunciado 1: bom.
Enunciado 2: facil.
]
Resposta :
Tabela A: 1 - Tabela B: 2
Tabela A: 2 - Tabela B: 1
Cotação: 1

Dificuldade: 3

}
Data Abertura: 30/05/2023 09:00
Data Fecho: 06/10/2023 17:00
}

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\ExamFile.txt

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\Exame.g4

```
grammar Exame;

prog: exame;

exame: TESTE DOISPONTOS ABRECHAVETA corpo_exame FECHACHAVETA;

corpo_exame: ID DOISPONTOS id_exame=INT VIRGULA TITULO DOISPONTOS
titulo_exame=FRASE seccao+ DATAABERTURA DOISPONTOS data_abertura=DATA
DATAFECHO DOISPONTOS data_fecho=DATA;

seccao: SECCAO ID DOISPONTOS id_seccao=INT VIRGULA ABRECHAVETA
DESCRICAO_TEXTUAL DOISPONTOS desc_seccao=FRASE DIFICULDADE
DOISPONTOS dificuldade_seccao=INT LIMITE_PERGUNTAS DOISPONTOS
limite=INT PERGUNTAS DOISPONTOS pergunta+ FECHACHAVETA;

pergunta: PERGUNTA ID DOISPONTOS id_pergunta=INT VIRGULA ENUNCIADO
DOISPONTOS enunciado_pergunta=FRASE tipo_pergunta=TIPO_PERGUNTA
DOISPONTOS corpo COTACAO DOISPONTOS cotacao_pergunta=INT DIFICULDADE
DOISPONTOS dificuldade_pergunta=INT;

corpo: correspondencia
    | escolha_multipla
    | resposta_curta
    | numerica
    | palavras_em_falta
    | verdadeiro_falso;

verdadeiro_falso: VERDADEIROOUFALSO RESPOSTA DOISPONTOS
resposta_verdOuFal = (VERDADEIRO | FALSO) ;

palavras_em_falta: PALAVRAS_EM_FALTA RESPOSTA DOISPONTOS
ABRECHAVETA resposta_falta+ FECHACHAVETA;
```

```
resposta_falta : RESPOSTA INT DOISPONTOS resp_falta=FRASE;

numerica: NUMERICA RESPOSTA DOISPONTOS resp_numerica=NUMERO;

resposta_curta: RESPOSTA_CURTA RESPOSTA DOISPONTOS resp_curta=FRASE;

escolha_multipla: ESCOLHA_MULTIPLA OPCOES DOISPONTOS ABREPARANTESIS
opcao_escolha_multipla+ FECHAPARANTESIS RESPOSTA DOISPONTOS
resposta_escolha_multipla=INT;

opcao_escolha_multipla: OPCAO INT DOISPONTOS opcao_escolha=FRASE;

correspondencia: CORRESPONDENCIA TABELA_A DOISPONTOS
ABREPARANTESIS token_correspondencia+ FECHAPARANTESIS TABELA_B
DOISPONTOS ABREPARANTESIS token_correspondencia+ FECHAPARANTESIS
RESPOSTA DOISPONTOS respostas_correspondencia+;

token_correspondencia: ENUNCIADO INT DOISPONTOS
resp_correspondencia=FRASE;

respostas_correspondencia: TABELA_A DOISPONTOS INT TRACO TABELA_B
DOISPONTOS INT;

DOISPONTOS : ':';
ABRECHAVETA : '{';
FECHACHAVETA : '}';
ABREPARANTESIS : '[';
FECHAPARANTESIS : ']';
VIRGULA : ',';
TESTE : 'Teste';
ID : 'ID';
TRACO : '-';
RESPOSTA : 'Resposta';
TITULO : 'Titulo';
DATAABERTURA : 'DataAbertura';
DATAFECHO : 'DataFecho';
OPCOES : 'Opcoes';
OPCAO : 'Opcao';
ENUNCIADO : 'Enunciado';
TABELA_A : 'TabelaA';
TABELA_B : 'TabelaB';
COTACAO : 'Cotacao';
DIFICULDADE : 'Dificuldade';
```

```
DESCRICAO_TEXTUAL : 'DescricaoTextual';
PERGUNTAS : 'Perguntas';
LIMITE_PERGUNTAS : 'LimitePerguntas';
SECCAO : 'Seccao';
PERGUNTA : 'Pergunta';
TIPO_PERGUNTA : 'TipoPergunta';
NUMERICA : 'Numerica';
ESCOLHA_MULTIPLA : 'EscolhaMultipla';
CORRESPONDENCIA : 'Correspondencia';
VERDADEIROOUFALSO : 'VerdadeiroOuFalso';
PALAVRAS_EM_FALTA : 'PalavrasEmFalta';
RESPOSTA_CURTA : 'RespostaCurta';
VERDADEIRO : 'Verdadeiro';
FALSO : 'Falso';
TIPO : 'Tipo';
INT : [0-9]+;
DATA : (('0' [0-9]) | ('1' [0-9]) | ('2' [0-9]) | ('3' [0-1])) '/' (('0' [0-9]) | ('1' [0-2])) '/' (([0-9] [0-9] [0-9] [0-9])) ' ' ([0-9][0-9]) DOISPONTOS ([0-9][0-9]);
WS: [\r\n ]+ -> skip;
CARACTERE_ESPECIAL: [_()+/\-'#"] -> skip;
NUMERO: INT'.'INT | INT;
FRASE: STRING (ESPACO STRING)*;
STRING : [a-zA-Z]+;
ESPACO: [ \t] -> skip;
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\Exame.g4

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\Exame.interp

```
token literal names:
null
':'
'{'
'}'
'['
']'
','
'Teste'
'ID'
'-'
'Resposta'
'Titulo'
'DataAbertura'
```

'DataFecho'
'Opcoes'
'Opcao'
'Enunciado'
'TabelaA'
'TabelaB'
'Cotacao'
'Dificuldade'
'DescricaoTextual'
'Perguntas'
'LimitePerguntas'
'Seccao'
'Pergunta'
'TipoPergunta'
'Numerica'
'EscolhaMultipla'
'Correspondencia'
'VerdadeiroOuFalso'
'PalavrasEmFalta'
'RespostaCurta'
'Verdadeiro'
'Falso'
'Tipo'
null
null
null
null
null
null
null
null

token symbolic names:
null
DOISPONTOS
ABRECHAVETA
FECHACHAVETA
ABREPARANTESIS
FECHAPARANTESIS
VIRGULA
TESTE
ID
TRACO
RESPOSTA

TITULO
DATAABERTURA
DATAFECHO
OPCOES
OPCAO
ENUNCIADO
TABELA_A
TABELA_B
COTACAO
DIFICULDADE
DESCRICAO_TEXTUAL
PERGUNTAS
LIMITE_PERGUNTAS
SECCAO
PERGUNTA
TIPO_PERGUNTA
NUMERICA
ESCOLHA_MULTIPLA
CORRESPONDENCIA
VERDADEIROOUFALSO
PALAVRAS_EM_FALTA
RESPOSTA_CURTA
VERDADEIRO
FALSO
TIPO
INT
DATA
WS
CARACTERE_ESPECIAL
NUMERO
FRASE
STRING
ESPACO

rule names:
prog
exame
corpo_exame
seccao
pergunta
corpo
verdadeiro_falso
palavras_em_falta
resposta_falta

numerica
resposta_curta
escolha_multipla
opcao_escolha_multipla
correspondencia
token_correspondencia
respostas_correspondencia

atn:
[4, 1, 43, 199, 2, 0, 7, 0, 2, 1, 7, 1, 2, 2, 7, 2, 2, 3, 7, 3, 2, 4, 7, 4, 2, 5, 7, 5, 2, 6, 7, 6, 2,
7, 7, 7, 2, 8, 7, 8, 2, 9, 7, 9, 2, 10, 7, 10, 2, 11, 7, 11, 2, 12, 7, 12, 2, 13, 7, 13, 2, 14, 7,
14, 2, 15, 7, 15, 1, 0, 1, 0, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1,
2, 1, 2, 4, 2, 49, 8, 2, 11, 2, 12, 2, 50, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 3, 1, 3, 1, 3,
1, 3, 1, 3, 1, 3, 1, 3, 1, 3, 1, 3, 1, 3, 1, 3, 1, 3, 1, 3, 1, 3, 1, 3, 1, 3, 1, 3, 4, 3, 78, 8, 3,
11, 3, 12, 3, 79, 1, 3, 1, 3, 1, 4, 1, 4, 1, 4, 1, 4, 1, 4, 1, 4, 1, 4, 1, 4, 1, 4, 1, 4, 1, 4, 1, 4, 1,
4, 1, 4, 1, 4, 1, 4, 1, 4, 1, 4, 1, 5, 1, 5, 1, 5, 1, 5, 1, 5, 1, 5, 3, 5, 108, 8, 5, 1, 6, 1, 6, 1, 6,
1, 6, 1, 6, 1, 7, 1, 7, 1, 7, 1, 7, 1, 7, 4, 7, 120, 8, 7, 11, 7, 12, 7, 121, 1, 7, 1, 7, 1, 8, 1, 8,
1, 8, 1, 8, 1, 8, 1, 9, 1, 9, 1, 9, 1, 9, 1, 9, 1, 10, 1, 10, 1, 10, 1, 10, 1, 10, 1, 11, 1, 11, 1,
11, 1, 11, 1, 11, 4, 11, 146, 8, 11, 11, 11, 12, 11, 147, 1, 11, 1, 11, 1, 11, 1, 11, 1, 11, 1,
12, 1, 12, 1, 12, 1, 12, 1, 12, 1, 13, 1, 13, 1, 13, 1, 13, 1, 13, 4, 13, 165, 8, 13, 11, 13, 12,
13, 166, 1, 13, 1, 13, 1, 13, 1, 13, 1, 13, 4, 13, 174, 8, 13, 11, 13, 12, 13, 175, 1, 13, 1,
13, 1, 13, 1, 13, 4, 13, 182, 8, 13, 11, 13, 12, 13, 183, 1, 14, 1, 14, 1, 14, 1, 14, 1, 14, 1,
15, 1, 15, 1, 15, 1, 15, 1, 15, 1, 15, 1, 15, 1, 15, 1, 15, 1, 15, 0, 0, 16, 0, 2, 4, 6, 8, 10, 12, 14,
16, 18, 20, 22, 24, 26, 28, 30, 0, 1, 1, 0, 33, 34, 194, 0, 32, 1, 0, 0, 0, 2, 34, 1, 0, 0, 0, 4,
40, 1, 0, 0, 0, 6, 59, 1, 0, 0, 0, 8, 83, 1, 0, 0, 0, 10, 107, 1, 0, 0, 0, 12, 109, 1, 0, 0, 0, 14,
114, 1, 0, 0, 0, 16, 125, 1, 0, 0, 0, 18, 130, 1, 0, 0, 0, 20, 135, 1, 0, 0, 0, 22, 140, 1, 0, 0,
0, 24, 154, 1, 0, 0, 0, 26, 159, 1, 0, 0, 0, 28, 185, 1, 0, 0, 0, 30, 190, 1, 0, 0, 0, 32, 33, 3,
2, 1, 0, 33, 1, 1, 0, 0, 0, 34, 35, 5, 7, 0, 0, 35, 36, 5, 1, 0, 0, 36, 37, 5, 2, 0, 0, 37, 38, 3, 4,
2, 0, 38, 39, 5, 3, 0, 0, 39, 3, 1, 0, 0, 0, 40, 41, 5, 8, 0, 0, 41, 42, 5, 1, 0, 0, 42, 43, 5, 36,
0, 0, 43, 44, 5, 6, 0, 0, 44, 45, 5, 11, 0, 0, 45, 46, 5, 1, 0, 0, 46, 48, 5, 41, 0, 0, 47, 49, 3,
6, 3, 0, 48, 47, 1, 0, 0, 0, 49, 50, 1, 0, 0, 0, 50, 48, 1, 0, 0, 0, 50, 51, 1, 0, 0, 0, 51, 52, 1,
0, 0, 0, 52, 53, 5, 12, 0, 0, 53, 54, 5, 1, 0, 0, 54, 55, 5, 37, 0, 0, 55, 56, 5, 13, 0, 0, 56, 57,
5, 1, 0, 0, 57, 58, 5, 37, 0, 0, 58, 5, 1, 0, 0, 0, 59, 60, 5, 24, 0, 0, 60, 61, 5, 8, 0, 0, 61, 62,
5, 1, 0, 0, 62, 63, 5, 36, 0, 0, 63, 64, 5, 6, 0, 0, 64, 65, 5, 2, 0, 0, 65, 66, 5, 21, 0, 0, 66,
67, 5, 1, 0, 0, 67, 68, 5, 41, 0, 0, 68, 69, 5, 20, 0, 0, 69, 70, 5, 1, 0, 0, 70, 71, 5, 36, 0, 0,
71, 72, 5, 23, 0, 0, 72, 73, 5, 1, 0, 0, 73, 74, 5, 36, 0, 0, 74, 75, 5, 22, 0, 0, 75, 77, 5, 1, 0,
0, 76, 78, 3, 8, 4, 0, 77, 76, 1, 0, 0, 0, 78, 79, 1, 0, 0, 0, 79, 77, 1, 0, 0, 0, 79, 80, 1, 0, 0,
0, 80, 81, 1, 0, 0, 0, 81, 82, 5, 3, 0, 0, 82, 7, 1, 0, 0, 0, 83, 84, 5, 25, 0, 0, 84, 85, 5, 8, 0,
0, 85, 86, 5, 1, 0, 0, 86, 87, 5, 36, 0, 0, 87, 88, 5, 6, 0, 0, 88, 89, 5, 16, 0, 0, 89, 90, 5, 1,
0, 0, 90, 91, 5, 41, 0, 0, 91, 92, 5, 26, 0, 0, 92, 93, 5, 1, 0, 0, 93, 94, 3, 10, 5, 0, 94, 95, 5,
19, 0, 0, 95, 96, 5, 1, 0, 0, 96, 97, 5, 36, 0, 0, 97, 98, 5, 20, 0, 0, 98, 99, 5, 1, 0, 0, 99,
100, 5, 36, 0, 0, 100, 9, 1, 0, 0, 0, 101, 108, 3, 26, 13, 0, 102, 108, 3, 22, 11, 0, 103, 108,
3, 20, 10, 0, 104, 108, 3, 18, 9, 0, 105, 108, 3, 14, 7, 0, 106, 108, 3, 12, 6, 0, 107, 101, 1,

0, 0, 0, 107, 102, 1, 0, 0, 0, 107, 103, 1, 0, 0, 0, 107, 104, 1, 0, 0, 0, 107, 105, 1, 0, 0, 0, 107, 106, 1, 0, 0, 0, 108, 11, 1, 0, 0, 0, 109, 110, 5, 30, 0, 0, 110, 111, 5, 10, 0, 0, 111, 112, 5, 1, 0, 0, 112, 113, 7, 0, 0, 0, 113, 13, 1, 0, 0, 0, 114, 115, 5, 31, 0, 0, 115, 116, 5, 10, 0, 0, 116, 117, 5, 1, 0, 0, 117, 119, 5, 2, 0, 0, 118, 120, 3, 16, 8, 0, 119, 118, 1, 0, 0, 0, 120, 121, 1, 0, 0, 0, 121, 119, 1, 0, 0, 0, 121, 122, 1, 0, 0, 0, 122, 123, 1, 0, 0, 0, 123, 124, 5, 3, 0, 0, 124, 15, 1, 0, 0, 0, 125, 126, 5, 10, 0, 0, 126, 127, 5, 36, 0, 0, 127, 128, 5, 1, 0, 0, 128, 129, 5, 41, 0, 0, 129, 17, 1, 0, 0, 0, 130, 131, 5, 27, 0, 0, 131, 132, 5, 10, 0, 0, 132, 133, 5, 1, 0, 0, 133, 134, 5, 40, 0, 0, 134, 19, 1, 0, 0, 0, 135, 136, 5, 32, 0, 0, 136, 137, 5, 10, 0, 0, 137, 138, 5, 1, 0, 0, 138, 139, 5, 41, 0, 0, 139, 21, 1, 0, 0, 0, 140, 141, 5, 28, 0, 0, 141, 142, 5, 14, 0, 0, 142, 143, 5, 1, 0, 0, 143, 145, 5, 4, 0, 0, 144, 146, 3, 24, 12, 0, 145, 144, 1, 0, 0, 0, 146, 147, 1, 0, 0, 0, 147, 145, 1, 0, 0, 0, 147, 148, 1, 0, 0, 0, 148, 149, 1, 0, 0, 0, 149, 150, 5, 5, 0, 0, 150, 151, 5, 10, 0, 0, 151, 152, 5, 1, 0, 0, 152, 153, 5, 36, 0, 0, 153, 23, 1, 0, 0, 0, 154, 155, 5, 15, 0, 0, 155, 156, 5, 36, 0, 0, 156, 157, 5, 1, 0, 0, 157, 158, 5, 41, 0, 0, 158, 25, 1, 0, 0, 0, 159, 160, 5, 29, 0, 0, 160, 161, 5, 17, 0, 0, 161, 162, 5, 1, 0, 0, 162, 164, 5, 4, 0, 0, 163, 165, 3, 28, 14, 0, 164, 163, 1, 0, 0, 0, 165, 166, 1, 0, 0, 0, 166, 164, 1, 0, 0, 0, 166, 167, 1, 0, 0, 0, 167, 168, 1, 0, 0, 0, 168, 169, 5, 5, 0, 0, 169, 170, 5, 18, 0, 0, 170, 171, 5, 1, 0, 0, 171, 173, 5, 4, 0, 0, 172, 174, 3, 28, 14, 0, 173, 172, 1, 0, 0, 0, 174, 175, 1, 0, 0, 0, 175, 173, 1, 0, 0, 0, 175, 176, 1, 0, 0, 0, 176, 177, 1, 0, 0, 0, 177, 178, 5, 5, 0, 0, 178, 179, 5, 10, 0, 0, 179, 181, 5, 1, 0, 0, 180, 182, 3, 30, 15, 0, 181, 180, 1, 0, 0, 0, 182, 183, 1, 0, 0, 0, 183, 181, 1, 0, 0, 0, 183, 184, 1, 0, 0, 0, 184, 27, 1, 0, 0, 0, 185, 186, 5, 16, 0, 0, 186, 187, 5, 36, 0, 0, 187, 188, 5, 1, 0, 0, 188, 189, 5, 41, 0, 0, 189, 29, 1, 0, 0, 0, 190, 191, 5, 17, 0, 0, 191, 192, 5, 1, 0, 0, 192, 193, 5, 36, 0, 0, 193, 194, 5, 9, 0, 0, 194, 195, 5, 18, 0, 0, 195, 196, 5, 1, 0, 0, 196, 197, 5, 36, 0, 0, 197, 31, 1, 0, 0, 0, 8, 50, 79, 107, 121, 147, 166, 175, 183]

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\Exame.interp

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\Exame.tokens

DOISPONTOS=1
ABRECHAVETA=2
FECHACHAVETA=3
ABREPARANTESIS=4
FECHAPARANTESIS=5
VIRGULA=6
TESTE=7
ID=8
TRACO=9
RESPOSTA=10
TITULO=11
DATAABERTURA=12
DATAFECHO=13
OPCOES=14
OPCAO=15

ENUNCIADO=16
TABELA_A=17
TABELA_B=18
COTACAO=19
DIFICULDADE=20
DESCRICAO_TEXTUAL=21
PERGUNTAS=22
LIMITE_PERGUNTAS=23
SECCAO=24
PERGUNTA=25
TIPO_PERGUNTA=26
NUMERICA=27
ESCOLHA_MULTIPLA=28
CORRESPONDENCIA=29
VERDADEIROOUFALSO=30
PALAVRAS_EM_FALTA=31
RESPOSTA_CURTA=32
VERDADEIRO=33
FALSO=34
TIPO=35
INT=36
DATA=37
WS=38
CARACTERE_ESPECIAL=39
NUMERO=40
FRASE=41
STRING=42
ESPACO=43
':'=1
'{'=2
'}'=3
'['=4
']'=5
','=6
'Teste'=7
'ID'=8
'-'=9
'Resposta'=10
'Titulo'=11
'DataAbertura'=12
'DataFecho'=13
'Opcoes'=14
'Opcao'=15
'Enunciado'=16

'TabelaA'=17
'TabelaB'=18
'Cotacao'=19
'Dificuldade'=20
'DescricaoTextual'=21
'Perguntas'=22
'LimitePerguntas'=23
'Seccao'=24
'Pergunta'=25
'TipoPergunta'=26
'Numerica'=27
'EscolhaMultipla'=28
'Correspondencia'=29
'VerdadeiroOuFalso'=30
'PalavrasEmFalta'=31
'RespostaCurta'=32
'Verdadeiro'=33
'Falso'=34
'Tipo'=35

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\Exame.tokens

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\ExameBaseListener.txt

```
// Generated from C:/Users/mike_/OneDrive/Documentos/sem4pi-22-23-61/base.core/src/main/java/eapli/base/ANTLR/ExamValidation\Exame.g4 by ANTLR 4.12.0
package eapli.base.ANTLR.ExamValidation;

import org.antlr.v4.runtime.ParserRuleContext;
import org.antlr.v4.runtime.tree.ErrorNode;
import org.antlr.v4.runtime.tree.TerminalNode;

/**
 * This class provides an empty implementation of {@link ExameListener},
 * which can be extended to create a listener which only needs to handle a subset
 * of the available methods.
 */
@SuppressWarnings("CheckReturnValue")
public class ExameBaseListener implements ExameListener {
	/**
	 * {@inheritDoc}
	 *
```

```
         * <p>The default implementation does nothing.</p>
         */
        @Override public void enterProg(ExameParser.ProgContext ctx) { }
        /**
         * {@inheritDoc}
         *
         * <p>The default implementation does nothing.</p>
         */
        @Override public void exitProg(ExameParser.ProgContext ctx) { }
        /**
         * {@inheritDoc}
         *
         * <p>The default implementation does nothing.</p>
         */
        @Override public void enterExame(ExameParser.ExameContext ctx) { }
        /**
         * {@inheritDoc}
         *
         * <p>The default implementation does nothing.</p>
         */
        @Override public void exitExame(ExameParser.ExameContext ctx) { }
        /**
         * {@inheritDoc}
         *
         * <p>The default implementation does nothing.</p>
         */
        @Override public void enterCorpo_exame(ExameParser.Corpo_exameContext
ctx) { }
        /**
         * {@inheritDoc}
         *
         * <p>The default implementation does nothing.</p>
         */
        @Override public void exitCorpo_exame(ExameParser.Corpo_exameContext
ctx) { }
        /**
         * {@inheritDoc}
         *
         * <p>The default implementation does nothing.</p>
         */
        @Override public void enterSeccao(ExameParser.SeccaoContext ctx) { }
        /**
         * {@inheritDoc}
         *
```

```
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void exitSeccao(ExameParser.SeccaoContext ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void enterPergunta(ExameParser.PerguntaContext ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void exitPergunta(ExameParser.PerguntaContext ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void enterCorpo(ExameParser.CorpoContext ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void exitCorpo(ExameParser.CorpoContext ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void
enterVerdadeiro_falso(ExameParser.Verdadeiro_falsoContext ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void
exitVerdadeiro_falso(ExameParser.Verdadeiro_falsoContext ctx) { }
	/**
	 * {@inheritDoc}
	 *
```

```
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void
enterPalavras_em_falta(ExameParser.Palavras_em_faltaContext ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void
exitPalavras_em_falta(ExameParser.Palavras_em_faltaContext ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void enterResposta_falta(ExameParser.Resposta_faltaContext
ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void exitResposta_falta(ExameParser.Resposta_faltaContext
ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void enterNumerica(ExameParser.NumericaContext ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void exitNumerica(ExameParser.NumericaContext ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void
enterResposta_curta(ExameParser.Resposta_curtaContext ctx) { }
```

```
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void exitResposta_curta(ExameParser.Resposta_curtaContext
ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void
enterEscolha_multipla(ExameParser.Escolha_multiplaContext ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void
exitEscolha_multipla(ExameParser.Escolha_multiplaContext ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void
enterOpcao_escolha_multipla(ExameParser.Opcao_escolha_multiplaContext ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void
exitOpcao_escolha_multipla(ExameParser.Opcao_escolha_multiplaContext ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void
enterCorrespondencia(ExameParser.CorrespondenciaContext ctx) { }
	/**
	 * {@inheritDoc}
```

```
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void
exitCorrespondencia(ExameParser.CorrespondenciaContext ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void
enterToken_correspondencia(ExameParser.Token_correspondenciaContext ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void
exitToken_correspondencia(ExameParser.Token_correspondenciaContext ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void
enterRespostas_correspondencia(ExameParser.Respostas_correspondenciaContext
ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void
exitRespostas_correspondencia(ExameParser.Respostas_correspondenciaContext ctx)
{ }

	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void enterEveryRule(ParserRuleContext ctx) { }
	/**
	 * {@inheritDoc}
```

```
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void exitEveryRule(ParserRuleContext ctx) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void visitTerminal(TerminalNode node) { }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation does nothing.</p>
	 */
	@Override public void visitErrorNode(ErrorNode node) { }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\ExameBaseListener.txt

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\ExameBaseVisitor.txt

```
// Generated from C:/Users/mike_/OneDrive/Documentos/sem4pi-22-23-61/base.core/src/main/java/eapli/base/ANTLR/ExamValidation\Exame.g4 by ANTLR 4.12.0
package eapli.base.ANTLR.ExamValidation;
import org.antlr.v4.runtime.tree.AbstractParseTreeVisitor;

/**
 * This class provides an empty implementation of {@link ExameVisitor},
 * which can be extended to create a visitor which only needs to handle a subset
 * of the available methods.
 *
 * @param <T> The return type of the visit operation. Use {@link Void} for
 * operations with no return type.
 */
@SuppressWarnings("CheckReturnValue")
public class ExameBaseVisitor<T> extends AbstractParseTreeVisitor<T> implements ExameVisitor<T> {
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation returns the result of calling
	 * {@link #visitChildren} on {@code ctx}.</p>
```

```
	 */
	@Override public T visitProg(ExameParser.ProgContext ctx) { return
visitChildren(ctx); }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation returns the result of calling
	 * {@link #visitChildren} on {@code ctx}.</p>
	 */
	@Override public T visitExame(ExameParser.ExameContext ctx) { return
visitChildren(ctx); }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation returns the result of calling
	 * {@link #visitChildren} on {@code ctx}.</p>
	 */
	@Override public T visitCorpo_exame(ExameParser.Corpo_exameContext ctx) {
return visitChildren(ctx); }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation returns the result of calling
	 * {@link #visitChildren} on {@code ctx}.</p>
	 */
	@Override public T visitSeccao(ExameParser.SeccaoContext ctx) { return
visitChildren(ctx); }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation returns the result of calling
	 * {@link #visitChildren} on {@code ctx}.</p>
	 */
	@Override public T visitPergunta(ExameParser.PerguntaContext ctx) { return
visitChildren(ctx); }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation returns the result of calling
	 * {@link #visitChildren} on {@code ctx}.</p>
	 */
	@Override public T visitCorpo(ExameParser.CorpoContext ctx) { return
visitChildren(ctx); }
	/**
```

```
	 * {@inheritDoc}
	 *
	 * <p>The default implementation returns the result of calling
	 * {@link #visitChildren} on {@code ctx}.</p>
	 */
	@Override public T visitVerdadeiro_falso(ExameParser.Verdadeiro_falsoContext
ctx) { return visitChildren(ctx); }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation returns the result of calling
	 * {@link #visitChildren} on {@code ctx}.</p>
	 */
	@Override public T
visitPalavras_em_falta(ExameParser.Palavras_em_faltaContext ctx) { return
visitChildren(ctx); }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation returns the result of calling
	 * {@link #visitChildren} on {@code ctx}.</p>
	 */
	@Override public T visitResposta_falta(ExameParser.Resposta_faltaContext ctx)
{ return visitChildren(ctx); }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation returns the result of calling
	 * {@link #visitChildren} on {@code ctx}.</p>
	 */
	@Override public T visitNumerica(ExameParser.NumericaContext ctx) { return
visitChildren(ctx); }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation returns the result of calling
	 * {@link #visitChildren} on {@code ctx}.</p>
	 */
	@Override public T visitResposta_curta(ExameParser.Resposta_curtaContext
ctx) { return visitChildren(ctx); }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation returns the result of calling
```

```
	 * {@link #visitChildren} on {@code ctx}.</p>
	 */
	@Override public T visitEscolha_multipla(ExameParser.Escolha_multiplaContext
ctx) { return visitChildren(ctx); }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation returns the result of calling
	 * {@link #visitChildren} on {@code ctx}.</p>
	 */
	@Override public T
visitOpcao_escolha_multipla(ExameParser.Opcao_escolha_multiplaContext ctx) { return
visitChildren(ctx); }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation returns the result of calling
	 * {@link #visitChildren} on {@code ctx}.</p>
	 */
	@Override public T visitCorrespondencia(ExameParser.CorrespondenciaContext
ctx) { return visitChildren(ctx); }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation returns the result of calling
	 * {@link #visitChildren} on {@code ctx}.</p>
	 */
	@Override public T
visitToken_correspondencia(ExameParser.Token_correspondenciaContext ctx) { return
visitChildren(ctx); }
	/**
	 * {@inheritDoc}
	 *
	 * <p>The default implementation returns the result of calling
	 * {@link #visitChildren} on {@code ctx}.</p>
	 */
	@Override public T
visitRespostas_correspondencia(ExameParser.Respostas_correspondenciaContext ctx)
{ return visitChildren(ctx); }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\ExameBaseVisitor.txt

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\ExameLexer.interp

token literal names:
null
':'
'{'
'}'
'['
']'
','
'Teste'
'ID'
'-'
'Resposta'
'Titulo'
'DataAbertura'
'DataFecho'
'Opcoes'
'Opcao'
'Enunciado'
'TabelaA'
'TabelaB'
'Cotacao'
'Dificuldade'
'DescricaoTextual'
'Perguntas'
'LimitePerguntas'
'Seccao'
'Pergunta'
'TipoPergunta'
'Numerica'
'EscolhaMultipla'
'Correspondencia'
'VerdadeiroOuFalso'
'PalavrasEmFalta'
'RespostaCurta'
'Verdadeiro'
'Falso'
'Tipo'
null
null

null
null
null
null
null
null

token symbolic names:
null
DOISPONTOS
ABRECHAVETA
FECHACHAVETA
ABREPARANTESIS
FECHAPARANTESIS
VIRGULA
TESTE
ID
TRACO
RESPOSTA
TITULO
DATAABERTURA
DATAFECHO
OPCOES
OPCAO
ENUNCIADO
TABELA_A
TABELA_B
COTACAO
DIFICULDADE
DESCRICAO_TEXTUAL
PERGUNTAS
LIMITE_PERGUNTAS
SECCAO
PERGUNTA
TIPO_PERGUNTA
NUMERICA
ESCOLHA_MULTIPLA
CORRESPONDENCIA
VERDADEIROOUFALSO
PALAVRAS_EM_FALTA
RESPOSTA_CURTA
VERDADEIRO
FALSO
TIPO

INT
DATA
WS
CARACTERE_ESPECIAL
NUMERO
FRASE
STRING
ESPACO

rule names:
DOISPONTOS
ABRECHAVETA
FECHACHAVETA
ABREPARANTESIS
FECHAPARANTESIS
VIRGULA
TESTE
ID
TRACO
RESPOSTA
TITULO
DATAABERTURA
DATAFECHO
OPCOES
OPCAO
ENUNCIADO
TABELA_A
TABELA_B
COTACAO
DIFICULDADE
DESCRICAO_TEXTUAL
PERGUNTAS
LIMITE_PERGUNTAS
SECCAO
PERGUNTA
TIPO_PERGUNTA
NUMERICA
ESCOLHA_MULTIPLA
CORRESPONDENCIA
VERDADEIROOUFALSO
PALAVRAS_EM_FALTA
RESPOSTA_CURTA
VERDADEIRO
FALSO

TIPO
INT
DATA
WS
CARACTERE_ESPECIAL
NUMERO
FRASE
STRING
ESPACO

channel names:
DEFAULT_TOKEN_CHANNEL
HIDDEN

mode names:
DEFAULT_MODE

atn:
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297, 5, 77, 0, 0, 297, 298, 5, 117, 0, 0, 298, 299, 5, 108, 0, 0, 299, 300, 5, 116, 0, 0, 300,
301, 5, 105, 0, 0, 301, 302, 5, 112, 0, 0, 302, 303, 5, 108, 0, 0, 303, 304, 5, 97, 0, 0, 304,
56, 1, 0, 0, 0, 305, 306, 5, 67, 0, 0, 306, 307, 5, 111, 0, 0, 307, 308, 5, 114, 0, 0, 308,
309, 5, 114, 0, 0, 309, 310, 5, 101, 0, 0, 310, 311, 5, 115, 0, 0, 311, 312, 5, 112, 0, 0,
312, 313, 5, 111, 0, 0, 313, 314, 5, 110, 0, 0, 314, 315, 5, 100, 0, 0, 315, 316, 5, 101, 0,
0, 316, 317, 5, 110, 0, 0, 317, 318, 5, 99, 0, 0, 318, 319, 5, 105, 0, 0, 319, 320, 5, 97, 0,
0, 320, 58, 1, 0, 0, 0, 321, 322, 5, 86, 0, 0, 322, 323, 5, 101, 0, 0, 323, 324, 5, 114, 0, 0,

324, 325, 5, 100, 0, 0, 325, 326, 5, 97, 0, 0, 326, 327, 5, 100, 0, 0, 327, 328, 5, 101, 0, 0,
328, 329, 5, 105, 0, 0, 329, 330, 5, 114, 0, 0, 330, 331, 5, 111, 0, 0, 331, 332, 5, 79, 0, 0,
332, 333, 5, 117, 0, 0, 333, 334, 5, 70, 0, 0, 334, 335, 5, 97, 0, 0, 335, 336, 5, 108, 0, 0,
336, 337, 5, 115, 0, 0, 337, 338, 5, 111, 0, 0, 338, 60, 1, 0, 0, 0, 339, 340, 5, 80, 0, 0,
340, 341, 5, 97, 0, 0, 341, 342, 5, 108, 0, 0, 342, 343, 5, 97, 0, 0, 343, 344, 5, 118, 0, 0,
344, 345, 5, 114, 0, 0, 345, 346, 5, 97, 0, 0, 346, 347, 5, 115, 0, 0, 347, 348, 5, 69, 0, 0,
348, 349, 5, 109, 0, 0, 349, 350, 5, 70, 0, 0, 350, 351, 5, 97, 0, 0, 351, 352, 5, 108, 0, 0,
352, 353, 5, 116, 0, 0, 353, 354, 5, 97, 0, 0, 354, 62, 1, 0, 0, 0, 355, 356, 5, 82, 0, 0, 356,
357, 5, 101, 0, 0, 357, 358, 5, 115, 0, 0, 358, 359, 5, 112, 0, 0, 359, 360, 5, 111, 0, 0,
360, 361, 5, 115, 0, 0, 361, 362, 5, 116, 0, 0, 362, 363, 5, 97, 0, 0, 363, 364, 5, 67, 0, 0,
364, 365, 5, 117, 0, 0, 365, 366, 5, 114, 0, 0, 366, 367, 5, 116, 0, 0, 367, 368, 5, 97, 0, 0,
368, 64, 1, 0, 0, 0, 369, 370, 5, 86, 0, 0, 370, 371, 5, 101, 0, 0, 371, 372, 5, 114, 0, 0,
372, 373, 5, 100, 0, 0, 373, 374, 5, 97, 0, 0, 374, 375, 5, 100, 0, 0, 375, 376, 5, 101, 0, 0,
376, 377, 5, 105, 0, 0, 377, 378, 5, 114, 0, 0, 378, 379, 5, 111, 0, 0, 379, 66, 1, 0, 0, 0,
380, 381, 5, 70, 0, 0, 381, 382, 5, 97, 0, 0, 382, 383, 5, 108, 0, 0, 383, 384, 5, 115, 0, 0,
384, 385, 5, 111, 0, 0, 385, 68, 1, 0, 0, 0, 386, 387, 5, 84, 0, 0, 387, 388, 5, 105, 0, 0,
388, 389, 5, 112, 0, 0, 389, 390, 5, 111, 0, 0, 390, 70, 1, 0, 0, 0, 391, 393, 7, 0, 0, 0, 392,
391, 1, 0, 0, 0, 393, 394, 1, 0, 0, 0, 394, 392, 1, 0, 0, 0, 394, 395, 1, 0, 0, 0, 395, 72, 1, 0,
0, 0, 396, 397, 5, 48, 0, 0, 397, 405, 7, 0, 0, 0, 398, 399, 5, 49, 0, 0, 399, 405, 7, 0, 0, 0,
400, 401, 5, 50, 0, 0, 401, 405, 7, 0, 0, 0, 402, 403, 5, 51, 0, 0, 403, 405, 7, 1, 0, 0, 404,
396, 1, 0, 0, 0, 404, 398, 1, 0, 0, 0, 404, 400, 1, 0, 0, 0, 404, 402, 1, 0, 0, 0, 405, 406, 1,
0, 0, 0, 406, 411, 5, 47, 0, 0, 407, 408, 5, 48, 0, 0, 408, 412, 7, 0, 0, 0, 409, 410, 5, 49, 0,
0, 410, 412, 7, 2, 0, 0, 411, 407, 1, 0, 0, 0, 411, 409, 1, 0, 0, 0, 412, 413, 1, 0, 0, 0, 413,
414, 5, 47, 0, 0, 414, 415, 7, 0, 0, 0, 415, 416, 7, 0, 0, 0, 416, 417, 7, 0, 0, 0, 417, 418, 7,
0, 0, 0, 418, 419, 1, 0, 0, 0, 419, 420, 5, 32, 0, 0, 420, 421, 7, 0, 0, 0, 421, 422, 7, 0, 0, 0,
422, 423, 1, 0, 0, 0, 423, 424, 3, 1, 0, 0, 424, 425, 7, 0, 0, 0, 425, 426, 7, 0, 0, 0, 426, 74,
1, 0, 0, 0, 427, 429, 7, 3, 0, 0, 428, 427, 1, 0, 0, 0, 429, 430, 1, 0, 0, 0, 430, 428, 1, 0, 0,
0, 430, 431, 1, 0, 0, 0, 431, 432, 1, 0, 0, 0, 432, 433, 6, 37, 0, 0, 433, 76, 1, 0, 0, 0, 434,
435, 7, 4, 0, 0, 435, 436, 1, 0, 0, 0, 436, 437, 6, 38, 0, 0, 437, 78, 1, 0, 0, 0, 438, 439, 3,
71, 35, 0, 439, 440, 5, 46, 0, 0, 440, 441, 3, 71, 35, 0, 441, 444, 1, 0, 0, 0, 442, 444, 3,
71, 35, 0, 443, 438, 1, 0, 0, 0, 443, 442, 1, 0, 0, 0, 444, 80, 1, 0, 0, 0, 445, 451, 3, 83, 41,
0, 446, 447, 3, 85, 42, 0, 447, 448, 3, 83, 41, 0, 448, 450, 1, 0, 0, 0, 449, 446, 1, 0, 0, 0,
450, 453, 1, 0, 0, 0, 451, 449, 1, 0, 0, 0, 451, 452, 1, 0, 0, 0, 452, 82, 1, 0, 0, 0, 453, 451,
1, 0, 0, 0, 454, 456, 7, 5, 0, 0, 455, 454, 1, 0, 0, 0, 456, 457, 1, 0, 0, 0, 457, 455, 1, 0, 0,
0, 457, 458, 1, 0, 0, 0, 458, 84, 1, 0, 0, 0, 459, 460, 7, 6, 0, 0, 460, 461, 1, 0, 0, 0, 461,
462, 6, 42, 0, 0, 462, 86, 1, 0, 0, 0, 8, 0, 394, 404, 411, 430, 443, 451, 457, 1, 6, 0, 0]

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\ExameLexer.interp

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\ExameLexer.txt

// Generated from C:/Users/mike_/OneDrive/Documentos/sem4pi-22-23-61/base.core/src/main/java/eapli/base/ANTLR/ExamValidation\Exame.g4 by ANTLR 4.12.0

```
package eapli.base.ANTLR.ExamValidation;
import org.antlr.v4.runtime.Lexer;
import org.antlr.v4.runtime.CharStream;
import org.antlr.v4.runtime.Token;
import org.antlr.v4.runtime.TokenStream;
import org.antlr.v4.runtime.*;
import org.antlr.v4.runtime.atn.*;
import org.antlr.v4.runtime.dfa.DFA;
import org.antlr.v4.runtime.misc.*;

@SuppressWarnings({"all", "warnings", "unchecked", "unused", "cast",
"CheckReturnValue"})
public class ExameLexer extends Lexer {
	static { RuntimeMetaData.checkVersion("4.12.0", RuntimeMetaData.VERSION);
}

	protected static final DFA[] _decisionToDFA;
	protected static final PredictionContextCache _sharedContextCache =
		new PredictionContextCache();
	public static final int
		DOISPONTOS=1, ABRECHAVETA=2, FECHACHAVETA=3,
ABREPARANTESIS=4, FECHAPARANTESIS=5,
		VIRGULA=6, TESTE=7, ID=8, TRACO=9, RESPOSTA=10, TITULO=11,
DATAABERTURA=12,
		DATAFECHO=13, OPCOES=14, OPCAO=15, ENUNCIADO=16,
TABELA_A=17, TABELA_B=18,
		COTACAO=19, DIFICULDADE=20, DESCRICAO_TEXTUAL=21,
PERGUNTAS=22, LIMITE_PERGUNTAS=23,
		SECCAO=24, PERGUNTA=25, TIPO_PERGUNTA=26, NUMERICA=27,
ESCOLHA_MULTIPLA=28,
		CORRESPONDENCIA=29, VERDADEIROOUFALSO=30,
PALAVRAS_EM_FALTA=31, RESPOSTA_CURTA=32,
		VERDADEIRO=33, FALSO=34, TIPO=35, INT=36, DATA=37, WS=38,
CARACTERE_ESPECIAL=39,
		NUMERO=40, FRASE=41, STRING=42, ESPACO=43;
	public static String[] channelNames = {
		"DEFAULT_TOKEN_CHANNEL", "HIDDEN"
	};

	public static String[] modeNames = {
		"DEFAULT_MODE"
	};

	private static String[] makeRuleNames() {
```

```
		return new String[] {
			"DOISPONTOS", "ABRECHAVETA", "FECHACHAVETA",
"ABREPARANTESIS", "FECHAPARANTESIS",
			"VIRGULA", "TESTE", "ID", "TRACO", "RESPOSTA", "TITULO",
"DATAABERTURA",
			"DATAFECHO", "OPCOES", "OPCAO", "ENUNCIADO",
"TABELA_A", "TABELA_B",
			"COTACAO", "DIFICULDADE", "DESCRICAO_TEXTUAL",
"PERGUNTAS", "LIMITE_PERGUNTAS",
			"SECCAO", "PERGUNTA", "TIPO_PERGUNTA", "NUMERICA",
"ESCOLHA_MULTIPLA",
			"CORRESPONDENCIA", "VERDADEIROOUFALSO",
"PALAVRAS_EM_FALTA", "RESPOSTA_CURTA",
			"VERDADEIRO", "FALSO", "TIPO", "INT", "DATA", "WS",
"CARACTERE_ESPECIAL",
			"NUMERO", "FRASE", "STRING", "ESPACO"
		};
	}
	public static final String[] ruleNames = makeRuleNames();

	private static String[] makeLiteralNames() {
		return new String[] {
			null, "':'", "'{'", "'}'", "'['", "']'", "','", "'Teste'", "'ID'", "'-'",
			"'Resposta'", "'Titulo'", "'DataAbertura'", "'DataFecho'", "'Opcoes'",
			"'Opcao'", "'Enunciado'", "'TabelaA'", "'TabelaB'", "'Cotacao'",
"'Dificuldade'",
			"'DescricaoTextual'", "'Perguntas'", "'LimitePerguntas'", "'Seccao'",
			"'Pergunta'", "'TipoPergunta'", "'Numerica'", "'EscolhaMultipla'",
"'Correspondencia'",
			"'VerdadeiroOuFalso'", "'PalavrasEmFalta'", "'RespostaCurta'",
"'Verdadeiro'",
			"'Falso'", "'Tipo'"
		};
	}
	private static final String[] _LITERAL_NAMES = makeLiteralNames();
	private static String[] makeSymbolicNames() {
		return new String[] {
			null, "DOISPONTOS", "ABRECHAVETA", "FECHACHAVETA",
"ABREPARANTESIS",
			"FECHAPARANTESIS", "VIRGULA", "TESTE", "ID", "TRACO",
"RESPOSTA", "TITULO",
			"DATAABERTURA", "DATAFECHO", "OPCOES", "OPCAO",
"ENUNCIADO", "TABELA_A",
			"TABELA_B", "COTACAO", "DIFICULDADE",
```

```
"DESCRICAO_TEXTUAL", "PERGUNTAS",
                        "LIMITE_PERGUNTAS", "SECCAO", "PERGUNTA",
"TIPO_PERGUNTA", "NUMERICA",
                        "ESCOLHA_MULTIPLA", "CORRESPONDENCIA",
"VERDADEIROOUFALSO", "PALAVRAS_EM_FALTA",
                        "RESPOSTA_CURTA", "VERDADEIRO", "FALSO", "TIPO", "INT",
"DATA", "WS",
                        "CARACTERE_ESPECIAL", "NUMERO", "FRASE", "STRING",
"ESPACO"
                };
        }
        private static final String[] _SYMBOLIC_NAMES = makeSymbolicNames();
        public static final Vocabulary VOCABULARY = new
VocabularyImpl(_LITERAL_NAMES, _SYMBOLIC_NAMES);

        /**
         * @deprecated Use {@link #VOCABULARY} instead.
         */
        @Deprecated
        public static final String[] tokenNames;
        static {
                tokenNames = new String[_SYMBOLIC_NAMES.length];
                for (int i = 0; i < tokenNames.length; i++) {
                        tokenNames[i] = VOCABULARY.getLiteralName(i);
                        if (tokenNames[i] == null) {
                                tokenNames[i] = VOCABULARY.getSymbolicName(i);
                        }

                        if (tokenNames[i] == null) {
                                tokenNames[i] = "<INVALID>";
                        }
                }
        }

        @Override
        @Deprecated
        public String[] getTokenNames() {
                return tokenNames;
        }

        @Override

        public Vocabulary getVocabulary() {
                return VOCABULARY;
```

```
	}


	public ExameLexer(CharStream input) {
		super(input);
		_interp = new
LexerATNSimulator(this,_ATN,_decisionToDFA,_sharedContextCache);
	}

	@Override
	public String getGrammarFileName() { return "Exame.g4"; }

	@Override
	public String[] getRuleNames() { return ruleNames; }

	@Override
	public String getSerializedATN() { return _serializedATN; }

	@Override
	public String[] getChannelNames() { return channelNames; }

	@Override
	public String[] getModeNames() { return modeNames; }

	@Override
	public ATN getATN() { return _ATN; }

	public static final String _serializedATN =

	"\u0004\u0000+\u01cf\u0006\uffff\uffff\u0002\u0000\u0007\u0000\u0002\u0001"
+

	"\u0007\u0001\u0002\u0002\u0007\u0002\u0002\u0003\u0007\u0003\u0002\u00
04"+

	"\u0007\u0004\u0002\u0005\u0007\u0005\u0002\u0006\u0007\u0006\u0002\u00
07"+

	"\u0007\u0007\u0002\b\u0007\b\u0002\t\u0007\t\u0002\n\u0007\n\u0002\u000b"
+

	"\u0007\u000b\u0002\f\u0007\f\u0002\r\u0007\r\u0002\u000e\u0007\u000e\u000
2"+
```

"\u000f\u0007\u000f\u0002\u0010\u0007\u0010\u0002\u0011\u0007\u0011\u000
2"+

"\u0012\u0007\u0012\u0002\u0013\u0007\u0013\u0002\u0014\u0007\u0014\u00
02"+

"\u0015\u0007\u0015\u0002\u0016\u0007\u0016\u0002\u0017\u0007\u0017\u00
02"+

"\u0018\u0007\u0018\u0002\u0019\u0007\u0019\u0002\u001a\u0007\u001a\u00
02"+

"\u001b\u0007\u001b\u0002\u001c\u0007\u001c\u0002\u001d\u0007\u001d\u00
02"+
"\u001e\u0007\u001e\u0002\u001f\u0007\u001f\u0002 \u0007
\u0002!\u0007"+

"!\u0002\"\u0007\"\u0002#\u0007#\u0002$\u0007$\u0002%\u0007%\u0002&\u0
007"+

"&\u0002\'\u0007\'\u0002(\u0007(\u0002)\u0007)\u0002*\u0007*\u0001\u0000"+

"\u0001\u0000\u0001\u0001\u0001\u0001\u0001\u0002\u0001\u0002\u0001\u00
03"+

"\u0001\u0003\u0001\u0004\u0001\u0004\u0001\u0005\u0001\u0005\u0001\u00
06"+

"\u0001\u0006\u0001\u0006\u0001\u0006\u0001\u0006\u0001\u0006\u0001\u00
07"+

"\u0001\u0007\u0001\u0007\u0001\b\u0001\b\u0001\t\u0001\t\u0001\t\u0001"+

"\t\u0001\t\u0001\t\u0001\t\u0001\t\u0001\t\u0001\n\u0001\n\u0001\n\u0001"+

"\n\u0001\n\u0001\n\u0001\n\u0001\u000b\u0001\u000b\u0001\u000b\u0001\u0
00b"+

"\u0001\u000b\u0001\u000b\u0001\u000b\u0001\u000b\u0001\u000b\u0001\u00
0b"+

"\u0001\u000b\u0001\u000b\u0001\u000b\u0001\f\u0001\f\u0001\f\u0001\f\u000
1"+

```
        "\f\u0001\f\u0001\f\u0001\f\u0001\f\u0001\f\u0001\r\u0001\r\u0001\r\u0001"+

        "\r\u0001\r\u0001\r\u0001\r\u0001\u000e\u0001\u000e\u0001\u000e\u0001\u000
e"+

        "\u0001\u000e\u0001\u000e\u0001\u000f\u0001\u000f\u0001\u000f\u0001\u000f
"+

        "\u0001\u000f\u0001\u000f\u0001\u000f\u0001\u000f\u0001\u000f\u0001\u000f"
+

        "\u0001\u0010\u0001\u0010\u0001\u0010\u0001\u0010\u0001\u0010\u0001\u00
10"+

        "\u0001\u0010\u0001\u0010\u0001\u0011\u0001\u0011\u0001\u0011\u0001\u00
11"+

        "\u0001\u0011\u0001\u0011\u0001\u0011\u0001\u0011\u0001\u0012\u0001\u00
12"+

        "\u0001\u0012\u0001\u0012\u0001\u0012\u0001\u0012\u0001\u0012\u0001\u00
12"+

        "\u0001\u0013\u0001\u0013\u0001\u0013\u0001\u0013\u0001\u0013\u0001\u00
13"+

        "\u0001\u0013\u0001\u0013\u0001\u0013\u0001\u0013\u0001\u0013\u0001\u00
13"+

        "\u0001\u0014\u0001\u0014\u0001\u0014\u0001\u0014\u0001\u0014\u0001\u00
14"+

        "\u0001\u0014\u0001\u0014\u0001\u0014\u0001\u0014\u0001\u0014\u0001\u00
14"+

        "\u0001\u0014\u0001\u0014\u0001\u0014\u0001\u0014\u0001\u0014\u0001\u00
15"+

        "\u0001\u0015\u0001\u0015\u0001\u0015\u0001\u0015\u0001\u0015\u0001\u00
15"+

        "\u0001\u0015\u0001\u0015\u0001\u0015\u0001\u0016\u0001\u0016\u0001\u00
16"+
```

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        "\u0001\u0016\u0001\u0016\u0001\u0016\u0001\u0016\u0001\u0016\u0001\u00
16"+
        "\u0001\u0016\u0001\u0016\u0001\u0016\u0001\u0016\u0001\u0016\u0001\u00
16"+
        "\u0001\u0016\u0001\u0017\u0001\u0017\u0001\u0017\u0001\u0017\u0001\u00
17"+
        "\u0001\u0017\u0001\u0017\u0001\u0018\u0001\u0018\u0001\u0018\u0001\u00
18"+
        "\u0001\u0018\u0001\u0018\u0001\u0018\u0001\u0018\u0001\u0018\u0001\u00
19"+
        "\u0001\u0019\u0001\u0019\u0001\u0019\u0001\u0019\u0001\u0019\u0001\u00
19"+
        "\u0001\u0019\u0001\u0019\u0001\u0019\u0001\u0019\u0001\u0019\u0001\u00
19"+
        "\u0001\u001a\u0001\u001a\u0001\u001a\u0001\u001a\u0001\u001a\u0001\u00
1a"+
        "\u0001\u001a\u0001\u001a\u0001\u001a\u0001\u001b\u0001\u001b\u0001\u00
1b"+
        "\u0001\u001b\u0001\u001b\u0001\u001b\u0001\u001b\u0001\u001b\u0001\u00
1b"+
        "\u0001\u001b\u0001\u001b\u0001\u001b\u0001\u001b\u0001\u001b\u0001\u00
1b"+
        "\u0001\u001b\u0001\u001c\u0001\u001c\u0001\u001c\u0001\u001c\u0001\u00
1c"+
        "\u0001\u001c\u0001\u001c\u0001\u001c\u0001\u001c\u0001\u001c\u0001\u00
1c"+
        "\u0001\u001c\u0001\u001c\u0001\u001c\u0001\u001c\u0001\u001c\u0001\u00
1d"+
        "\u0001\u001d\u0001\u001d\u0001\u001d\u0001\u001d\u0001\u001d\u0001\u00
1d"+
```

```
        "\u0001\u001d\u0001\u001d\u0001\u001d\u0001\u001d\u0001\u001d\u0001\u00
1d"+

        "\u0001\u001d\u0001\u001d\u0001\u001d\u0001\u001d\u0001\u001d\u0001\u00
1e"+

        "\u0001\u001e\u0001\u001e\u0001\u001e\u0001\u001e\u0001\u001e\u0001\u00
1e"+

        "\u0001\u001e\u0001\u001e\u0001\u001e\u0001\u001e\u0001\u001e\u0001\u00
1e"+

        "\u0001\u001e\u0001\u001e\u0001\u001e\u0001\u001f\u0001\u001f\u0001\u001
f"+

        "\u0001\u001f\u0001\u001f\u0001\u001f\u0001\u001f\u0001\u001f\u0001\u001f"
+
                "\u0001\u001f\u0001\u001f\u0001\u001f\u0001\u001f\u0001\u001f\u0001
\u0001"+
                " \u0001 \u0001 \u0001 \u0001 \u0001 \u0001 \u0001 \u0001
\u0001"+

        "!\u0001!\u0001!\u0001!\u0001!\u0001!\u0001\"\u0001\"\u0001\"\u0001\"\u0001"
+

        "\"\u0001#\u0004#\u0189\b#\u000b#\f#\u018a\u0001$\u0001$\u0001$\u0001$"+

        "\u0001$\u0001$\u0001$\u0001$\u0003$\u0195\b$\u0001$\u0001$\u0001$\u00
01"+

        "$\u0001$\u0003$\u019c\b$\u0001$\u0001$\u0001$\u0001$\u0001$\u0001$\u0
001"+

        "$\u0001$\u0001$\u0001$\u0001$\u0001$\u0001$\u0001$\u0001%\u0004%\u0
1ad"+

        "\b%\u000b%\f%\u01ae\u0001%\u0001%\u0001&\u0001&\u0001&\u0001&\u000
1\'"+

        "\u0001\'\u0001\'\u0001\'\u0001\'\u0003\'\u01bc\b\'\u0001(\u0001(\u0001"+

        "(\u0001(\u0005(\u01c2\b(\n(\f(\u01c5\t(\u0001)\u0004)\u01c8\b)\u000b)"+
```

"\f)\u01c9\u0001*\u0001*\u0001*\u0001*\u0000\u0000+\u0001\u0001\u0003\u0002"+

"\u0005\u0003\u0007\u0004\t\u0005\u000b\u0006\r\u0007\u000f\b\u0011\t\u0013"+

"\n\u0015\u000b\u0017\f\u0019\r\u001b\u000e\u001d\u000f\u001f\u0010!\u0011"+
"#\u0012%\u0013\'\u0014)\u0015+\u0016-\u0017/\u00181\u00193\u001a5\u001b"+
"7\u001c9\u001d;\u001e=\u001f?A!C\"E#G$I%K&M\'O(Q)S*U+\u0001\u0000\u0007"+
"\u0001\u000009\u0001\u000001\u0001\u000002\u0003\u0000\n\n\r\r\u0006"+
"\u0000\"#\')++--//__\u0002\u0000AZaz\u0002\u0000\t\t\u01d7\u0000\u0001"+

"\u0001\u0000\u0000\u0000\u0000\u0003\u0001\u0000\u0000\u0000\u0000\u0005"+

"\u0001\u0000\u0000\u0000\u0000\u0007\u0001\u0000\u0000\u0000\u0000\t\u0001"+

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"\u0000\u0000\u0000\u000f\u0001\u0000\u0000\u0000\u0000\u0011\u0001\u0000"+

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"\u0000\u0000\u0000\u0017\u0001\u0000\u0000\u0000\u0000\u0019\u0001\u0000"+

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        "\u0000\u0000\u0000\u0000;\u0001\u0000\u0000\u0000\u0000=\u0001\u0000\u
0000"+

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0000"+

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        "\u0000\u0000`\n\u0001\u0000\u0000\u0000ab\u0005,\u0000\u0000b\f\u0001"+

        "\u0000\u0000\u0000cd\u0005T\u0000\u0000de\u0005e\u0000\u0000ef\u0005s"
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        "\u0000\u0000fg\u0005t\u0000\u0000gh\u0005e\u0000\u0000h\u000e\u0001\u0
000"+

        "\u0000\u0000ij\u0005I\u0000\u0000jk\u0005D\u0000\u0000k\u0010\u0001\u00
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0000"+

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        "|\u0000\u0000|}\u0005o\u0000\u0000}\u0016\u0001\u0000\u0000\u0000~\u007
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+

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"+

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        "\u0000\u0000\u0199\u019a\u00051\u0000\u0000\u019a\u019c\u0007\u0002\u0
000"+

        "\u0000\u019b\u0197\u0001\u0000\u0000\u0000\u019b\u0199\u0001\u0000\u00
00"+

        "\u0000\u019c\u019d\u0001\u0000\u0000\u0000\u019d\u019e\u0005/\u0000\u0
000"+

        "\u019e\u019f\u0007\u0000\u0000\u0000\u019f\u01a0\u0007\u0000\u0000\u000
0"+

        "\u01a0\u01a1\u0007\u0000\u0000\u0000\u01a1\u01a2\u0007\u0000\u0000\u00
00"+
                "\u01a2\u01a3\u0001\u0000\u0000\u0000\u01a3\u01a4\u0005
\u0000\u0000\u01a4"+

        "\u01a5\u0007\u0000\u0000\u0000\u01a5\u01a6\u0007\u0000\u0000\u0000\u01
a6"+

        "\u01a7\u0001\u0000\u0000\u0000\u01a7\u01a8\u0003\u0001\u0000\u0000\u01
a8"+

        "\u01a9\u0007\u0000\u0000\u0000\u01a9\u01aa\u0007\u0000\u0000\u0000\u01
aa"+

        "J\u0001\u0000\u0000\u0000\u01ab\u01ad\u0007\u0003\u0000\u0000\u01ac\u0
1ab"+

        "\u0001\u0000\u0000\u0000\u01ad\u01ae\u0001\u0000\u0000\u0000\u01ae\u01
ac"+

        "\u0001\u0000\u0000\u0000\u01ae\u01af\u0001\u0000\u0000\u0000\u01af\u01b
0"+

        "\u0001\u0000\u0000\u0000\u01b0\u01b1\u0006%\u0000\u0000\u01b1L\u0001\
u0000"+

        "\u0000\u0000\u01b2\u01b3\u0007\u0004\u0000\u0000\u01b3\u01b4\u0001\u00
00"+

        "\u0000\u0000\u01b4\u01b5\u0006&\u0000\u0000\u01b5N\u0001\u0000\u0000\
```

```
u0000"+
        "\u01b6\u01b7\u0003G#\u0000\u01b7\u01b8\u0005.\u0000\u0000\u01b8\u01b9"
+
        "\u0003G#\u0000\u01b9\u01bc\u0001\u0000\u0000\u0000\u01ba\u01bc\u0003G
"+
        "#\u0000\u01bb\u01b6\u0001\u0000\u0000\u0000\u01bb\u01ba\u0001\u0000\u0
000"+
        "\u0000\u01bcP\u0001\u0000\u0000\u0000\u01bd\u01c3\u0003S)\u0000\u01be"
+
        "\u01bf\u0003U*\u0000\u01bf\u01c0\u0003S)\u0000\u01c0\u01c2\u0001\u0000"
+
        "\u0000\u0000\u01c1\u01be\u0001\u0000\u0000\u0000\u01c2\u01c5\u0001\u00
00"+
        "\u0000\u0000\u01c3\u01c1\u0001\u0000\u0000\u0000\u01c3\u01c4\u0001\u00
00"+
        "\u0000\u0000\u01c4R\u0001\u0000\u0000\u0000\u01c5\u01c3\u0001\u0000\u0
000"+
        "\u0000\u01c6\u01c8\u0007\u0005\u0000\u0000\u01c7\u01c6\u0001\u0000\u00
00"+
        "\u0000\u01c8\u01c9\u0001\u0000\u0000\u0000\u01c9\u01c7\u0001\u0000\u00
00"+
        "\u0000\u01c9\u01ca\u0001\u0000\u0000\u0000\u01caT\u0001\u0000\u0000\u0
000"+
        "\u01cb\u01cc\u0007\u0006\u0000\u0000\u01cc\u01cd\u0001\u0000\u0000\u00
00"+
        "\u01cd\u01ce\u0006*\u0000\u0000\u01ceV\u0001\u0000\u0000\u0000\b\u0000
"+
        "\u018a\u0194\u019b\u01ae\u01bb\u01c3\u01c9\u0001\u0006\u0000\u0000";
        public static final ATN _ATN =
                new ATNDeserializer().deserialize(_serializedATN.toCharArray());
```

```
	static {
		_decisionToDFA = new DFA[_ATN.getNumberOfDecisions()];
		for (int i = 0; i < _ATN.getNumberOfDecisions(); i++) {
			_decisionToDFA[i] = new DFA(_ATN.getDecisionState(i), i);
		}
	}
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\ExameLexer.txt

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\ExameListener.txt

```
// Generated from C:/Users/mike_/OneDrive/Documentos/sem4pi-22-23-61/base.core/src/main/java/eapli/base/ANTLR/ExamValidation\Exame.g4 by ANTLR 4.12.0
package eapli.base.ANTLR.ExamValidation;
import org.antlr.v4.runtime.tree.ParseTreeListener;

/**
 * This interface defines a complete listener for a parse tree produced by
 * {@link ExameParser}.
 */
public interface ExameListener extends ParseTreeListener {
	/**
	 * Enter a parse tree produced by {@link ExameParser#prog}.
	 * @param ctx the parse tree
	 */
	void enterProg(ExameParser.ProgContext ctx);
	/**
	 * Exit a parse tree produced by {@link ExameParser#prog}.
	 * @param ctx the parse tree
	 */
	void exitProg(ExameParser.ProgContext ctx);
	/**
	 * Enter a parse tree produced by {@link ExameParser#exame}.
	 * @param ctx the parse tree
	 */
	void enterExame(ExameParser.ExameContext ctx);
	/**
	 * Exit a parse tree produced by {@link ExameParser#exame}.
	 * @param ctx the parse tree
	 */
	void exitExame(ExameParser.ExameContext ctx);
	/**
```

```
 * Enter a parse tree produced by {@link ExameParser#corpo_exame}.
 * @param ctx the parse tree
 */
void enterCorpo_exame(ExameParser.Corpo_exameContext ctx);
/**
 * Exit a parse tree produced by {@link ExameParser#corpo_exame}.
 * @param ctx the parse tree
 */
void exitCorpo_exame(ExameParser.Corpo_exameContext ctx);
/**
 * Enter a parse tree produced by {@link ExameParser#seccao}.
 * @param ctx the parse tree
 */
void enterSeccao(ExameParser.SeccaoContext ctx);
/**
 * Exit a parse tree produced by {@link ExameParser#seccao}.
 * @param ctx the parse tree
 */
void exitSeccao(ExameParser.SeccaoContext ctx);
/**
 * Enter a parse tree produced by {@link ExameParser#pergunta}.
 * @param ctx the parse tree
 */
void enterPergunta(ExameParser.PerguntaContext ctx);
/**
 * Exit a parse tree produced by {@link ExameParser#pergunta}.
 * @param ctx the parse tree
 */
void exitPergunta(ExameParser.PerguntaContext ctx);
/**
 * Enter a parse tree produced by {@link ExameParser#corpo}.
 * @param ctx the parse tree
 */
void enterCorpo(ExameParser.CorpoContext ctx);
/**
 * Exit a parse tree produced by {@link ExameParser#corpo}.
 * @param ctx the parse tree
 */
void exitCorpo(ExameParser.CorpoContext ctx);
/**
 * Enter a parse tree produced by {@link ExameParser#verdadeiro_falso}.
 * @param ctx the parse tree
 */
void enterVerdadeiro_falso(ExameParser.Verdadeiro_falsoContext ctx);
```

```
/**
 * Exit a parse tree produced by {@link ExameParser#verdadeiro_falso}.
 * @param ctx the parse tree
 */
void exitVerdadeiro_falso(ExameParser.Verdadeiro_falsoContext ctx);
/**
 * Enter a parse tree produced by {@link ExameParser#palavras_em_falta}.
 * @param ctx the parse tree
 */
void enterPalavras_em_falta(ExameParser.Palavras_em_faltaContext ctx);
/**
 * Exit a parse tree produced by {@link ExameParser#palavras_em_falta}.
 * @param ctx the parse tree
 */
void exitPalavras_em_falta(ExameParser.Palavras_em_faltaContext ctx);
/**
 * Enter a parse tree produced by {@link ExameParser#resposta_falta}.
 * @param ctx the parse tree
 */
void enterResposta_falta(ExameParser.Resposta_faltaContext ctx);
/**
 * Exit a parse tree produced by {@link ExameParser#resposta_falta}.
 * @param ctx the parse tree
 */
void exitResposta_falta(ExameParser.Resposta_faltaContext ctx);
/**
 * Enter a parse tree produced by {@link ExameParser#numerica}.
 * @param ctx the parse tree
 */
void enterNumerica(ExameParser.NumericaContext ctx);
/**
 * Exit a parse tree produced by {@link ExameParser#numerica}.
 * @param ctx the parse tree
 */
void exitNumerica(ExameParser.NumericaContext ctx);
/**
 * Enter a parse tree produced by {@link ExameParser#resposta_curta}.
 * @param ctx the parse tree
 */
void enterResposta_curta(ExameParser.Resposta_curtaContext ctx);
/**
 * Exit a parse tree produced by {@link ExameParser#resposta_curta}.
 * @param ctx the parse tree
 */
```

```
	void exitResposta_curta(ExameParser.Resposta_curtaContext ctx);
	/**
	 * Enter a parse tree produced by {@link ExameParser#escolha_multipla}.
	 * @param ctx the parse tree
	 */
	void enterEscolha_multipla(ExameParser.Escolha_multiplaContext ctx);
	/**
	 * Exit a parse tree produced by {@link ExameParser#escolha_multipla}.
	 * @param ctx the parse tree
	 */
	void exitEscolha_multipla(ExameParser.Escolha_multiplaContext ctx);
	/**
	 * Enter a parse tree produced by {@link
ExameParser#opcao_escolha_multipla}.
	 * @param ctx the parse tree
	 */
	void
enterOpcao_escolha_multipla(ExameParser.Opcao_escolha_multiplaContext ctx);
	/**
	 * Exit a parse tree produced by {@link ExameParser#opcao_escolha_multipla}.
	 * @param ctx the parse tree
	 */
	void exitOpcao_escolha_multipla(ExameParser.Opcao_escolha_multiplaContext
ctx);
	/**
	 * Enter a parse tree produced by {@link ExameParser#correspondencia}.
	 * @param ctx the parse tree
	 */
	void enterCorrespondencia(ExameParser.CorrespondenciaContext ctx);
	/**
	 * Exit a parse tree produced by {@link ExameParser#correspondencia}.
	 * @param ctx the parse tree
	 */
	void exitCorrespondencia(ExameParser.CorrespondenciaContext ctx);
	/**
	 * Enter a parse tree produced by {@link ExameParser#token_correspondencia}.
	 * @param ctx the parse tree
	 */
	void enterToken_correspondencia(ExameParser.Token_correspondenciaContext
ctx);
	/**
	 * Exit a parse tree produced by {@link ExameParser#token_correspondencia}.
	 * @param ctx the parse tree
	 */
```

```
	void exitToken_correspondencia(ExameParser.Token_correspondenciaContext
ctx);
	/**
	 * Enter a parse tree produced by {@link
ExameParser#respostas_correspondencia}.
	 * @param ctx the parse tree
	 */
	void
enterRespostas_correspondencia(ExameParser.Respostas_correspondenciaContext
ctx);
	/**
	 * Exit a parse tree produced by {@link
ExameParser#respostas_correspondencia}.
	 * @param ctx the parse tree
	 */
	void
exitRespostas_correspondencia(ExameParser.Respostas_correspondenciaContext ctx);
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\ExameListener.txt

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\ExameParser.txt

```
// Generated from C:/Users/mike_/OneDrive/Documentos/sem4pi-22-23-
61/base.core/src/main/java/eapli/base/ANTLR/ExamValidation\Exame.g4 by ANTLR
4.12.0
package eapli.base.ANTLR.ExamValidation;
import org.antlr.v4.runtime.atn.*;
import org.antlr.v4.runtime.dfa.DFA;
import org.antlr.v4.runtime.*;
import org.antlr.v4.runtime.misc.*;
import org.antlr.v4.runtime.tree.*;
import java.util.List;
import java.util.Iterator;
import java.util.ArrayList;


public class ExameParser extends Parser {
	static { RuntimeMetaData.checkVersion("4.12.0", RuntimeMetaData.VERSION);
}

	protected static final DFA[] _decisionToDFA;
	protected static final PredictionContextCache _sharedContextCache =
		new PredictionContextCache();
```

```
	public static final int
		DOISPONTOS=1, ABRECHAVETA=2, FECHACHAVETA=3,
ABREPARANTESIS=4, FECHAPARANTESIS=5,
		VIRGULA=6, TESTE=7, ID=8, TRACO=9, RESPOSTA=10, TITULO=11,
DATAABERTURA=12,
		DATAFECHO=13, OPCOES=14, OPCAO=15, ENUNCIADO=16,
TABELA_A=17, TABELA_B=18,
		COTACAO=19, DIFICULDADE=20, DESCRICAO_TEXTUAL=21,
PERGUNTAS=22, LIMITE_PERGUNTAS=23,
		SECCAO=24, PERGUNTA=25, TIPO_PERGUNTA=26, NUMERICA=27,
ESCOLHA_MULTIPLA=28,
		CORRESPONDENCIA=29, VERDADEIROOUFALSO=30,
PALAVRAS_EM_FALTA=31, RESPOSTA_CURTA=32,
		VERDADEIRO=33, FALSO=34, TIPO=35, INT=36, DATA=37, WS=38,
CARACTERE_ESPECIAL=39,
		NUMERO=40, FRASE=41, STRING=42, ESPACO=43;
	public static final int
		RULE_prog = 0, RULE_exame = 1, RULE_corpo_exame = 2,
RULE_seccao = 3,
		RULE_pergunta = 4, RULE_corpo = 5, RULE_verdadeiro_falso = 6,
RULE_palavras_em_falta = 7,
		RULE_resposta_falta = 8, RULE_numerica = 9, RULE_resposta_curta =
10,
		RULE_escolha_multipla = 11, RULE_opcao_escolha_multipla = 12,
RULE_correspondencia = 13,
		RULE_token_correspondencia = 14, RULE_respostas_correspondencia
= 15;
	private static String[] makeRuleNames() {
		return new String[] {
			"prog", "exame", "corpo_exame", "seccao", "pergunta", "corpo",
"verdadeiro_falso",
			"palavras_em_falta", "resposta_falta", "numerica",
"resposta_curta",
			"escolha_multipla", "opcao_escolha_multipla", "correspondencia",
"token_correspondencia",
			"respostas_correspondencia"
		};
	}
	public static final String[] ruleNames = makeRuleNames();

	private static String[] makeLiteralNames() {
		return new String[] {
			null, "':'", "'{'", "'}'", "'['", "']'", "','", "'Teste'", "'ID'", "'-'",
			"'Resposta'", "'Titulo'", "'DataAbertura'", "'DataFecho'", "'Opcoes'",
```

```
                        "'Opcao'", "'Enunciado'", "'TabelaA'", "'TabelaB'", "'Cotacao'",
"'Dificuldade'",
                        "'DescricaoTextual'", "'Perguntas'", "'LimitePerguntas'", "'Seccao'",
                        "'Pergunta'", "'TipoPergunta'", "'Numerica'", "'EscolhaMultipla'",
"'Correspondencia'",
                        "'VerdadeiroOuFalso'", "'PalavrasEmFalta'", "'RespostaCurta'",
"'Verdadeiro'",
                        "'Falso'", "'Tipo'"
                };
        }
        private static final String[] _LITERAL_NAMES = makeLiteralNames();
        private static String[] makeSymbolicNames() {
                return new String[] {
                        null, "DOISPONTOS", "ABRECHAVETA", "FECHACHAVETA",
"ABREPARANTESIS",
                        "FECHAPARANTESIS", "VIRGULA", "TESTE", "ID", "TRACO",
"RESPOSTA", "TITULO",
                        "DATAABERTURA", "DATAFECHO", "OPCOES", "OPCAO",
"ENUNCIADO", "TABELA_A",
                        "TABELA_B", "COTACAO", "DIFICULDADE",
"DESCRICAO_TEXTUAL", "PERGUNTAS",
                        "LIMITE_PERGUNTAS", "SECCAO", "PERGUNTA",
"TIPO_PERGUNTA", "NUMERICA",
                        "ESCOLHA_MULTIPLA", "CORRESPONDENCIA",
"VERDADEIROOUFALSO", "PALAVRAS_EM_FALTA",
                        "RESPOSTA_CURTA", "VERDADEIRO", "FALSO", "TIPO", "INT",
"DATA", "WS",
                        "CARACTERE_ESPECIAL", "NUMERO", "FRASE", "STRING",
"ESPACO"
                };
        }
        private static final String[] _SYMBOLIC_NAMES = makeSymbolicNames();
        public static final Vocabulary VOCABULARY = new
VocabularyImpl(_LITERAL_NAMES, _SYMBOLIC_NAMES);

        /**
         * @deprecated Use {@link #VOCABULARY} instead.
         */
        @Deprecated
        public static final String[] tokenNames;
        static {
                tokenNames = new String[_SYMBOLIC_NAMES.length];
                for (int i = 0; i < tokenNames.length; i++) {
                        tokenNames[i] = VOCABULARY.getLiteralName(i);
```

```
                        if (tokenNames[i] == null) {
                                tokenNames[i] = VOCABULARY.getSymbolicName(i);
                        }

                        if (tokenNames[i] == null) {
                                tokenNames[i] = "<INVALID>";
                        }
                }
        }

        @Override
        @Deprecated
        public String[] getTokenNames() {
                return tokenNames;
        }

        @Override

        public Vocabulary getVocabulary() {
                return VOCABULARY;
        }

        @Override
        public String getGrammarFileName() { return "Exame.g4"; }

        @Override
        public String[] getRuleNames() { return ruleNames; }

        @Override
        public String getSerializedATN() { return _serializedATN; }

        @Override
        public ATN getATN() { return _ATN; }

        public ExameParser(TokenStream input) {
                super(input);
                _interp = new
ParserATNSimulator(this,_ATN,_decisionToDFA,_sharedContextCache);
        }

        @SuppressWarnings("CheckReturnValue")
        public static class ProgContext extends ParserRuleContext {
                public ExameContext exame() {
                        return getRuleContext(ExameContext.class,0);
```

```
		}
		public ProgContext(ParserRuleContext parent, int invokingState) {
			super(parent, invokingState);
		}
		@Override public int getRuleIndex() { return RULE_prog; }
		@Override
		public void enterRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).enterProg(this);
		}
		@Override
		public void exitRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).exitProg(this);
		}
		@Override
		public <T> T accept(ParseTreeVisitor<? extends T> visitor) {
			if ( visitor instanceof ExameVisitor ) return ((ExameVisitor<?
extends T>)visitor).visitProg(this);
			else return visitor.visitChildren(this);
		}
	}

	public final ProgContext prog() throws RecognitionException {
		ProgContext _localctx = new ProgContext(_ctx, getState());
		enterRule(_localctx, 0, RULE_prog);
		try {
			enterOuterAlt(_localctx, 1);
			{
			setState(32);
			exame();
			}
		}
		catch (RecognitionException re) {
			_localctx.exception = re;
			_errHandler.reportError(this, re);
			_errHandler.recover(this, re);
		}
		finally {
			exitRule();
		}
		return _localctx;
	}
```

```
	@SuppressWarnings("CheckReturnValue")
	public static class ExameContext extends ParserRuleContext {
		public TerminalNode TESTE() { return getToken(ExameParser.TESTE,
0); }
		public TerminalNode DOISPONTOS() { return
getToken(ExameParser.DOISPONTOS, 0); }
		public TerminalNode ABRECHAVETA() { return
getToken(ExameParser.ABRECHAVETA, 0); }
		public Corpo_exameContext corpo_exame() {
			return getRuleContext(Corpo_exameContext.class,0);
		}
		public TerminalNode FECHACHAVETA() { return
getToken(ExameParser.FECHACHAVETA, 0); }
		public ExameContext(ParserRuleContext parent, int invokingState) {
			super(parent, invokingState);
		}
		@Override public int getRuleIndex() { return RULE_exame; }
		@Override
		public void enterRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).enterExame(this);
		}
		@Override
		public void exitRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).exitExame(this);
		}
		@Override
		public <T> T accept(ParseTreeVisitor<? extends T> visitor) {
			if ( visitor instanceof ExameVisitor ) return ((ExameVisitor<?
extends T>)visitor).visitExame(this);
			else return visitor.visitChildren(this);
		}
	}

	public final ExameContext exame() throws RecognitionException {
		ExameContext _localctx = new ExameContext(_ctx, getState());
		enterRule(_localctx, 2, RULE_exame);
		try {
			enterOuterAlt(_localctx, 1);
			{
			setState(34);
			match(TESTE);
			setState(35);
```

```
                        match(DOISPONTOS);
                        setState(36);
                        match(ABRECHAVETA);
                        setState(37);
                        corpo_exame();
                        setState(38);
                        match(FECHACHAVETA);
                        }
                }
                catch (RecognitionException re) {
                        _localctx.exception = re;
                        _errHandler.reportError(this, re);
                        _errHandler.recover(this, re);
                }
                finally {
                        exitRule();
                }
                return _localctx;
        }

        @SuppressWarnings("CheckReturnValue")
        public static class Corpo_exameContext extends ParserRuleContext {
                public Token id_exame;
                public Token titulo_exame;
                public Token data_abertura;
                public Token data_fecho;
                public TerminalNode ID() { return getToken(ExameParser.ID, 0); }
                public List<TerminalNode> DOISPONTOS() { return
getTokens(ExameParser.DOISPONTOS); }
                public TerminalNode DOISPONTOS(int i) {
                        return getToken(ExameParser.DOISPONTOS, i);
                }
                public TerminalNode VIRGULA() { return
getToken(ExameParser.VIRGULA, 0); }
                public TerminalNode TITULO() { return getToken(ExameParser.TITULO,
0); }
                public TerminalNode DATAABERTURA() { return
getToken(ExameParser.DATAABERTURA, 0); }
                public TerminalNode DATAFECHO() { return
getToken(ExameParser.DATAFECHO, 0); }
                public TerminalNode INT() { return getToken(ExameParser.INT, 0); }
                public TerminalNode FRASE() { return getToken(ExameParser.FRASE,
0); }
                public List<TerminalNode> DATA() { return
```

```
getTokens(ExameParser.DATA); }
		public TerminalNode DATA(int i) {
			return getToken(ExameParser.DATA, i);
		}
		public List<SeccaoContext> seccao() {
			return getRuleContexts(SeccaoContext.class);
		}
		public SeccaoContext seccao(int i) {
			return getRuleContext(SeccaoContext.class,i);
		}
		public Corpo_exameContext(ParserRuleContext parent, int
invokingState) {
			super(parent, invokingState);
		}
		@Override public int getRuleIndex() { return RULE_corpo_exame; }
		@Override
		public void enterRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).enterCorpo_exame(this);
		}
		@Override
		public void exitRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).exitCorpo_exame(this);
		}
		@Override
		public <T> T accept(ParseTreeVisitor<? extends T> visitor) {
			if ( visitor instanceof ExameVisitor ) return ((ExameVisitor<?
extends T>)visitor).visitCorpo_exame(this);
			else return visitor.visitChildren(this);
		}
	}

	public final Corpo_exameContext corpo_exame() throws RecognitionException {
		Corpo_exameContext _localctx = new Corpo_exameContext(_ctx,
getState());
		enterRule(_localctx, 4, RULE_corpo_exame);
		int _la;
		try {
			enterOuterAlt(_localctx, 1);
			{
			setState(40);
			match(ID);
			setState(41);
```

```
            match(DOISPONTOS);
            setState(42);
            ((Corpo_exameContext)_localctx).id_exame = match(INT);
            setState(43);
            match(VIRGULA);
            setState(44);
            match(TITULO);
            setState(45);
            match(DOISPONTOS);
            setState(46);
            ((Corpo_exameContext)_localctx).titulo_exame = match(FRASE);
            setState(48);
            _errHandler.sync(this);
            _la = _input.LA(1);
            do {
                    {
                    {
                    setState(47);
                    seccao();
                    }
                    }
                    setState(50);
                    _errHandler.sync(this);
                    _la = _input.LA(1);
            } while ( _la==SECCAO );
            setState(52);
            match(DATAABERTURA);
            setState(53);
            match(DOISPONTOS);
            setState(54);
            ((Corpo_exameContext)_localctx).data_abertura = match(DATA);
            setState(55);
            match(DATAFECHO);
            setState(56);
            match(DOISPONTOS);
            setState(57);
            ((Corpo_exameContext)_localctx).data_fecho = match(DATA);
            }
    }
    catch (RecognitionException re) {
            _localctx.exception = re;
            _errHandler.reportError(this, re);
            _errHandler.recover(this, re);
    }
```

```
		finally {
			exitRule();
		}
		return _localctx;
	}

	@SuppressWarnings("CheckReturnValue")
	public static class SeccaoContext extends ParserRuleContext {
		public Token id_seccao;
		public Token desc_seccao;
		public Token dificuldade_seccao;
		public Token limite;
		public TerminalNode SECCAO() { return
getToken(ExameParser.SECCAO, 0); }
		public TerminalNode ID() { return getToken(ExameParser.ID, 0); }
		public List<TerminalNode> DOISPONTOS() { return
getTokens(ExameParser.DOISPONTOS); }
		public TerminalNode DOISPONTOS(int i) {
			return getToken(ExameParser.DOISPONTOS, i);
		}
		public TerminalNode VIRGULA() { return
getToken(ExameParser.VIRGULA, 0); }
		public TerminalNode ABRECHAVETA() { return
getToken(ExameParser.ABRECHAVETA, 0); }
		public TerminalNode DESCRICAO_TEXTUAL() { return
getToken(ExameParser.DESCRICAO_TEXTUAL, 0); }
		public TerminalNode DIFICULDADE() { return
getToken(ExameParser.DIFICULDADE, 0); }
		public TerminalNode LIMITE_PERGUNTAS() { return
getToken(ExameParser.LIMITE_PERGUNTAS, 0); }
		public TerminalNode PERGUNTAS() { return
getToken(ExameParser.PERGUNTAS, 0); }
		public TerminalNode FECHACHAVETA() { return
getToken(ExameParser.FECHACHAVETA, 0); }
		public List<TerminalNode> INT() { return getTokens(ExameParser.INT); }
		public TerminalNode INT(int i) {
			return getToken(ExameParser.INT, i);
		}
		public TerminalNode FRASE() { return getToken(ExameParser.FRASE,
0); }
		public List<PerguntaContext> pergunta() {
			return getRuleContexts(PerguntaContext.class);
		}
		public PerguntaContext pergunta(int i) {
```

```
                return getRuleContext(PerguntaContext.class,i);
            }
            public SeccaoContext(ParserRuleContext parent, int invokingState) {
                super(parent, invokingState);
            }
            @Override public int getRuleIndex() { return RULE_seccao; }
            @Override
            public void enterRule(ParseTreeListener listener) {
                if ( listener instanceof ExameListener )
((ExameListener)listener).enterSeccao(this);
            }
            @Override
            public void exitRule(ParseTreeListener listener) {
                if ( listener instanceof ExameListener )
((ExameListener)listener).exitSeccao(this);
            }
            @Override
            public <T> T accept(ParseTreeVisitor<? extends T> visitor) {
                if ( visitor instanceof ExameVisitor ) return ((ExameVisitor<?
extends T>)visitor).visitSeccao(this);
                else return visitor.visitChildren(this);
            }
        }

        public final SeccaoContext seccao() throws RecognitionException {
            SeccaoContext _localctx = new SeccaoContext(_ctx, getState());
            enterRule(_localctx, 6, RULE_seccao);
            int _la;
            try {
                enterOuterAlt(_localctx, 1);
                {
                setState(59);
                match(SECCAO);
                setState(60);
                match(ID);
                setState(61);
                match(DOISPONTOS);
                setState(62);
                ((SeccaoContext)_localctx).id_seccao = match(INT);
                setState(63);
                match(VIRGULA);
                setState(64);
                match(ABRECHAVETA);
                setState(65);
```

```
            match(DESCRICAO_TEXTUAL);
            setState(66);
            match(DOISPONTOS);
            setState(67);
            ((SeccaoContext)_localctx).desc_seccao = match(FRASE);
            setState(68);
            match(DIFICULDADE);
            setState(69);
            match(DOISPONTOS);
            setState(70);
            ((SeccaoContext)_localctx).dificuldade_seccao = match(INT);
            setState(71);
            match(LIMITE_PERGUNTAS);
            setState(72);
            match(DOISPONTOS);
            setState(73);
            ((SeccaoContext)_localctx).limite = match(INT);
            setState(74);
            match(PERGUNTAS);
            setState(75);
            match(DOISPONTOS);
            setState(77);
            _errHandler.sync(this);
            _la = _input.LA(1);
            do {
                    {
                    {
                    setState(76);
                    pergunta();
                    }
                    }
                    setState(79);
                    _errHandler.sync(this);
                    _la = _input.LA(1);
            } while ( _la==PERGUNTA );
            setState(81);
            match(FECHACHAVETA);
            }
    }
    catch (RecognitionException re) {
            _localctx.exception = re;
            _errHandler.reportError(this, re);
            _errHandler.recover(this, re);
    }
```

```
		finally {
			exitRule();
		}
		return _localctx;
	}

	@SuppressWarnings("CheckReturnValue")
	public static class PerguntaContext extends ParserRuleContext {
		public Token id_pergunta;
		public Token enunciado_pergunta;
		public Token tipo_pergunta;
		public Token cotacao_pergunta;
		public Token dificuldade_pergunta;
		public TerminalNode PERGUNTA() { return
getToken(ExameParser.PERGUNTA, 0); }
		public TerminalNode ID() { return getToken(ExameParser.ID, 0); }
		public List<TerminalNode> DOISPONTOS() { return
getTokens(ExameParser.DOISPONTOS); }
		public TerminalNode DOISPONTOS(int i) {
			return getToken(ExameParser.DOISPONTOS, i);
		}
		public TerminalNode VIRGULA() { return
getToken(ExameParser.VIRGULA, 0); }
		public TerminalNode ENUNCIADO() { return
getToken(ExameParser.ENUNCIADO, 0); }
		public CorpoContext corpo() {
			return getRuleContext(CorpoContext.class,0);
		}
		public TerminalNode COTACAO() { return
getToken(ExameParser.COTACAO, 0); }
		public TerminalNode DIFICULDADE() { return
getToken(ExameParser.DIFICULDADE, 0); }
		public List<TerminalNode> INT() { return getTokens(ExameParser.INT); }
		public TerminalNode INT(int i) {
			return getToken(ExameParser.INT, i);
		}
		public TerminalNode FRASE() { return getToken(ExameParser.FRASE,
0); }
		public TerminalNode TIPO_PERGUNTA() { return
getToken(ExameParser.TIPO_PERGUNTA, 0); }
		public PerguntaContext(ParserRuleContext parent, int invokingState) {
			super(parent, invokingState);
		}
		@Override public int getRuleIndex() { return RULE_pergunta; }
```

```
		@Override
		public void enterRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener ) ((ExameListener)listener).enterPergunta(this);
		}
		@Override
		public void exitRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener ) ((ExameListener)listener).exitPergunta(this);
		}
		@Override
		public <T> T accept(ParseTreeVisitor<? extends T> visitor) {
			if ( visitor instanceof ExameVisitor ) return ((ExameVisitor<? extends T>)visitor).visitPergunta(this);
			else return visitor.visitChildren(this);
		}
	}

	public final PerguntaContext pergunta() throws RecognitionException {
		PerguntaContext _localctx = new PerguntaContext(_ctx, getState());
		enterRule(_localctx, 8, RULE_pergunta);
		try {
			enterOuterAlt(_localctx, 1);
			{
			setState(83);
			match(PERGUNTA);
			setState(84);
			match(ID);
			setState(85);
			match(DOISPONTOS);
			setState(86);
			((PerguntaContext)_localctx).id_pergunta = match(INT);
			setState(87);
			match(VIRGULA);
			setState(88);
			match(ENUNCIADO);
			setState(89);
			match(DOISPONTOS);
			setState(90);
			((PerguntaContext)_localctx).enunciado_pergunta = match(FRASE);
			setState(91);
			((PerguntaContext)_localctx).tipo_pergunta = match(TIPO_PERGUNTA);
```

```
                setState(92);
                match(DOISPONTOS);
                setState(93);
                corpo();
                setState(94);
                match(COTACAO);
                setState(95);
                match(DOISPONTOS);
                setState(96);
                ((PerguntaContext)_localctx).cotacao_pergunta = match(INT);
                setState(97);
                match(DIFICULDADE);
                setState(98);
                match(DOISPONTOS);
                setState(99);
                ((PerguntaContext)_localctx).dificuldade_pergunta = match(INT);
                }
        }
        catch (RecognitionException re) {
                _localctx.exception = re;
                _errHandler.reportError(this, re);
                _errHandler.recover(this, re);
        }
        finally {
                exitRule();
        }
        return _localctx;
}

@SuppressWarnings("CheckReturnValue")
public static class CorpoContext extends ParserRuleContext {
        public CorrespondenciaContext correspondencia() {
                return getRuleContext(CorrespondenciaContext.class,0);
        }
        public Escolha_multiplaContext escolha_multipla() {
                return getRuleContext(Escolha_multiplaContext.class,0);
        }
        public Resposta_curtaContext resposta_curta() {
                return getRuleContext(Resposta_curtaContext.class,0);
        }
        public NumericaContext numerica() {
                return getRuleContext(NumericaContext.class,0);
        }
        public Palavras_em_faltaContext palavras_em_falta() {
```

```
                return getRuleContext(Palavras_em_faltaContext.class,0);
            }
            public Verdadeiro_falsoContext verdadeiro_falso() {
                return getRuleContext(Verdadeiro_falsoContext.class,0);
            }
            public CorpoContext(ParserRuleContext parent, int invokingState) {
                super(parent, invokingState);
            }
            @Override public int getRuleIndex() { return RULE_corpo; }
            @Override
            public void enterRule(ParseTreeListener listener) {
                if ( listener instanceof ExameListener )
((ExameListener)listener).enterCorpo(this);
            }
            @Override
            public void exitRule(ParseTreeListener listener) {
                if ( listener instanceof ExameListener )
((ExameListener)listener).exitCorpo(this);
            }
            @Override
            public <T> T accept(ParseTreeVisitor<? extends T> visitor) {
                if ( visitor instanceof ExameVisitor ) return ((ExameVisitor<?
extends T>)visitor).visitCorpo(this);
                else return visitor.visitChildren(this);
            }
        }

        public final CorpoContext corpo() throws RecognitionException {
            CorpoContext _localctx = new CorpoContext(_ctx, getState());
            enterRule(_localctx, 10, RULE_corpo);
            try {
                setState(107);
                _errHandler.sync(this);
                switch (_input.LA(1)) {
                case CORRESPONDENCIA:
                    enterOuterAlt(_localctx, 1);
                    {
                    setState(101);
                    correspondencia();
                    }
                    break;
                case ESCOLHA_MULTIPLA:
                    enterOuterAlt(_localctx, 2);
                    {
```

```
                setState(102);
                escolha_multipla();
                }
                break;
        case RESPOSTA_CURTA:
                enterOuterAlt(_localctx, 3);
                {
                setState(103);
                resposta_curta();
                }
                break;
        case NUMERICA:
                enterOuterAlt(_localctx, 4);
                {
                setState(104);
                numerica();
                }
                break;
        case PALAVRAS_EM_FALTA:
                enterOuterAlt(_localctx, 5);
                {
                setState(105);
                palavras_em_falta();
                }
                break;
        case VERDADEIROOUFALSO:
                enterOuterAlt(_localctx, 6);
                {
                setState(106);
                verdadeiro_falso();
                }
                break;
        default:
                throw new NoViableAltException(this);
        }
}
catch (RecognitionException re) {
        _localctx.exception = re;
        _errHandler.reportError(this, re);
        _errHandler.recover(this, re);
}
finally {
        exitRule();
}
```

```
		return _localctx;
	}

	@SuppressWarnings("CheckReturnValue")
	public static class Verdadeiro_falsoContext extends ParserRuleContext {
		public Token resposta_verdOuFal;
		public TerminalNode VERDADEIROOUFALSO() { return
getToken(ExameParser.VERDADEIROOUFALSO, 0); }
		public TerminalNode RESPOSTA() { return
getToken(ExameParser.RESPOSTA, 0); }
		public TerminalNode DOISPONTOS() { return
getToken(ExameParser.DOISPONTOS, 0); }
		public TerminalNode VERDADEIRO() { return
getToken(ExameParser.VERDADEIRO, 0); }
		public TerminalNode FALSO() { return getToken(ExameParser.FALSO,
0); }
		public Verdadeiro_falsoContext(ParserRuleContext parent, int
invokingState) {
			super(parent, invokingState);
		}
		@Override public int getRuleIndex() { return RULE_verdadeiro_falso; }
		@Override
		public void enterRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).enterVerdadeiro_falso(this);
		}
		@Override
		public void exitRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).exitVerdadeiro_falso(this);
		}
		@Override
		public <T> T accept(ParseTreeVisitor<? extends T> visitor) {
			if ( visitor instanceof ExameVisitor ) return ((ExameVisitor<?
extends T>)visitor).visitVerdadeiro_falso(this);
			else return visitor.visitChildren(this);
		}
	}

	public final Verdadeiro_falsoContext verdadeiro_falso() throws
RecognitionException {
		Verdadeiro_falsoContext _localctx = new Verdadeiro_falsoContext(_ctx,
getState());
		enterRule(_localctx, 12, RULE_verdadeiro_falso);
```

```
		int _la;
		try {
			enterOuterAlt(_localctx, 1);
			{
			setState(109);
			match(VERDADEIROOUFALSO);
			setState(110);
			match(RESPOSTA);
			setState(111);
			match(DOISPONTOS);
			setState(112);
			((Verdadeiro_falsoContext)_localctx).resposta_verdOuFal =
_input.LT(1);
			_la = _input.LA(1);
			if ( !(_la==VERDADEIRO || _la==FALSO) ) {
				((Verdadeiro_falsoContext)_localctx).resposta_verdOuFal
= (Token)_errHandler.recoverInline(this);
			}
			else {
				if ( _input.LA(1)==Token.EOF ) matchedEOF = true;
				_errHandler.reportMatch(this);
				consume();
			}
			}
		}
		catch (RecognitionException re) {
			_localctx.exception = re;
			_errHandler.reportError(this, re);
			_errHandler.recover(this, re);
		}
		finally {
			exitRule();
		}
		return _localctx;
	}

	@SuppressWarnings("CheckReturnValue")
	public static class Palavras_em_faltaContext extends ParserRuleContext {
		public TerminalNode PALAVRAS_EM_FALTA() { return
getToken(ExameParser.PALAVRAS_EM_FALTA, 0); }
		public TerminalNode RESPOSTA() { return
getToken(ExameParser.RESPOSTA, 0); }
		public TerminalNode DOISPONTOS() { return
getToken(ExameParser.DOISPONTOS, 0); }
```

```
		public TerminalNode ABRECHAVETA() { return
getToken(ExameParser.ABRECHAVETA, 0); }
		public TerminalNode FECHACHAVETA() { return
getToken(ExameParser.FECHACHAVETA, 0); }
		public List<Resposta_faltaContext> resposta_falta() {
			return getRuleContexts(Resposta_faltaContext.class);
		}
		public Resposta_faltaContext resposta_falta(int i) {
			return getRuleContext(Resposta_faltaContext.class,i);
		}
		public Palavras_em_faltaContext(ParserRuleContext parent, int
invokingState) {
			super(parent, invokingState);
		}
		@Override public int getRuleIndex() { return RULE_palavras_em_falta; }
		@Override
		public void enterRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).enterPalavras_em_falta(this);
		}
		@Override
		public void exitRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).exitPalavras_em_falta(this);
		}
		@Override
		public <T> T accept(ParseTreeVisitor<? extends T> visitor) {
			if ( visitor instanceof ExameVisitor ) return ((ExameVisitor<?
extends T>)visitor).visitPalavras_em_falta(this);
			else return visitor.visitChildren(this);
		}
	}

	public final Palavras_em_faltaContext palavras_em_falta() throws
RecognitionException {
		Palavras_em_faltaContext _localctx = new
Palavras_em_faltaContext(_ctx, getState());
		enterRule(_localctx, 14, RULE_palavras_em_falta);
		int _la;
		try {
			enterOuterAlt(_localctx, 1);
			{
			setState(114);
			match(PALAVRAS_EM_FALTA);
```

```
                setState(115);
                match(RESPOSTA);
                setState(116);
                match(DOISPONTOS);
                setState(117);
                match(ABRECHAVETA);
                setState(119);
                _errHandler.sync(this);
                _la = _input.LA(1);
                do {
                        {
                        {
                        setState(118);
                        resposta_falta();
                        }
                        }
                        setState(121);
                        _errHandler.sync(this);
                        _la = _input.LA(1);
                } while ( _la==RESPOSTA );
                setState(123);
                match(FECHACHAVETA);
                }
        }
        catch (RecognitionException re) {
                _localctx.exception = re;
                _errHandler.reportError(this, re);
                _errHandler.recover(this, re);
        }
        finally {
                exitRule();
        }
        return _localctx;
    }

    @SuppressWarnings("CheckReturnValue")
    public static class Resposta_faltaContext extends ParserRuleContext {
        public Token resp_falta;
        public TerminalNode RESPOSTA() { return
getToken(ExameParser.RESPOSTA, 0); }
        public TerminalNode INT() { return getToken(ExameParser.INT, 0); }
        public TerminalNode DOISPONTOS() { return
getToken(ExameParser.DOISPONTOS, 0); }
        public TerminalNode FRASE() { return getToken(ExameParser.FRASE,
```

```
0); }
		public Resposta_faltaContext(ParserRuleContext parent, int
invokingState) {
			super(parent, invokingState);
		}
		@Override public int getRuleIndex() { return RULE_resposta_falta; }
		@Override
		public void enterRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).enterResposta_falta(this);
		}
		@Override
		public void exitRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).exitResposta_falta(this);
		}
		@Override
		public <T> T accept(ParseTreeVisitor<? extends T> visitor) {
			if ( visitor instanceof ExameVisitor ) return ((ExameVisitor<?
extends T>)visitor).visitResposta_falta(this);
			else return visitor.visitChildren(this);
		}
	}

	public final Resposta_faltaContext resposta_falta() throws RecognitionException
{
		Resposta_faltaContext _localctx = new Resposta_faltaContext(_ctx,
getState());
		enterRule(_localctx, 16, RULE_resposta_falta);
		try {
			enterOuterAlt(_localctx, 1);
			{
			setState(125);
			match(RESPOSTA);
			setState(126);
			match(INT);
			setState(127);
			match(DOISPONTOS);
			setState(128);
			((Resposta_faltaContext)_localctx).resp_falta = match(FRASE);
			}
		}
		catch (RecognitionException re) {
			_localctx.exception = re;
```

```
                        _errHandler.reportError(this, re);
                        _errHandler.recover(this, re);
                }
                finally {
                        exitRule();
                }
                return _localctx;
        }

        @SuppressWarnings("CheckReturnValue")
        public static class NumericaContext extends ParserRuleContext {
                public Token resp_numerica;
                public TerminalNode NUMERICA() { return
getToken(ExameParser.NUMERICA, 0); }
                public TerminalNode RESPOSTA() { return
getToken(ExameParser.RESPOSTA, 0); }
                public TerminalNode DOISPONTOS() { return
getToken(ExameParser.DOISPONTOS, 0); }
                public TerminalNode NUMERO() { return
getToken(ExameParser.NUMERO, 0); }
                public NumericaContext(ParserRuleContext parent, int invokingState) {
                        super(parent, invokingState);
                }
                @Override public int getRuleIndex() { return RULE_numerica; }
                @Override
                public void enterRule(ParseTreeListener listener) {
                        if ( listener instanceof ExameListener )
((ExameListener)listener).enterNumerica(this);
                }
                @Override
                public void exitRule(ParseTreeListener listener) {
                        if ( listener instanceof ExameListener )
((ExameListener)listener).exitNumerica(this);
                }
                @Override
                public <T> T accept(ParseTreeVisitor<? extends T> visitor) {
                        if ( visitor instanceof ExameVisitor ) return ((ExameVisitor<?
extends T>)visitor).visitNumerica(this);
                        else return visitor.visitChildren(this);
                }
        }

        public final NumericaContext numerica() throws RecognitionException {
                NumericaContext _localctx = new NumericaContext(_ctx, getState());
```

```
		enterRule(_localctx, 18, RULE_numerica);
		try {
			enterOuterAlt(_localctx, 1);
			{
			setState(130);
			match(NUMERICA);
			setState(131);
			match(RESPOSTA);
			setState(132);
			match(DOISPONTOS);
			setState(133);
			((NumericaContext)_localctx).resp_numerica = match(NUMERO);
			}
		}
		catch (RecognitionException re) {
			_localctx.exception = re;
			_errHandler.reportError(this, re);
			_errHandler.recover(this, re);
		}
		finally {
			exitRule();
		}
		return _localctx;
	}

	@SuppressWarnings("CheckReturnValue")
	public static class Resposta_curtaContext extends ParserRuleContext {
		public Token resp_curta;
		public TerminalNode RESPOSTA_CURTA() { return
getToken(ExameParser.RESPOSTA_CURTA, 0); }
		public TerminalNode RESPOSTA() { return
getToken(ExameParser.RESPOSTA, 0); }
		public TerminalNode DOISPONTOS() { return
getToken(ExameParser.DOISPONTOS, 0); }
		public TerminalNode FRASE() { return getToken(ExameParser.FRASE,
0); }
		public Resposta_curtaContext(ParserRuleContext parent, int
invokingState) {
			super(parent, invokingState);
		}
		@Override public int getRuleIndex() { return RULE_resposta_curta; }
		@Override
		public void enterRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
```

```
((ExameListener)listener).enterResposta_curta(this);
		}
		@Override
		public void exitRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).exitResposta_curta(this);
		}
		@Override
		public <T> T accept(ParseTreeVisitor<? extends T> visitor) {
			if ( visitor instanceof ExameVisitor ) return ((ExameVisitor<?
extends T>)visitor).visitResposta_curta(this);
			else return visitor.visitChildren(this);
		}
	}

	public final Resposta_curtaContext resposta_curta() throws
RecognitionException {
		Resposta_curtaContext _localctx = new Resposta_curtaContext(_ctx,
getState());
		enterRule(_localctx, 20, RULE_resposta_curta);
		try {
			enterOuterAlt(_localctx, 1);
			{
			setState(135);
			match(RESPOSTA_CURTA);
			setState(136);
			match(RESPOSTA);
			setState(137);
			match(DOISPONTOS);
			setState(138);
			((Resposta_curtaContext)_localctx).resp_curta = match(FRASE);
			}
		}
		catch (RecognitionException re) {
			_localctx.exception = re;
			_errHandler.reportError(this, re);
			_errHandler.recover(this, re);
		}
		finally {
			exitRule();
		}
		return _localctx;
	}
```

```
	@SuppressWarnings("CheckReturnValue")
	public static class Escolha_multiplaContext extends ParserRuleContext {
		public Token resposta_escolha_multipla;
		public TerminalNode ESCOLHA_MULTIPLA() { return
getToken(ExameParser.ESCOLHA_MULTIPLA, 0); }
		public TerminalNode OPCOES() { return
getToken(ExameParser.OPCOES, 0); }
		public List<TerminalNode> DOISPONTOS() { return
getTokens(ExameParser.DOISPONTOS); }
		public TerminalNode DOISPONTOS(int i) {
			return getToken(ExameParser.DOISPONTOS, i);
		}
		public TerminalNode ABREPARANTESIS() { return
getToken(ExameParser.ABREPARANTESIS, 0); }
		public TerminalNode FECHAPARANTESIS() { return
getToken(ExameParser.FECHAPARANTESIS, 0); }
		public TerminalNode RESPOSTA() { return
getToken(ExameParser.RESPOSTA, 0); }
		public TerminalNode INT() { return getToken(ExameParser.INT, 0); }
		public List<Opcao_escolha_multiplaContext> opcao_escolha_multipla() {
			return getRuleContexts(Opcao_escolha_multiplaContext.class);
		}
		public Opcao_escolha_multiplaContext opcao_escolha_multipla(int i) {
			return getRuleContext(Opcao_escolha_multiplaContext.class,i);
		}
		public Escolha_multiplaContext(ParserRuleContext parent, int
invokingState) {
			super(parent, invokingState);
		}
		@Override public int getRuleIndex() { return RULE_escolha_multipla; }
		@Override
		public void enterRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).enterEscolha_multipla(this);
		}
		@Override
		public void exitRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).exitEscolha_multipla(this);
		}
		@Override
		public <T> T accept(ParseTreeVisitor<? extends T> visitor) {
			if ( visitor instanceof ExameVisitor ) return ((ExameVisitor<?
extends T>)visitor).visitEscolha_multipla(this);
```

```
                else return visitor.visitChildren(this);
            }
        }

        public final Escolha_multiplaContext escolha_multipla() throws
RecognitionException {
            Escolha_multiplaContext _localctx = new Escolha_multiplaContext(_ctx,
getState());
            enterRule(_localctx, 22, RULE_escolha_multipla);
            int _la;
            try {
                enterOuterAlt(_localctx, 1);
                {
                setState(140);
                match(ESCOLHA_MULTIPLA);
                setState(141);
                match(OPCOES);
                setState(142);
                match(DOISPONTOS);
                setState(143);
                match(ABREPARANTESIS);
                setState(145);
                _errHandler.sync(this);
                _la = _input.LA(1);
                do {
                    {
                    {
                    setState(144);
                    opcao_escolha_multipla();
                    }
                    }
                    setState(147);
                    _errHandler.sync(this);
                    _la = _input.LA(1);
                } while ( _la==OPCAO );
                setState(149);
                match(FECHAPARANTESIS);
                setState(150);
                match(RESPOSTA);
                setState(151);
                match(DOISPONTOS);
                setState(152);
                ((Escolha_multiplaContext)_localctx).resposta_escolha_multipla =
match(INT);
```

```
                }
            }
            catch (RecognitionException re) {
                _localctx.exception = re;
                _errHandler.reportError(this, re);
                _errHandler.recover(this, re);
            }
            finally {
                exitRule();
            }
            return _localctx;
        }

        @SuppressWarnings("CheckReturnValue")
        public static class Opcao_escolha_multiplaContext extends ParserRuleContext {
            public Token opcao_escolha;
            public TerminalNode OPCAO() { return getToken(ExameParser.OPCAO,
0); }
            public TerminalNode INT() { return getToken(ExameParser.INT, 0); }
            public TerminalNode DOISPONTOS() { return
getToken(ExameParser.DOISPONTOS, 0); }
            public TerminalNode FRASE() { return getToken(ExameParser.FRASE,
0); }
            public Opcao_escolha_multiplaContext(ParserRuleContext parent, int
invokingState) {
                super(parent, invokingState);
            }
            @Override public int getRuleIndex() { return
RULE_opcao_escolha_multipla; }
            @Override
            public void enterRule(ParseTreeListener listener) {
                if ( listener instanceof ExameListener )
((ExameListener)listener).enterOpcao_escolha_multipla(this);
            }
            @Override
            public void exitRule(ParseTreeListener listener) {
                if ( listener instanceof ExameListener )
((ExameListener)listener).exitOpcao_escolha_multipla(this);
            }
            @Override
            public <T> T accept(ParseTreeVisitor<? extends T> visitor) {
                if ( visitor instanceof ExameVisitor ) return ((ExameVisitor<?
extends T>)visitor).visitOpcao_escolha_multipla(this);
                else return visitor.visitChildren(this);
```

```
		}
	}

	public final Opcao_escolha_multiplaContext opcao_escolha_multipla() throws
RecognitionException {
		Opcao_escolha_multiplaContext _localctx = new
Opcao_escolha_multiplaContext(_ctx, getState());
		enterRule(_localctx, 24, RULE_opcao_escolha_multipla);
		try {
			enterOuterAlt(_localctx, 1);
			{
			setState(154);
			match(OPCAO);
			setState(155);
			match(INT);
			setState(156);
			match(DOISPONTOS);
			setState(157);
			((Opcao_escolha_multiplaContext)_localctx).opcao_escolha =
match(FRASE);
			}
		}
		catch (RecognitionException re) {
			_localctx.exception = re;
			_errHandler.reportError(this, re);
			_errHandler.recover(this, re);
		}
		finally {
			exitRule();
		}
		return _localctx;
	}

	@SuppressWarnings("CheckReturnValue")
	public static class CorrespondenciaContext extends ParserRuleContext {
		public TerminalNode CORRESPONDENCIA() { return
getToken(ExameParser.CORRESPONDENCIA, 0); }
		public TerminalNode TABELA_A() { return
getToken(ExameParser.TABELA_A, 0); }
		public List<TerminalNode> DOISPONTOS() { return
getTokens(ExameParser.DOISPONTOS); }
		public TerminalNode DOISPONTOS(int i) {
			return getToken(ExameParser.DOISPONTOS, i);
		}
```

```
		public List<TerminalNode> ABREPARANTESIS() { return
getTokens(ExameParser.ABREPARANTESIS); }
		public TerminalNode ABREPARANTESIS(int i) {
			return getToken(ExameParser.ABREPARANTESIS, i);
		}
		public List<TerminalNode> FECHAPARANTESIS() { return
getTokens(ExameParser.FECHAPARANTESIS); }
		public TerminalNode FECHAPARANTESIS(int i) {
			return getToken(ExameParser.FECHAPARANTESIS, i);
		}
		public TerminalNode TABELA_B() { return
getToken(ExameParser.TABELA_B, 0); }
		public TerminalNode RESPOSTA() { return
getToken(ExameParser.RESPOSTA, 0); }
		public List<Token_correspondenciaContext> token_correspondencia() {
			return getRuleContexts(Token_correspondenciaContext.class);
		}
		public Token_correspondenciaContext token_correspondencia(int i) {
			return getRuleContext(Token_correspondenciaContext.class,i);
		}
		public List<Respostas_correspondenciaContext>
respostas_correspondencia() {
			return
getRuleContexts(Respostas_correspondenciaContext.class);
		}
		public Respostas_correspondenciaContext
respostas_correspondencia(int i) {
			return
getRuleContext(Respostas_correspondenciaContext.class,i);
		}
		public CorrespondenciaContext(ParserRuleContext parent, int
invokingState) {
			super(parent, invokingState);
		}
		@Override public int getRuleIndex() { return RULE_correspondencia; }
		@Override
		public void enterRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).enterCorrespondencia(this);
		}
		@Override
		public void exitRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).exitCorrespondencia(this);
```

```
		}
		@Override
		public <T> T accept(ParseTreeVisitor<? extends T> visitor) {
			if ( visitor instanceof ExameVisitor ) return ((ExameVisitor<?
extends T>)visitor).visitCorrespondencia(this);
			else return visitor.visitChildren(this);
		}
	}

	public final CorrespondenciaContext correspondencia() throws
RecognitionException {
		CorrespondenciaContext _localctx = new CorrespondenciaContext(_ctx,
getState());
		enterRule(_localctx, 26, RULE_correspondencia);
		int _la;
		try {
			enterOuterAlt(_localctx, 1);
			{
			setState(159);
			match(CORRESPONDENCIA);
			setState(160);
			match(TABELA_A);
			setState(161);
			match(DOISPONTOS);
			setState(162);
			match(ABREPARANTESIS);
			setState(164);
			_errHandler.sync(this);
			_la = _input.LA(1);
			do {
				{
				{
				setState(163);
				token_correspondencia();
				}
				}
				setState(166);
				_errHandler.sync(this);
				_la = _input.LA(1);
			} while ( _la==ENUNCIADO );
			setState(168);
			match(FECHAPARANTESIS);
			setState(169);
			match(TABELA_B);
```

```
            setState(170);
            match(DOISPONTOS);
            setState(171);
            match(ABREPARANTESIS);
            setState(173);
            _errHandler.sync(this);
            _la = _input.LA(1);
            do {
                    {
                    {
                    setState(172);
                    token_correspondencia();
                    }
                    }
                    setState(175);
                    _errHandler.sync(this);
                    _la = _input.LA(1);
            } while ( _la==ENUNCIADO );
            setState(177);
            match(FECHAPARANTESIS);
            setState(178);
            match(RESPOSTA);
            setState(179);
            match(DOISPONTOS);
            setState(181);
            _errHandler.sync(this);
            _la = _input.LA(1);
            do {
                    {
                    {
                    setState(180);
                    respostas_correspondencia();
                    }
                    }
                    setState(183);
                    _errHandler.sync(this);
                    _la = _input.LA(1);
            } while ( _la==TABELA_A );
            }
    }
    catch (RecognitionException re) {
            _localctx.exception = re;
            _errHandler.reportError(this, re);
            _errHandler.recover(this, re);
```

```
		}
		finally {
			exitRule();
		}
		return _localctx;
	}

	@SuppressWarnings("CheckReturnValue")
	public static class Token_correspondenciaContext extends ParserRuleContext {
		public Token resp_correspondencia;
		public TerminalNode ENUNCIADO() { return
getToken(ExameParser.ENUNCIADO, 0); }
		public TerminalNode INT() { return getToken(ExameParser.INT, 0); }
		public TerminalNode DOISPONTOS() { return
getToken(ExameParser.DOISPONTOS, 0); }
		public TerminalNode FRASE() { return getToken(ExameParser.FRASE,
0); }
		public Token_correspondenciaContext(ParserRuleContext parent, int
invokingState) {
			super(parent, invokingState);
		}
		@Override public int getRuleIndex() { return
RULE_token_correspondencia; }
		@Override
		public void enterRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).enterToken_correspondencia(this);
		}
		@Override
		public void exitRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).exitToken_correspondencia(this);
		}
		@Override
		public <T> T accept(ParseTreeVisitor<? extends T> visitor) {
			if ( visitor instanceof ExameVisitor ) return ((ExameVisitor<?
extends T>)visitor).visitToken_correspondencia(this);
			else return visitor.visitChildren(this);
		}
	}

	public final Token_correspondenciaContext token_correspondencia() throws
RecognitionException {
		Token_correspondenciaContext _localctx = new
```

```
Token_correspondenciaContext(_ctx, getState());
		enterRule(_localctx, 28, RULE_token_correspondencia);
		try {
			enterOuterAlt(_localctx, 1);
			{
			setState(185);
			match(ENUNCIADO);
			setState(186);
			match(INT);
			setState(187);
			match(DOISPONTOS);
			setState(188);

	((Token_correspondenciaContext)_localctx).resp_correspondencia =
match(FRASE);
			}
		}
		catch (RecognitionException re) {
			_localctx.exception = re;
			_errHandler.reportError(this, re);
			_errHandler.recover(this, re);
		}
		finally {
			exitRule();
		}
		return _localctx;
	}

	@SuppressWarnings("CheckReturnValue")
	public static class Respostas_correspondenciaContext extends
ParserRuleContext {
		public TerminalNode TABELA_A() { return
getToken(ExameParser.TABELA_A, 0); }
		public List<TerminalNode> DOISPONTOS() { return
getTokens(ExameParser.DOISPONTOS); }
		public TerminalNode DOISPONTOS(int i) {
			return getToken(ExameParser.DOISPONTOS, i);
		}
		public List<TerminalNode> INT() { return getTokens(ExameParser.INT); }
		public TerminalNode INT(int i) {
			return getToken(ExameParser.INT, i);
		}
		public TerminalNode TRACO() { return getToken(ExameParser.TRACO,
0); }
```

```
		public TerminalNode TABELA_B() { return
getToken(ExameParser.TABELA_B, 0); }
		public Respostas_correspondenciaContext(ParserRuleContext parent, int
invokingState) {
			super(parent, invokingState);
		}
		@Override public int getRuleIndex() { return
RULE_respostas_correspondencia; }
		@Override
		public void enterRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).enterRespostas_correspondencia(this);
		}
		@Override
		public void exitRule(ParseTreeListener listener) {
			if ( listener instanceof ExameListener )
((ExameListener)listener).exitRespostas_correspondencia(this);
		}
		@Override
		public <T> T accept(ParseTreeVisitor<? extends T> visitor) {
			if ( visitor instanceof ExameVisitor ) return ((ExameVisitor<?
extends T>)visitor).visitRespostas_correspondencia(this);
			else return visitor.visitChildren(this);
		}
	}

	public final Respostas_correspondenciaContext respostas_correspondencia()
throws RecognitionException {
		Respostas_correspondenciaContext _localctx = new
Respostas_correspondenciaContext(_ctx, getState());
		enterRule(_localctx, 30, RULE_respostas_correspondencia);
		try {
			enterOuterAlt(_localctx, 1);
			{
			setState(190);
			match(TABELA_A);
			setState(191);
			match(DOISPONTOS);
			setState(192);
			match(INT);
			setState(193);
			match(TRACO);
			setState(194);
			match(TABELA_B);
```

```
                setState(195);
                match(DOISPONTOS);
                setState(196);
                match(INT);
                }
            }
            catch (RecognitionException re) {
                _localctx.exception = re;
                _errHandler.reportError(this, re);
                _errHandler.recover(this, re);
            }
            finally {
                exitRule();
            }
            return _localctx;
        }

        public static final String _serializedATN =

        "\u0004\u0001+\u00c7\u0002\u0000\u0007\u0000\u0002\u0001\u0007\u0001\u0
002"+

        "\u0002\u0007\u0002\u0002\u0003\u0007\u0003\u0002\u0004\u0007\u0004\u00
02"+

        "\u0005\u0007\u0005\u0002\u0006\u0007\u0006\u0002\u0007\u0007\u0007\u00
02"+

        "\b\u0007\b\u0002\t\u0007\t\u0002\n\u0007\n\u0002\u000b\u0007\u000b\u0002"
+

        "\f\u0007\f\u0002\r\u0007\r\u0002\u000e\u0007\u000e\u0002\u000f\u0007\u000f
"+

        "\u0001\u0000\u0001\u0000\u0001\u0001\u0001\u0001\u0001\u0001\u0001\u00
01"+

        "\u0001\u0001\u0001\u0001\u0001\u0002\u0001\u0002\u0001\u0002\u0001\u00
02"+

        "\u0001\u0002\u0001\u0002\u0001\u0002\u0001\u0002\u0004\u00021\b\u0002"
+

        "\u000b\u0002\f\u00022\u0001\u0002\u0001\u0002\u0001\u0002\u0001\u0002"
```

```
+
        "\u0001\u0002\u0001\u0002\u0001\u0002\u0001\u0003\u0001\u0003\u0001\u00
03"+
        "\u0001\u0003\u0001\u0003\u0001\u0003\u0001\u0003\u0001\u0003\u0001\u00
03"+
        "\u0001\u0003\u0001\u0003\u0001\u0003\u0001\u0003\u0001\u0003\u0001\u00
03"+
        "\u0001\u0003\u0001\u0003\u0001\u0003\u0004\u0003N\b\u0003\u000b\u0003"
+
        "\f\u0003O\u0001\u0003\u0001\u0003\u0001\u0004\u0001\u0004\u0001\u0004"
+
        "\u0001\u0004\u0001\u0004\u0001\u0004\u0001\u0004\u0001\u0004\u0001\u00
04"+
        "\u0001\u0004\u0001\u0004\u0001\u0004\u0001\u0004\u0001\u0004\u0001\u00
04"+
        "\u0001\u0004\u0001\u0004\u0001\u0004\u0001\u0005\u0001\u0005\u0001\u00
05"+
        "\u0001\u0005\u0001\u0005\u0001\u0005\u0003\u0005l\b\u0005\u0001\u0006"+
        "\u0001\u0006\u0001\u0006\u0001\u0006\u0001\u0006\u0001\u0007\u0001\u00
07"+
        "\u0001\u0007\u0001\u0007\u0001\u0007\u0004\u0007x\b\u0007\u000b\u0007"
+
        "\f\u0007y\u0001\u0007\u0001\u0007\u0001\b\u0001\b\u0001\b\u0001\b\u0001"
+
        "\b\u0001\t\u0001\t\u0001\t\u0001\t\u0001\t\u0001\n\u0001\n\u0001\n\u0001"+
        "\n\u0001\n\u0001\u000b\u0001\u000b\u0001\u000b\u0001\u000b\u0001\u000b
"+
        "\u0004\u000b\u0092\b\u000b\u000b\u000b\f\u000b\u0093\u0001\u000b\u0001"
+
```

```
        "\u000b\u0001\u000b\u0001\u000b\u0001\u000b\u0001\f\u0001\f\u0001\f\u0001
"+

        "\f\u0001\f\u0001\r\u0001\r\u0001\r\u0001\r\u0001\r\u0004\r\u00a5\b\r\u000b"+
                "\r\f\r\u00a6\u0001\r\u0001\r\u0001\r\u0001\r\u0001\r\u0004\r\u00ae\b\r"+

        "\u000b\r\f\r\u00af\u0001\r\u0001\r\u0001\r\u0001\r\u0004\r\u00b6\b\r\u000b"+

        "\r\f\r\u00b7\u0001\u000e\u0001\u000e\u0001\u000e\u0001\u000e\u0001\u000e
"+

        "\u0001\u000f\u0001\u000f\u0001\u000f\u0001\u000f\u0001\u000f\u0001\u000f"
+

        "\u0001\u000f\u0001\u000f\u0001\u000f\u0000\u0000\u0010\u0000\u0002\u000
4"+

        "\u0006\b\n\f\u000e\u0010\u0012\u0014\u0016\u0018\u001a\u001c\u001e\u000
0"+
                "\u0001\u0001\u0000!\"\u00c2\u0000
\u0001\u0000\u0000\u0000\u0002\"\u0001"+

        "\u0000\u0000\u0000\u0004(\u0001\u0000\u0000\u0000\u0006;\u0001\u0000\u
0000"+

        "\u0000\bS\u0001\u0000\u0000\u0000\nk\u0001\u0000\u0000\u0000\fm\u0001"
+

        "\u0000\u0000\u0000\u000er\u0001\u0000\u0000\u0000\u0010}\u0001\u0000\u
0000"+

        "\u0000\u0012\u0082\u0001\u0000\u0000\u0000\u0014\u0087\u0001\u0000\u00
00"+

        "\u0000\u0016\u008c\u0001\u0000\u0000\u0000\u0018\u009a\u0001\u0000\u00
00"+

        "\u0000\u001a\u009f\u0001\u0000\u0000\u0000\u001c\u00b9\u0001\u0000\u00
00"+
                "\u0000\u001e\u00be\u0001\u0000\u0000\u0000
!\u0003\u0002\u0001\u0000!"+

        "\u0001\u0001\u0000\u0000\u0000\"#\u0005\u0007\u0000\u0000#$\u0005\u000
```

```
1"+

        "\u0000\u0000$%\u0005\u0002\u0000\u0000%&\u0003\u0004\u0002\u0000&\'\u
0005"+

        "\u0003\u0000\u0000\'\u0003\u0001\u0000\u0000\u0000()\u0005\b\u0000\u0000
"+

        ")*\u0005\u0001\u0000\u0000*+\u0005$\u0000\u0000+,\u0005\u0006\u0000\u0
000"+
                ",-\u0005\u000b\u0000\u0000-
.\u0005\u0001\u0000\u0000.0\u0005)\u0000\u0000"+

        "/1\u0003\u0006\u0003\u00000/\u0001\u0000\u0000\u000012\u0001\u0000\u00
00"+

        "\u000020\u0001\u0000\u0000\u000023\u0001\u0000\u0000\u000034\u0001\u0
000"+

        "\u0000\u000045\u0005\f\u0000\u000056\u0005\u0001\u0000\u000067\u0005%
"+

        "\u0000\u000078\u0005\r\u0000\u000089\u0005\u0001\u0000\u00009:\u0005%"
+

        "\u0000\u0000:\u0005\u0001\u0000\u0000\u0000;<\u0005\u0018\u0000\u0000"
+

        "<=\u0005\b\u0000\u0000=>\u0005\u0001\u0000\u0000>?\u0005$\u0000\u0000
"+

        "?@\u0005\u0006\u0000\u0000@A\u0005\u0002\u0000\u0000AB\u0005\u0015\
u0000"+

        "\u0000BC\u0005\u0001\u0000\u0000CD\u0005)\u0000\u0000DE\u0005\u0014\
u0000"+

        "\u0000EF\u0005\u0001\u0000\u0000FG\u0005$\u0000\u0000GH\u0005\u0017\
u0000"+

        "\u0000HI\u0005\u0001\u0000\u0000IJ\u0005$\u0000\u0000JK\u0005\u0016\u0
000"+

        "\u0000KM\u0005\u0001\u0000\u0000LN\u0003\b\u0004\u0000ML\u0001\u0000
```

\u0000"+

"\u0000NO\u0001\u0000\u0000\u0000OM\u0001\u0000\u0000\u0000OP\u0001\
u0000"+

"\u0000\u0000PQ\u0001\u0000\u0000\u0000QR\u0005\u0003\u0000\u0000R\u0
007"+

"\u0001\u0000\u0000\u0000ST\u0005\u0019\u0000\u0000TU\u0005\b\u0000\u0
000"+

"UV\u0005\u0001\u0000\u0000VW\u0005$\u0000\u0000WX\u0005\u0006\u000
0\u0000"+

"XY\u0005\u0010\u0000\u0000YZ\u0005\u0001\u0000\u0000Z[\u0005)\u0000\u
0000"+

"[\\\u0005\u001a\u0000\u0000\\]\u0005\u0001\u0000\u0000]^\u0003\n\u0005"+

"\u0000^_\u0005\u0013\u0000\u0000_`\u0005\u0001\u0000\u0000`a\u0005$\u0
000"+

"\u0000ab\u0005\u0014\u0000\u0000bc\u0005\u0001\u0000\u0000cd\u0005$\u
0000"+

"\u0000d\t\u0001\u0000\u0000\u0000el\u0003\u001a\r\u0000fl\u0003\u0016"+

"\u000b\u0000gl\u0003\u0014\n\u0000hl\u0003\u0012\t\u0000il\u0003\u000e"+

"\u0007\u0000jl\u0003\f\u0006\u0000ke\u0001\u0000\u0000\u0000kf\u0001\u00
00"+

"\u0000\u0000kg\u0001\u0000\u0000\u0000kh\u0001\u0000\u0000\u0000ki\u00
01"+

"\u0000\u0000\u0000kj\u0001\u0000\u0000\u0000l\u000b\u0001\u0000\u0000"+

"\u0000mn\u0005\u001e\u0000\u0000no\u0005\n\u0000\u0000op\u0005\u0001\
u0000"+

"\u0000pq\u0007\u0000\u0000\u0000q\r\u0001\u0000\u0000\u0000rs\u0005\u00
1f"+

"\u0000\u0000st\u0005\n\u0000\u0000tu\u0005\u0001\u0000\u0000uw\u0005\u

0002"+

"\u0000\u0000vx\u0003\u0010\b\u0000wv\u0001\u0000\u0000\u0000xy\u0001\u0000"+

"\u0000\u0000yw\u0001\u0000\u0000\u0000yz\u0001\u0000\u0000\u0000z{\u0001"+

"\u0000\u0000\u0000{|\u0005\u0003\u0000\u0000|\u000f\u0001\u0000\u0000"+

"\u0000}~\u0005\n\u0000\u0000~\u007f\u0005$\u0000\u0000\u007f\u0080\u0005"+

"\u0001\u0000\u0000\u0080\u0081\u0005)\u0000\u0000\u0081\u0011\u0001\u0000"+

"\u0000\u0000\u0082\u0083\u0005\u001b\u0000\u0000\u0083\u0084\u0005\n\u0000"+

"\u0000\u0084\u0085\u0005\u0001\u0000\u0000\u0085\u0086\u0005(\u0000\u0000"+
"\u0086\u0013\u0001\u0000\u0000\u0000\u0087\u0088\u0005
\u0000\u0000\u0088"+

"\u0089\u0005\n\u0000\u0000\u0089\u008a\u0005\u0001\u0000\u0000\u008a\u008b"+

"\u0005)\u0000\u0000\u008b\u0015\u0001\u0000\u0000\u0000\u008c\u008d\u0005"+

"\u001c\u0000\u0000\u008d\u008e\u0005\u000e\u0000\u0000\u008e\u008f\u0005"+

"\u0001\u0000\u0000\u008f\u0091\u0005\u0004\u0000\u0000\u0090\u0092\u0003"+

"\u0018\f\u0000\u0091\u0090\u0001\u0000\u0000\u0000\u0092\u0093\u0001\u0000"+

"\u0000\u0000\u0093\u0091\u0001\u0000\u0000\u0000\u0093\u0094\u0001\u0000"+

"\u0000\u0000\u0094\u0095\u0001\u0000\u0000\u0000\u0095\u0096\u0005\u0005"+

"\u0000\u0000\u0096\u0097\u0005\n\u0000\u0000\u0097\u0098\u0005\u0001\u0000"+

"\u0000\u0098\u0099\u0005$\u0000\u0000\u0099\u0017\u0001\u0000\u0000\u0000"+

"\u009a\u009b\u0005\u000f\u0000\u0000\u009b\u009c\u0005$\u0000\u0000\u009c"+

"\u009d\u0005\u0001\u0000\u0000\u009d\u009e\u0005)\u0000\u0000\u009e\u0019"+

"\u0001\u0000\u0000\u0000\u009f\u00a0\u0005\u001d\u0000\u0000\u00a0\u00a1"+

"\u0005\u0011\u0000\u0000\u00a1\u00a2\u0005\u0001\u0000\u0000\u00a2\u00a4"+

"\u0005\u0004\u0000\u0000\u00a3\u00a5\u0003\u001c\u000e\u0000\u00a4\u00a3"+

"\u0001\u0000\u0000\u0000\u00a5\u00a6\u0001\u0000\u0000\u0000\u00a6\u00a4"+

"\u0001\u0000\u0000\u0000\u00a6\u00a7\u0001\u0000\u0000\u0000\u00a7\u00a8"+

"\u0001\u0000\u0000\u0000\u00a8\u00a9\u0005\u0005\u0000\u0000\u00a9\u00aa"+

"\u0005\u0012\u0000\u0000\u00aa\u00ab\u0005\u0001\u0000\u0000\u00ab\u00ad"+

"\u0005\u0004\u0000\u0000\u00ac\u00ae\u0003\u001c\u000e\u0000\u00ad\u00ac"+

"\u0001\u0000\u0000\u0000\u00ae\u00af\u0001\u0000\u0000\u0000\u00af\u00ad"+

"\u0001\u0000\u0000\u0000\u00af\u00b0\u0001\u0000\u0000\u0000\u00b0\u00b1"+

"\u0001\u0000\u0000\u0000\u00b1\u00b2\u0005\u0005\u0000\u0000\u00b2\u00

```
b3"+

        "\u0005\n\u0000\u0000\u00b3\u00b5\u0005\u0001\u0000\u0000\u00b4\u00b6\u
0003"+

        "\u001e\u000f\u0000\u00b5\u00b4\u0001\u0000\u0000\u0000\u00b6\u00b7\u00
01"+

        "\u0000\u0000\u0000\u00b7\u00b5\u0001\u0000\u0000\u0000\u00b7\u00b8\u00
01"+

        "\u0000\u0000\u0000\u00b8\u001b\u0001\u0000\u0000\u0000\u00b9\u00ba\u00
05"+

        "\u0010\u0000\u0000\u00ba\u00bb\u0005$\u0000\u0000\u00bb\u00bc\u0005\u0
001"+

        "\u0000\u0000\u00bc\u00bd\u0005)\u0000\u0000\u00bd\u001d\u0001\u0000\u0
000"+

        "\u0000\u00be\u00bf\u0005\u0011\u0000\u0000\u00bf\u00c0\u0005\u0001\u000
0"+

        "\u0000\u00c0\u00c1\u0005$\u0000\u0000\u00c1\u00c2\u0005\t\u0000\u0000"+

        "\u00c2\u00c3\u0005\u0012\u0000\u0000\u00c3\u00c4\u0005\u0001\u0000\u00
00"+

        "\u00c4\u00c5\u0005$\u0000\u0000\u00c5\u001f\u0001\u0000\u0000\u0000\b"+
                "2Oky\u0093\u00a6\u00af\u00b7";
        public static final ATN _ATN =
                new ATNDeserializer().deserialize(_serializedATN.toCharArray());
        static {
                _decisionToDFA = new DFA[_ATN.getNumberOfDecisions()];
                for (int i = 0; i < _ATN.getNumberOfDecisions(); i++) {
                        _decisionToDFA[i] = new DFA(_ATN.getDecisionState(i), i);
                }
        }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\ExameParser.txt

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\ExameVisitor.txt

```
// Generated from C:/Users/mike_/OneDrive/Documentos/sem4pi-22-23-61/base.core/src/main/java/eapli/base/ANTLR/ExamValidation\Exame.g4 by ANTLR 4.12.0
package eapli.base.ANTLR.ExamValidation;
import org.antlr.v4.runtime.tree.ParseTreeVisitor;

/**
 * This interface defines a complete generic visitor for a parse tree produced
 * by {@link ExameParser}.
 *
 * @param <T> The return type of the visit operation. Use {@link Void} for
 * operations with no return type.
 */
public interface ExameVisitor<T> extends ParseTreeVisitor<T> {
	/**
	 * Visit a parse tree produced by {@link ExameParser#prog}.
	 * @param ctx the parse tree
	 * @return the visitor result
	 */
	T visitProg(ExameParser.ProgContext ctx);
	/**
	 * Visit a parse tree produced by {@link ExameParser#exame}.
	 * @param ctx the parse tree
	 * @return the visitor result
	 */
	T visitExame(ExameParser.ExameContext ctx);
	/**
	 * Visit a parse tree produced by {@link ExameParser#corpo_exame}.
	 * @param ctx the parse tree
	 * @return the visitor result
	 */
	T visitCorpo_exame(ExameParser.Corpo_exameContext ctx);
	/**
	 * Visit a parse tree produced by {@link ExameParser#seccao}.
	 * @param ctx the parse tree
	 * @return the visitor result
	 */
	T visitSeccao(ExameParser.SeccaoContext ctx);
	/**
```

```
 * Visit a parse tree produced by {@link ExameParser#pergunta}.
 * @param ctx the parse tree
 * @return the visitor result
 */
T visitPergunta(ExameParser.PerguntaContext ctx);
/**
 * Visit a parse tree produced by {@link ExameParser#corpo}.
 * @param ctx the parse tree
 * @return the visitor result
 */
T visitCorpo(ExameParser.CorpoContext ctx);
/**
 * Visit a parse tree produced by {@link ExameParser#verdadeiro_falso}.
 * @param ctx the parse tree
 * @return the visitor result
 */
T visitVerdadeiro_falso(ExameParser.Verdadeiro_falsoContext ctx);
/**
 * Visit a parse tree produced by {@link ExameParser#palavras_em_falta}.
 * @param ctx the parse tree
 * @return the visitor result
 */
T visitPalavras_em_falta(ExameParser.Palavras_em_faltaContext ctx);
/**
 * Visit a parse tree produced by {@link ExameParser#resposta_falta}.
 * @param ctx the parse tree
 * @return the visitor result
 */
T visitResposta_falta(ExameParser.Resposta_faltaContext ctx);
/**
 * Visit a parse tree produced by {@link ExameParser#numerica}.
 * @param ctx the parse tree
 * @return the visitor result
 */
T visitNumerica(ExameParser.NumericaContext ctx);
/**
 * Visit a parse tree produced by {@link ExameParser#resposta_curta}.
 * @param ctx the parse tree
 * @return the visitor result
 */
T visitResposta_curta(ExameParser.Resposta_curtaContext ctx);
/**
 * Visit a parse tree produced by {@link ExameParser#escolha_multipla}.
 * @param ctx the parse tree
```

```
	 * @return the visitor result
	 */
	T visitEscolha_multipla(ExameParser.Escolha_multiplaContext ctx);
	/**
	 * Visit a parse tree produced by {@link ExameParser#opcao_escolha_multipla}.
	 * @param ctx the parse tree
	 * @return the visitor result
	 */
	T visitOpcao_escolha_multipla(ExameParser.Opcao_escolha_multiplaContext
ctx);
	/**
	 * Visit a parse tree produced by {@link ExameParser#correspondencia}.
	 * @param ctx the parse tree
	 * @return the visitor result
	 */
	T visitCorrespondencia(ExameParser.CorrespondenciaContext ctx);
	/**
	 * Visit a parse tree produced by {@link ExameParser#token_correspondencia}.
	 * @param ctx the parse tree
	 * @return the visitor result
	 */
	T visitToken_correspondencia(ExameParser.Token_correspondenciaContext
ctx);
	/**
	 * Visit a parse tree produced by {@link
ExameParser#respostas_correspondencia}.
	 * @param ctx the parse tree
	 * @return the visitor result
	 */
	T
visitRespostas_correspondencia(ExameParser.Respostas_correspondenciaContext
ctx);
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\ExamValidation\ExameVisitor.txt

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\FormativeExamValidation\ExameFormativo.g4

```
grammar ExameFormativo;

prog: exam;
```

```
exam: TESTE DOISPONTOS ABRECHAVETA formative_exam_body
FECHACHAVETA;

formative_exam_body: ID DOISPONTOS id_exam=INT VIRGULA TITULO
DOISPONTOS title_exam=FRASE section+;

section: SECÇÃO ID DOISPONTOS id_section=INT VIRGULA ABRECHAVETA
DESCRICAO_TEXTUAL DOISPONTOS desc_section=FRASE DIFICULDADE
DOISPONTOS difficulty_section=INT LIMITE_PERGUNTAS DOISPONTOS limit=INT
TIPO_PERGUNTA DOISPONTOS question_type=QUESTION_TYPE
FECHACHAVETA;

QUESTION_TYPE: 'Numérica' | 'Escolha Múltipla' | 'Correspondência' | 'Verdadeiro ou
Falso' | 'Palavras em Falta' | 'Resposta Curta';

DOISPONTOS : ':';
ABRECHAVETA : '{';
FECHACHAVETA : '}';
VIRGULA : ',';
TESTE : 'Teste';
ID : 'ID';
TITULO : 'Título';
SECÇÕES : 'Secções';
ENUNCIADO : 'Enunciado';
COTACAO : 'Cotação';
DIFICULDADE : 'Dificuldade';
DESCRICAO_TEXTUAL : 'Descrição Textual';
LIMITE_PERGUNTAS : 'Limite de Perguntas';
SECÇÃO : 'Secção';
TIPO_PERGUNTA : 'Tipo de Pergunta';
INT : [0-9]+;
WS: [\r\n ]+ -> skip;
CARACTERE_ESPECIAL: [_()+/\-'#"] -> skip;
STRING : [a-zA-Z]+[0-9]+ | '_' | '\" ;
ESPACO: [ \t] -> skip;
FRASE: CARACTERE_ESPECIAL? (PALAVRA|INT) PALAVRA
(PALAVRA|INT|ESPACO|CARACTERE_ESPECIAL|VIRGULA)* FIM
CARACTERE_ESPECIAL? ;
PALAVRA: [A-Za-z]+;
FIM: [.!?;];
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\FormativeExamValidation\ExameFormativo.g4

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\FormativeExamValidation\ExameFormativoFile.txt

```
Teste: {
    ID: 1,
    Título: "Exame Formativo de Literatura Inglesa",
    Secção ID: 1, {
        Descrição Textual: "Analise de Poesia",
        Dificuldade: 3,
        Limite de Perguntas: 5,
        Tipo de Pergunta: "Escolha Múltipla"
    },
    Secção ID: 2, {
        Descrição Textual: "Analise de Prosa",
        Dificuldade: 2,
        Limite de Perguntas: 3,
        Tipo de Pergunta: "Resposta Curta"
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\FormativeExamValidation\ExameFormativoFile.txt

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\QuestionValidation\Question.g4

```
grammar Question;

pprog: (add_question | update_question)+;

add_question: ADD_QUESTION COLON OPENBRACE question_body CLOSEBRACE
SEMI;

update_question: UPDATE_QUESTION COLON OPENBRACE question_id COMMA
question_body CLOSEBRACE SEMI;

question_id: ID COLON INT;

question_body: (title | question_type | options | answer ) (COMMA (title | question_type |
```

```
options | answer))* ;

title: TITLE COLON PHRASE;
question_type: QUESTION_TYPE COLON PHRASE;
options: OPTIONS COLON OPENBRACKETS option+ CLOSEBRACKETS;
answer: ANSWER COLON INT;

option: OPTION INT COLON PHRASE;

ADD_QUESTION: 'Add Question';
UPDATE_QUESTION: 'Update Question';
ID: 'ID';
TITLE: 'Title';
OPTIONS: 'Options';
OPTION: 'Option';
ANSWER: 'Answer';
QUESTION_TYPE: 'Question Type';
INT: [0-9]+;
PHRASE: '"' ~["]* '"';
COLON: ':';
COMMA: ',';
OPENBRACE: '{';
CLOSEBRACE: '}';
OPENBRACKETS: '[';
CLOSEBRACKETS: ']';
SEMI: ';';
WS: [\r\n\t ]+ -> skip;
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\QuestionValidation\Question.g4

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\QuestionValidation\QuestionFile.txt

```
Add Question:
{
    ID: 1,
    Title: "Multiple Choice Question",
    Question Type: "Multiple Choice",
    Options: [
        Option 1: "Option A",
        Option 2: "Option B",
        Option 3: "Option C"
    ],
    Answer: 2
```

```
}

Update Question:
{
    ID: 1,
    Title: "Multiple Choice Question (Updated)",
    Question Type: "Multiple Choice",
    Options: [
        Option 1: "Option A",
        Option 2: "Option B",
        Option 3: "Option C",
        Option 4: "Option D"
    ],
    Answer: 3
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ANTLR\QuestionValidation\QuestionFile.txt

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\AppSettings.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
 * MIT License
 *
 * Permission is hereby granted, free of charge, to any person obtaining a copy of this software and
 * associated documentation files (the "Software"), to deal in the Software without restriction,
 * including without limitation the rights to use, copy, modify, merge, publish, distribute,
 * sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
 *
 * The above copyright notice and this permission notice shall be included in all copies or
 * substantial portions of the Software.
 *
 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT
 * NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
 * NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
```

```
TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
 */
package eapli.base;

import java.io.FileNotFoundException;
import java.io.IOException;
import java.io.InputStream;
import java.util.HashMap;
import java.util.Map;
import java.util.Properties;

import org.slf4j.Logger;
import org.slf4j.LoggerFactory;

/**
 * the application settings.
 *
 * @author Paulo Gandra Sousa
 */
public class AppSettings {
    private static final Logger LOGGER = LoggerFactory.getLogger(AppSettings.class);

    private static final String PROPERTIES_RESOURCE = "application.properties";
    private static final String REPOSITORY_FACTORY_KEY =
"persistence.repositoryFactory";
    private static final String UI_MENU_LAYOUT_KEY = "ui.menu.layout";
    private static final String PERSISTENCE_UNIT_KEY = "persistence.persistenceUnit";
    private static final String SCHEMA_GENERATION_KEY =
"javax.persistence.schema-generation.database.action";
    private static final String HIGH_CALORIES_DISH_LIMIT = "HighCaloriesDishLimit";

    private final Properties applicationProperties = new Properties();

    public AppSettings() {
        loadProperties();
    }

    private void loadProperties() {
        try (InputStream propertiesStream = this.getClass().getClassLoader()
                .getResourceAsStream(PROPERTIES_RESOURCE)) {
            if (propertiesStream != null) {
                this.applicationProperties.load(propertiesStream);
```

```
            } else {
                throw new FileNotFoundException(
                        "property file '" + PROPERTIES_RESOURCE + "' not found in the
classpath");
            }
        } catch (final IOException exio) {
            setDefaultProperties();

            LOGGER.warn("Loading default properties", exio);
        }
    }

    private void setDefaultProperties() {
        this.applicationProperties.setProperty(REPOSITORY_FACTORY_KEY,
                "eapli.base.persistence.jpa.JpaRepositoryFactory");
        this.applicationProperties.setProperty(UI_MENU_LAYOUT_KEY, "horizontal");
        this.applicationProperties.setProperty(PERSISTENCE_UNIT_KEY, "eapli"
                + ".base");
        this.applicationProperties.setProperty(HIGH_CALORIES_DISH_LIMIT, "300");
    }

    public Boolean isMenuLayoutHorizontal() {
        return "horizontal"

.equalsIgnoreCase(this.applicationProperties.getProperty(UI_MENU_LAYOUT_KEY));
    }

    public String getPersistenceUnitName() {
        return this.applicationProperties.getProperty(PERSISTENCE_UNIT_KEY);
    }

    public String getRepositoryFactory() {
        return this.applicationProperties.getProperty(REPOSITORY_FACTORY_KEY);
    }

    public Integer getHighCaloriesDishLimit() {
        return
Integer.valueOf(this.applicationProperties.getProperty(HIGH_CALORIES_DISH_LIMIT));
    }

    @SuppressWarnings({ "rawtypes", "unchecked" })
    public Map getExtendedPersistenceProperties() {
        final Map ret = new HashMap();
        ret.put(SCHEMA_GENERATION_KEY,
```

```
            this.applicationProperties.getProperty(SCHEMA_GENERATION_KEY));
        return ret;
    }

    public String getProperty(final String prop) {
        return this.applicationProperties.getProperty(prop);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\AppSettings.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Application.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
 * MIT License
 *
 * Permission is hereby granted, free of charge, to any person obtaining a copy of this
software and
 * associated documentation files (the "Software"), to deal in the Software without
restriction,
 * including without limitation the rights to use, copy, modify, merge, publish, distribute,
 * sublicense, and/or sell copies of the Software, and to permit persons to whom the
Software is
 * furnished to do so, subject to the following conditions:
 *
 * The above copyright notice and this permission notice shall be included in all copies or
 * substantial portions of the Software.
 *
 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT
 * NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A
PARTICULAR PURPOSE AND
 * NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
 */
package eapli.base;

/**
 * A "global" static class with the application registry of well known objects
```

```
 *
 * @author Paulo Gandra Sousa
 *
 */
public class Application {

    public static final String VERSION = "1.4.0";
    public static final String COPYRIGHT = "(C) 2016 - 2021, ISEP's Professors of
EAPLI";

    private static final AppSettings SETTINGS = new AppSettings();

    public static AppSettings settings() {
        return SETTINGS;
    }

    private Application() {
        // private visibility to ensure singleton & utility
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Application.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\aplication\ClassController.java

```
package eapli.base.Classe.aplication;

import eapli.base.Classe.domain.*;
import eapli.base.Classe.domain.Classe;
import eapli.base.Classe.repository.ClassRepository;
import eapli.base.Student_Teacher.Student.domain.Student;
import eapli.base.Student_Teacher.Teacher.Domain.Acronym;
import eapli.base.Student_Teacher.Teacher.Domain.Teacher;
import eapli.base.Student_Teacher.Teacher.Repository.TeacherRepository;
import eapli.framework.domain.repositories.ConcurrencyException;
import eapli.framework.domain.repositories.IntegrityViolationException;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;


import java.time.LocalTime;
import java.util.List;
import java.util.Optional;
```

```
public class ClassController {


    private ClassRepository repository;
    private final ScheduleClassService scs;

    public ClassController(final AuthorizationService authz, final ClassRepository
repository, final TeacherRepository teacherRepository) {
        scs = new ScheduleClassService(authz, repository, teacherRepository);

    }

    public ClasseDTO scheduleClass(Classe_Title title, Classe_Start_Time startTime,
Classe_Finish_Time finishTime, Classe_Start_Date start_date, Classe_Finish_Date
finishDate, DayOfWeek day, Acronym teacherAcronym) throws
IntegrityViolationException, ConcurrencyException {


        final Classe newClasse = new Classe(title, start_date, finishDate, startTime,
finishTime, day, teacherAcronym);

        if (checkClassConflict(newClasse)) {
            throw new IllegalStateException("There is a scheduling conflict with this class.");
        } else {
            return toDTO(this.repository.save(newClasse));
        }
    }


    public Teacher findTeacherBySystemUser(SystemUser systemUser) {
        return scs.findTeacherBySystemUser(systemUser);
    }

    public boolean checkClassConflict(Classe classeToCheck) {
        List<Classe> allClasses = (List<Classe>) repository.findAll();
        for (Classe existingClass : allClasses) {
            if (existingClass.getTitle().equals(classeToCheck.getTitle())) {
                // Skip checking against the same class
                continue;
            }

            // Only compare classes on the same date
            if (existingClass.getStartDate().equals(classeToCheck.getStartDate())) {
                // Check for time overlap
```

```
            if (isTimeOverlapUserInput(classeToCheck.getStartTime(),
classeToCheck.getFinishTime(), existingClass)) {
                return true; // Conflict found
            }
        }
    }

    return false; // No conflict found
}

/**
 * Checks if the class specified by userInputStartTime and userInputEndTime overlaps
 * with the existing class's start and end times.
 *
 * @param userInputStartTime The start time of the class to check.
 * @param userInputEndTime   The end time of the class to check.
 * @param existingClass      The class with which to compare the given class.
 * @return True if the given class overlaps with the existing class, false otherwise.
 */
public boolean isTimeOverlapUserInput(Classe_Start_Time userInputStartTime,
Classe_Finish_Time userInputEndTime, Classe existingClass) {
    // Extract the LocalTime from userInputStartTime and userInputEndTime
    LocalTime userInputStart = userInputStartTime.getStartTime();
    LocalTime userInputEnd = userInputEndTime.getFinish_time();

    // Convert start and end times of user input to minutes since midnight
    int userInputStartMinutes = userInputStart.getHour() * 60 +
userInputStart.getMinute();
    int userInputEndMinutes = userInputEnd.getHour() * 60 +
userInputEnd.getMinute();

    // Extract the LocalTime from existingClass's start and end time
    LocalTime existingStartTime = existingClass.getStartTime().getStartTime();
    LocalTime existingFinishTime = existingClass.getFinishTime().getFinish_time();

    // Convert start and end times of existing class to minutes since midnight
    int existingStartMinutes = existingStartTime.getHour() * 60 +
existingStartTime.getMinute();
    int existingEndMinutes = existingFinishTime.getHour() * 60 +
existingFinishTime.getMinute();

    // Check for overlap: does user input class start during existing class?
    if (userInputStartMinutes >= existingStartMinutes && userInputStartMinutes <
existingEndMinutes) {
```

```
            return true; // Overlap found
        }

        // Check for overlap: does existing class start during user input class?
        if (existingStartMinutes >= userInputStartMinutes && existingStartMinutes <
userInputEndMinutes) {
            return true; // Overlap found
        }

        // If neither condition above is met, there is no overlap
        return false; // No overlap found
    }


    public Classe updateClassSchedule(Classe_Title title,Classe_Start_Time
newStartTime, Classe_Finish_Time newFinishTime) throws IntegrityViolationException,
ConcurrencyException {

        Optional<Classe> optionalClass = this.repository.ofIdentity(title);
        if (optionalClass.isPresent()) {
            Classe classToUpdate = optionalClass.get();
            classToUpdate.changeStartTime(newStartTime);
            classToUpdate.changeFinishTime(newFinishTime);
            return this.repository.save(classToUpdate);
        } else {
            throw new IllegalArgumentException("No class found with title: " + title);
        }
    }

    public List<Classe> getAllClasses(Acronym acronym) {
        return repository.findClassesByTeacher(String.valueOf(acronym));
    }



    public ClasseDTO toDTO(Classe classe) {
        return new ClasseDTO(
                classe.getTitle().getTitle(),
                classe.getStartTime().getStartTime(),
                classe.getFinishTime().getFinish_time(),
                classe.getStartDate().getStart_date(),
                classe.getFinishDate().getFinish_date(),
                classe.getDay().getDay(),
                classe.getAcronym().getValue()
```

```
        );
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\aplication\ClassController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\aplication\ClasseDTO.java

```
package eapli.base.Classe.aplication;


import java.time.LocalDate;
import java.time.LocalTime;

public class ClasseDTO {
    public String title;
    public LocalTime startTime;
    public LocalTime finishTime;
    public LocalDate startDate;
    public LocalDate finishDate;
    public int dayOfWeek;
    public String teacherAcronym;

    public ClasseDTO( String title, LocalTime startTime, LocalTime finishTime, LocalDate
startDate, LocalDate finishDate, int dayOfWeek, String teacherAcronym) {
        this.title = title;
        this.startTime = startTime;
        this.finishTime = finishTime;
        this.startDate = startDate;
        this.finishDate = finishDate;
        this.dayOfWeek = dayOfWeek;
        this.teacherAcronym = teacherAcronym;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\aplication\ClasseDTO.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\aplication\ScheduleClassService.java

```
package eapli.base.Classe.aplication;

import eapli.base.Classe.domain.Classe;
import eapli.base.Classe.repository.ClassRepository;
import eapli.base.Student_Teacher.Teacher.Domain.Teacher;
import eapli.base.Student_Teacher.Teacher.Repository.TeacherRepository;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.application.ApplicationService;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

@ApplicationService
class ScheduleClassService {
    private final AuthorizationService authz;
    private final ClassRepository classRepository;
    private final TeacherRepository teacherRepository;

    public ScheduleClassService(final AuthorizationService authz, final ClassRepository
classRepository, final TeacherRepository teacherRepository) {
        this.authz = authz;
        this.classRepository = classRepository;
        this.teacherRepository = teacherRepository;
    }

    /**
     * Schedules a new class
     *
     * @param classe The class to be scheduled
     * @return the scheduled class
     */
    public Classe scheduleClass(Classe classe) {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.TEACHER,
BaseRoles.ADMIN);
        return classRepository.save(classe);
    }

    /**
     * Returns all teachers
     *
```

```
     * @return all teachers
     */
    public Iterable<Teacher> teachers() {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.TEACHER,
BaseRoles.ADMIN);
        return teacherRepository.findAll();
    }
    public Teacher findTeacherBySystemUser(SystemUser systemUser) {
        return teacherRepository.findTeacherBySystemUser(systemUser);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\aplication\ScheduleClassService.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\domain\Classe.java

```
package eapli.base.Classe.domain;

import eapli.base.Student_Teacher.Teacher.Domain.Acronym;
import eapli.framework.domain.model.AggregateRoot;
import eapli.framework.validations.Preconditions;

import javax.persistence.*;

@Entity
@Inheritance(strategy = InheritanceType.JOINED)
public class Classe implements AggregateRoot<Classe_Title> {

    @Column(unique = true)
    @EmbeddedId
    private Classe_Title title;

    private Classe_Start_Date start_date;
    private Classe_Finish_Date finish_date;
    private Classe_Start_Time start_time;
    private Classe_Finish_Time finish_time;
    private DayOfWeek day;
    private Acronym acronym;


    protected Classe() {
    }
```

```
    public Classe(Classe_Title title, Classe_Start_Date start_date, Classe_Finish_Date
finish_date, Classe_Start_Time start_time, Classe_Finish_Time finish_time, DayOfWeek
day, Acronym acronym) {
        Preconditions.nonNull(title, "Title should not be null");
        this.title = title;
        this.start_date = start_date;
        this.finish_date = finish_date;
        this.start_time = start_time;
        this.finish_time = finish_time;
        this.day = day;
        this.acronym = acronym;
    }

    public void changeTitle(Classe_Title newTitle) {
        Preconditions.nonNull(newTitle, "Title should not be null");
        this.title = newTitle;
    }

    public void changeStartTime(Classe_Start_Time newStartTime) {
        Preconditions.nonNull(newStartTime, "Start time should not be null");
        this.start_time = newStartTime;
    }

    public void changeFinishTime(Classe_Finish_Time newFinishTime) {
        Preconditions.nonNull(newFinishTime, "Finish time should not be null");
        this.finish_time = newFinishTime;
    }

    @Override
    public Classe_Title identity() {
        return this.title;
    }

    @Override
    public boolean sameAs(Object other) {
        return other instanceof Classe && this.title.equals(((Classe)other).title);
    }

    public Classe_Title getTitle() {
        return title;
    }

    public Classe_Start_Date getStartDate() {
        return start_date;
```

```
}

public Classe_Finish_Date getFinishDate() {
    return finish_date;
}

public Classe_Start_Time getStartTime() {
    return start_time;
}

public Classe_Finish_Time getFinishTime() {
    return finish_time;
}

public DayOfWeek getDay() {
    return day;
}

public Acronym getAcronym() {
    return acronym;
}


public void setTitle(Classe_Title title) {
    this.title = title;
}

public void setStart_date(Classe_Start_Date start_date) {
    this.start_date = start_date;
}

public void setFinish_date(Classe_Finish_Date finish_date) {
    this.finish_date = finish_date;
}

public void setStart_time(Classe_Start_Time start_time) {
    this.start_time = start_time;
}

public void setFinish_time(Classe_Finish_Time finish_time) {
    this.finish_time = finish_time;
}

public void setDay(DayOfWeek day) {
```

```
        this.day = day;
    }

    public void setAcronym(Acronym acronym) {
        this.acronym = acronym;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\domain\Classe.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\domain\Classe_Finish_Date.java

```
package eapli.base.Classe.domain;

import eapli.framework.domain.model.ValueObject;
import org.springframework.format.annotation.DateTimeFormat;

import javax.persistence.Column;
import javax.persistence.Embeddable;
import java.time.LocalDate;

@Embeddable
public class Classe_Finish_Date implements ValueObject {
    @DateTimeFormat(pattern = "yyyy-MM-dd")
    @Column(nullable = false)
    private LocalDate finish_date;

    // No argument constructor, used by JPA/Hibernate
    protected Classe_Finish_Date() {}

    public Classe_Finish_Date(LocalDate finish_date) {
        if (finish_date == null) {
            throw new IllegalArgumentException("Finish date cannot be null");
        }
        this.finish_date = finish_date;
    }

    public static Classe_Finish_Date valueOf(LocalDate finish_date) {
        return new Classe_Finish_Date(finish_date);
    }

    @Override
    public String toString() {
```

```
        return finish_date.toString();
    }

    public LocalDate getFinish_date() {
        return finish_date;
    }

    public void setFinish_date(LocalDate finish_date) {
        if (finish_date == null) {
            throw new IllegalArgumentException("Finish date cannot be null");
        }
        this.finish_date = finish_date;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\domain\Classe_Finish_Date.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\domain\Classe_Finish_Time.java

```
package eapli.base.Classe.domain;

import eapli.framework.domain.model.ValueObject;
import eapli.framework.validations.Preconditions;

import javax.persistence.Embeddable;
import java.time.LocalTime;

@Embeddable
public class Classe_Finish_Time implements ValueObject {
    private LocalTime finish_time;

    protected Classe_Finish_Time() {
    }

    public Classe_Finish_Time(LocalTime finish_time) throws IllegalArgumentException{
        Preconditions.ensure(finish_time != null, "Invalid finish time");
        this.finish_time = finish_time;
    }

    public static Classe_Finish_Time from(LocalTime finish_time) throws
IllegalArgumentException{
        return new Classe_Finish_Time(finish_time);
    }
```

```
    public static Classe_Finish_Time valueOf(LocalTime finish_time) throws
IllegalArgumentException{
        return from(finish_time);
    }

    @Override
    public String toString() {
        return String.format("Finish Time: %s", finish_time);
    }

    public LocalTime getFinish_time() {
        return finish_time;
    }

    public void setFinish_time(LocalTime finish_time) {
        Preconditions.ensure(finish_time != null, "Invalid finish time");
        this.finish_time = finish_time;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\domain\Classe_Finish_Time.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\domain\Classe_Start_Date.java

```
package eapli.base.Classe.domain;

import eapli.framework.domain.model.ValueObject;
import org.springframework.format.annotation.DateTimeFormat;

import javax.persistence.Column;
import javax.persistence.Embeddable;
import java.time.LocalDate;
import java.util.Objects;

@Embeddable
public class Classe_Start_Date implements ValueObject {
    @DateTimeFormat(pattern = "yyyy-MM-dd")
    @Column(nullable = false)
    private LocalDate start_date;
    protected Classe_Start_Date() {
    }
```

```
    public Classe_Start_Date(LocalDate start_date) {
        if (start_date == null) {
            throw new IllegalArgumentException("Start date must not be null");
        }
        this.start_date = start_date;
    }

    public static Classe_Start_Date valueOf(LocalDate start_date) {
        return new Classe_Start_Date(start_date);
    }

    public LocalDate getStart_date() {
        return this.start_date;
    }

    @Override
    public String toString() {
        return start_date != null ? start_date.toString() : "";
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\domain\Classe_Start_Date.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\domain\Classe_Start_Time.java

```
package eapli.base.Classe.domain;

import eapli.framework.domain.model.ValueObject;
import eapli.framework.validations.Preconditions;

import javax.persistence.Embeddable;
import javax.persistence.Column;
import java.time.LocalTime;

@Embeddable
public class Classe_Start_Time implements ValueObject {

    @Column(nullable = false)
    private LocalTime start_time;


    protected Classe_Start_Time() {
```

```
    }

    public Classe_Start_Time(LocalTime start_time) {
        Preconditions.ensure(start_time != null, "Invalid start time");
        this.start_time = start_time;
    }

    public static Classe_Start_Time from(LocalTime start_time) {
        return new Classe_Start_Time(start_time);
    }

    public static Classe_Start_Time valueOf(LocalTime start_time) {
        return from(start_time);
    }

    @Override
    public String toString() {
        return String.format("Start Time: %s", start_time);
    }

    public LocalTime getStartTime() {
        return this.start_time;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\domain\Classe_Start_Time.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\domain\Classe_Title.java

```
package eapli.base.Classe.domain;

import eapli.framework.domain.model.ValueObject;
import eapli.framework.validations.Preconditions;

import javax.persistence.Embeddable;
import javax.persistence.Column;
import java.util.Objects;

@Embeddable
public class Classe_Title implements ValueObject, Comparable<Classe_Title> {

    @Column(nullable = false)
    private  String title;
```

```
protected Classe_Title() {
}

public Classe_Title(String title) {
    Preconditions.ensure(title != null && !title.trim().isEmpty(), "Title invalido");
    this.title = title;
}

public static Classe_Title from(String title) {
    return new Classe_Title(title);
}

public static Classe_Title valueOf(String title) {
    return from(title);
}

@Override
public String toString() {
    return String.format("Title : %s", title);
}

public String getTitle() {
    return this.title;
}
@Override
public boolean equals(Object o) {
    if (this == o) return true;
    if (o == null || getClass() != o.getClass()) return false;
    Classe_Title other = (Classe_Title) o;
    return Objects.equals(title, other.title);
}

@Override
public int hashCode() {
    return Objects.hash(title);
}


@Override
public int compareTo(Classe_Title o) {
    return this.title.compareTo(o.title);
}
```

```
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\domain\Classe_Title.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\domain\DayOfWeek.java

```
package eapli.base.Classe.domain;

import eapli.framework.domain.model.ValueObject;
import eapli.framework.validations.Preconditions;

import javax.persistence.Embeddable;

@Embeddable
public class DayOfWeek implements ValueObject {

    private int day;

    protected DayOfWeek() {
    }

    public DayOfWeek(int day) throws IllegalArgumentException {
        Preconditions.ensure(day >= 1 && day <= 7, "Invalid day of week");
        this.day = day;
    }

    public static DayOfWeek valueOf(int day) throws IllegalArgumentException {
        return new DayOfWeek(day);
    }

    @Override
    public String toString() {
        return String.format("Day of Week: %d", day);
    }

    public int getDay() {
        return this.day;
    }

    public void setDay(int day) {
        Preconditions.ensure(day >= 1 && day <= 7, "Invalid day of week");
        this.day = day;
```

```
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\domain\DayOfWeek.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\repository\ClassRepository.java

```
package eapli.base.Classe.repository;

import eapli.base.Classe.domain.Classe;
import eapli.base.Classe.domain.Classe_Title;
import eapli.framework.domain.repositories.DomainRepository;

import java.util.List;

public interface ClassRepository extends DomainRepository<Classe_Title, Classe> {
    List<Classe> findClassesByTeacher(String teacherAcronym);

}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Classe\repository\ClassRepository.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Application\CourseController.java

```
/*
package eapli.base.Course.Application;

import eapli.base.Course.Domain.Course;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.web.bind.annotation.*;

import java.util.List;

@RestController
@RequestMapping("/courses")
public class CourseController {
    private final CourseService courseService;

    @Autowired
    public CourseController(CourseService courseService) {
        this.courseService = courseService;
```

```
    }

    @GetMapping("/search")
    public List<Course> getCoursesByName(@RequestParam String courseName) {
        //return courseService.getCoursesByName(courseName); Necessário corrigir isto
com prioridade com brevidade possível
        return null;
    }

    @PostMapping("/{id}/open-enrollment")
    public Course openEnrollment(@PathVariable Long id) {
        return courseService.openEnrollments(id);
    }

    @PostMapping("/{id}/close-enrollment")
    public Course closeEnrollment(@PathVariable Long id) {
        return courseService.closeEnrollments(id);
    }

    @PostMapping("/{id}/open-course")
    public Course openCourse(@PathVariable Long id) {
        return courseService.openCourse(id);
    }

    @PostMapping("/{id}/close-course")
    public Course closeCourse(@PathVariable Long id) {
        return courseService.closeCourse(id);
    }

}
*/
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Application\CourseController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Application\CourseService.java

```
package eapli.base.Course.Application;

import eapli.base.Course.Domain.Course;
import eapli.base.Course.Domain.Course_ID;
import eapli.base.Course.Domain.Course_Name;
import eapli.base.Course.Repository.CourseRepository;
import eapli.framework.application.ApplicationService;
```

```
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Service;

import javax.persistence.EntityNotFoundException;
import java.util.List;
import java.util.Optional;

@ApplicationService
public class CourseService {
    private final CourseRepository courseRepository;
    private final AuthorizationService authz;
    @Autowired
    public CourseService(final AuthorizationService authz, CourseRepository
courseRepository) {
        this.authz = authz;
        this.courseRepository = courseRepository;
    }

    public Course createCourse(Course course) {
        return courseRepository.save(course);
    }

    public Course openEnrollments(Course_Name courseName) {
        Optional<Course> courseOpt = courseRepository.ofIdentity(courseName);
        if (courseOpt.isPresent()) {
            Course course = courseOpt.get();
            course.setEnrollmentOpen(true);
            return courseRepository.save(course);
        } else {
            throw new EntityNotFoundException("Course not found with ID: " +
courseName);
        }
    }
    public Course closeEnrollments(Course_Name courseName) {
        Optional<Course> courseOpt = courseRepository.ofIdentity(courseName);
        if (courseOpt.isPresent()) {
            Course course = courseOpt.get();
            course.setEnrollmentOpen(false);
            return courseRepository.save(course);
        } else {
            throw new EntityNotFoundException("Course not found with ID: " +
courseName);
        }
```

```
    }

    public Course openCourse(Course_Name courseName) {
        Optional<Course> courseOpt = courseRepository.ofIdentity(courseName);
        if (courseOpt.isPresent()) {
            Course course = courseOpt.get();
            course.setIsOpen(true);
            return courseRepository.save(course);
        } else {
            throw new EntityNotFoundException("Course not found with ID: " +
courseName);
        }
    }

    public Course closeCourse(Course_Name courseName) {
        Optional<Course> courseOpt = courseRepository.ofIdentity(courseName);
        if (courseOpt.isPresent()) {
            Course course = courseOpt.get();
            course.setIsOpen(false);
            return courseRepository.save(course);
        } else {
            throw new EntityNotFoundException("Course not found with ID: " +
courseName);
        }
    }


    /*public Course openEnrollments(Course course) {
        Course course = courseRepository.ofIdentity(courseId);
        course.setEnrollmentOpen(true);
        return courseRepository.save(course);
    }

    public Course closeEnrollments(Long courseId) {
        Course course = courseRepository.ofIdentity(courseId);
        course.setEnrollmentOpen(false);
        return courseRepository.save(course);
    }*/

    /*public List<Course> getCoursesByName(String courseName) {
        return courseRepository.findByCourseName(courseName);
    }*/

    /*public Course findCourseById(Long courseId) {
```

```
        return courseRepository.findById(courseId)
                .orElseThrow(() -> new IllegalArgumentException("Course not found"));
    }

    public Course openEnrollment(Long courseId) {
        Course course = courseRepository.findById(courseId).orElseThrow(() -> new
IllegalArgumentException("Curso não encontrado"));
        course.setEnrollmentOpen(true);
        return courseRepository.save(course);
    }

    public Course closeEnrollment(Long courseId) {
        Course course = courseRepository.findById(courseId).orElseThrow(() -> new
IllegalArgumentException("Curso não encontrado"));
        course.setEnrollmentOpen(false);
        return courseRepository.save(course);
    }

    public Course openCourse(Long courseId) {
        Course course = courseRepository.findById(courseId)
                .orElseThrow(() -> new IllegalArgumentException("Curso não encontrado"));
        course.setIsOpen(true);
        return courseRepository.save(course);
    }

    public Course closeCourse(Long courseId) {
        Course course = courseRepository.findById(courseId)
                .orElseThrow(() -> new IllegalArgumentException("Curso não encontrado"));
        course.setIsOpen(false);
        return courseRepository.save(course);
    }*/

}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Application\CourseService.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Application\CreateCourseController.java

```
package eapli.base.Course.Application;

import eapli.base.Course.Domain.*;
import eapli.base.Course.Repository.CourseRepository;
```

```
import eapli.base.Student_Teacher.Teacher.Domain.Teacher;
import eapli.base.Student_Teacher.Teacher.Repository.TeacherRepository;

public class CreateCourseController {

    private final CourseRepository courseRepository;
    private final TeacherRepository teacherRepository;

    public CreateCourseController(final CourseRepository courseRepository, final
TeacherRepository teacherRepository) {
        this.courseRepository = courseRepository;
        this.teacherRepository=teacherRepository;
    }

    public void createCourse(String name, int min, int max, String description, Teacher
teacher) {
        courseRepository.save(new Course(new Course_Name(name),new
Maximum_Number_Of_Students(max),new Minimum_Number_Of_Students(min),new
Small_Textual_Description(description), teacher));
    }

    public Iterable<Teacher> listTeachers(){
        return this.teacherRepository.findAll();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Application\CreateCourseController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Application\ListCoursesController.java

```
package eapli.base.Course.Application;

import eapli.base.Course.Domain.Course;
import eapli.base.Course.Repository.CourseRepository;

public class ListCoursesController {

    private final ListCoursesService svc;

    public ListCoursesController(final CourseRepository courseRepository) {
        // dependency injection - to make this object more testable we don't create the
        // infrastructure objects to avoid coupling to the implementation. This way, the
controller
```

```
        // can be used in different scenarios with different implementations of the repository.
for
        // instance, unit testing.
        svc = new ListCoursesService(courseRepository);
    }

    public Iterable<Course> listCourses() {
        return svc.courses();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Application\ListCoursesController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Application\ListCoursesService.java

```
package eapli.base.Course.Application;

import eapli.base.Course.Domain.Course;
import eapli.base.Course.Repository.CourseRepository;

public class ListCoursesService {

    private final CourseRepository courseRepository;

    public ListCoursesService(final CourseRepository courseRepository) {
        this.courseRepository = courseRepository;
    }

    public Iterable<Course> courses() {
        return courseRepository.findAll();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Application\ListCoursesService.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Application\OpenCloseCourseController.java

```
package eapli.base.Course.Application;

import eapli.base.Course.Domain.Course;
```

```
import eapli.base.Course.Domain.Course_ID;
import eapli.base.Course.Domain.Course_Name;
import eapli.base.Course.Repository.CourseRepository;
import eapli.framework.infrastructure.authz.application.AuthorizationService;

public class OpenCloseCourseController {

    private final CourseService cs;

    public OpenCloseCourseController(final AuthorizationService authz, final
CourseRepository courseRepository) {
        cs = new CourseService(authz,courseRepository);
    }

    public Course openCourse(Course_Name courseName) {
        return cs.openCourse(courseName);
    }

    public Course closeCourse(Course_Name courseName) {
        return cs.closeCourse(courseName);
    }

}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Application\OpenCloseCourseController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Application\OpenCloseEnrollementsController.java

```
package eapli.base.Course.Application;

import eapli.base.Course.Domain.Course;
import eapli.base.Course.Domain.Course_ID;
import eapli.base.Course.Domain.Course_Name;
import eapli.base.Course.Repository.CourseRepository;
import eapli.framework.infrastructure.authz.application.AuthorizationService;

public class OpenCloseEnrollementsController {

    private final CourseService cs;
```

```
    public OpenCloseEnrollementsController(final AuthorizationService authz, final
CourseRepository courseRepository) {
        cs = new CourseService(authz,courseRepository);
    }

    public Course openEnrollments(Course_Name courseName) {
        return cs.openEnrollments(courseName);
    }

    public Course closeEnrollments(Course_Name courseName) {
        return cs.closeEnrollments(courseName);
    }

}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Application\OpenCloseEnrollementsController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Domain\Course.java

```
package eapli.base.Course.Domain;

import eapli.base.Student_Teacher.Student.domain.Student;
import eapli.base.Student_Teacher.Teacher.Domain.Teacher;
import eapli.framework.domain.model.AggregateRoot;

import javax.persistence.*;
import java.util.HashSet;
import java.util.Set;

@Entity
@Table(name = "COURSE")
public class Course implements AggregateRoot<Course_Name> {

    @Id
    @GeneratedValue(strategy = GenerationType.AUTO)
    private Long id;

    @Embedded
    @Column(unique = true)
    private Course_Name courseName;
```

```
    private Maximum_Number_Of_Students maximumNumberOfStudents;
    private Minimum_Number_Of_Students minimumNumberOfStudents;
    private Small_Textual_Description smallTextualDescription;

    private boolean enrollmentOpen;
    private boolean isOpen;


    @ManyToOne
    @JoinColumn(name = "teacher_in_charge_id")
    private Teacher teacherInCharge;

    @ManyToMany
    @JoinTable(
            name = "course_student",
            joinColumns = @JoinColumn(name = "course_id"),
            inverseJoinColumns = @JoinColumn(name = "student_id"))
    private Set<Student> students;

    public Course() {
    }

    public void addStudent(Student student) {
        students.add(student);
    }


    public void setIsOpen(boolean isOpen) {
        this.isOpen = isOpen;
    }

    @Override
    public boolean sameAs(Object other) {
        return false;
    }

    @Override
    public Course_Name identity() {
        return courseName;
    }


    public Course(Course_Name courseName, Maximum_Number_Of_Students
maximumNumberOfStudents, Minimum_Number_Of_Students
```

```
minimumNumberOfStudents, Small_Textual_Description smallTextualDescription,
Teacher teacher){
        this.courseName=courseName;
        this.maximumNumberOfStudents=maximumNumberOfStudents;
        this.minimumNumberOfStudents=minimumNumberOfStudents;
        this.smallTextualDescription=smallTextualDescription;
        this.teacherInCharge=teacher;
        this.students=new HashSet<>();

        this.isOpen = false;
        this.enrollmentOpen = false;
    }

    public Course_Name getCourseName() {
        return courseName;
    }

    public Maximum_Number_Of_Students getMaximumNumberOfStudents() {
        return maximumNumberOfStudents;
    }

    public Minimum_Number_Of_Students getMinimumNumberOfStudents() {
        return minimumNumberOfStudents;
    }

    public Small_Textual_Description getSmallTextualDescription() {
        return smallTextualDescription;
    }

    public Teacher getTeacherInCharge() {
        return teacherInCharge;
    }

    public Set<Student> getStudents() {
        return students;
    }

    public void setCourseName(Course_Name courseName) {
        this.courseName = courseName;
    }

    public void setMaximumNumberOfStudents(Maximum_Number_Of_Students
maximumNumberOfStudents) {
        this.maximumNumberOfStudents = maximumNumberOfStudents;
```

```
    }

    public void setMinimumNumberOfStudents(Minimum_Number_Of_Students
minimumNumberOfStudents) {
        this.minimumNumberOfStudents = minimumNumberOfStudents;
    }

    public void setSmallTextualDescription(Small_Textual_Description
smallTextualDescription) {
        this.smallTextualDescription = smallTextualDescription;
    }

    public void setEnrollmentOpen(boolean enrollmentOpen) {
        this.enrollmentOpen = enrollmentOpen;
    }

    public void setOpen(boolean open) {
        isOpen = open;
    }

    public void setTeacherInCharge(Teacher teacherInCharge) {
        this.teacherInCharge = teacherInCharge;
    }

    public void setStudents(Set<Student> students) {
        this.students = students;
    }

    @Override
    public String toString() {
        return id.toString();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Domain\Course.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Domain\Course_ID.java

```
package eapli.base.Course.Domain;

import javax.persistence.*;
import lombok.*;
```

```
@Embeddable
@EqualsAndHashCode
public class Course_ID implements Comparable<Course_ID> {

    @Id
    @GeneratedValue(strategy = GenerationType.AUTO)
    private Long id;

    private String value;

    public Long getId() {
        return id;
    }

    public void setId(Long id) {
        this.id = id;
    }

    public String getValue() {
        return value;
    }

    public void setValue(String value) {
        this.value = value;
    }

    protected Course_ID(){}

    public Course_ID(Long id){
        this.id=id;
    }
    @Override
    public int compareTo(Course_ID o) {
        return 0;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Domain\Course_ID.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Domain\Course_Name.java

```
package eapli.base.Course.Domain;
import javax.persistence.*;

import eapli.framework.domain.model.ValueObject;
import lombok.*;

@Embeddable
public class Course_Name implements ValueObject, Comparable<Course_Name>{
    private String value;

    public Course_Name() {

    }

    public String getValue() {
        return value;
    }

    public Course_Name(String value){
        this.value=value;
    }

    public void setValue(String value) {
        this.value = value;
    }

    @Override
    public int compareTo(Course_Name o) {
        return 0;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Domain\Course_Name.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Domain\Maximum_Number_Of_Students.java

```
package eapli.base.Course.Domain;
import javax.persistence.*;

import eapli.framework.domain.model.ValueObject;
import lombok.*;

@Embeddable
public class Maximum_Number_Of_Students implements ValueObject {

    private int max_num;

    protected Maximum_Number_Of_Students(){}

    public Maximum_Number_Of_Students(int value){this.max_num=value;
    }

    public int getValue() {
        return max_num;
    }

    public void setValue(int value) {
        this.max_num = value;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Domain\Maximum_Number_Of_Students.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Domain\Minimum_Number_Of_Students.java

```
package eapli.base.Course.Domain;
import javax.persistence.*;

import eapli.framework.domain.model.ValueObject;
import lombok.*;
```

```
@Embeddable
public class Minimum_Number_Of_Students implements ValueObject {

    private int min_num;

    public Minimum_Number_Of_Students(){
    }
    public Minimum_Number_Of_Students(int value){
        this.min_num=value;
    }

    public int getValue() {
        return min_num;
    }

    public void setValue(int value) {
        this.min_num = value;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Domain\Minimum_Number_Of_Students.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Domain\Small_Textual_Description.java

```
package eapli.base.Course.Domain;
import javax.persistence.*;

import eapli.framework.domain.model.ValueObject;
import lombok.*;


@Embeddable
public class Small_Textual_Description implements ValueObject {

    private String desc;

    public Small_Textual_Description(String value){
        this.desc=value;
    }
```

```
    public Small_Textual_Description() {

    }

    public String getValue() {
        return desc;
    }

    public void setValue(String value) {
        this.desc = value;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Domain\Small_Textual_Description.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Repository\CourseRepository.java

```
package eapli.base.Course.Repository;

import eapli.base.Course.Domain.Course;
import eapli.base.Course.Domain.Course_ID;
import eapli.base.Course.Domain.Course_Name;
import eapli.base.exammanagement.domain.Exam;
import eapli.framework.domain.repositories.DomainRepository;
import org.springframework.stereotype.Repository;

import javax.persistence.EntityNotFoundException;

@Repository
public interface CourseRepository extends DomainRepository<Course_Name,Course> {

    Iterable<Course> findCourseByName(String courseName);


    /*default Course openCourse(Long courseId) {
        Course course = this.ofIdentity(courseId)
                .orElseThrow(() -> new EntityNotFoundException("Course not found with ID:
" + courseId));
        course.setIsOpen(true);
        return this.save(course);
    }
    default Course closeCourse(Long courseId) {
        Course course = this.ofIdentity(courseId)
```

```
                .orElseThrow(() -> new EntityNotFoundException("Course not found with ID:
" + courseId));
        course.setIsOpen(false);
        return this.save(course);
    }

    default Course openEnrollments(Long courseId) {
        Course course = this.ofIdentity(courseId)
                .orElseThrow(() -> new EntityNotFoundException("Course not found with ID:
" + courseId));
        course.setEnrollmentOpen(true);
        return this.save(course);
    }

    default Course closeEnrollments(Long courseId) {
        Course course = this.ofIdentity(courseId)
                .orElseThrow(() -> new EntityNotFoundException("Course not found with ID:
" + courseId));
        course.setEnrollmentOpen(false);
        return this.save(course);
    }*/
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Course\Repository\CourseRepository.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Application\ApproveEnrollmentController.java

```
package eapli.base.Enrollment.Application;

import eapli.base.Enrollment.Domain.Enrollment;
import eapli.base.Enrollment.Repository.EnrollmentRepository;

public class ApproveEnrollmentController {

    private final EnrollmentRepository enrollmentRepository;

    public ApproveEnrollmentController(EnrollmentRepository enrollmentRepository) {
        this.enrollmentRepository = enrollmentRepository;
    }

    public void approveEnrollment(Enrollment enrollment, int isToBeAccepted) {
```

```
        if (isToBeAccepted == 1) {
            enrollment.acceptEnrollment();
        } else {
            enrollment.rejectEnrollment();
        }
        enrollmentRepository.save(enrollment);
    }


}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Application\ApproveEnrollmentController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Application\BulkEnrollmentController.java

```
package eapli.base.Enrollment.Application;

import eapli.base.Enrollment.Domain.BulkEnrollment.BulkEnrollment;
import eapli.base.Enrollment.Repository.EnrollmentRepository;

public class BulkEnrollmentController {
    private BulkEnrollment bulkEnrollment;
    private EnrollmentRepository enrollmentRepository;

    public BulkEnrollmentController(EnrollmentRepository enrollmentRepository) {
        this.enrollmentRepository=enrollmentRepository;
    }

    public void bulkEnrollment(String csvFilePath) {
        bulkEnrollment.bulkEnrollmentReadFile(csvFilePath);
        //save is given in bulkEnrollmentReadFile
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Application\BulkEnrollmentController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Application\ListEnrollmentsController.java

```
package eapli.base.Enrollment.Application;

import eapli.base.Enrollment.Domain.Enrollment;
import eapli.base.Enrollment.Repository.EnrollmentRepository;


public class ListEnrollmentsController {
    private final ListEnrollmentsService svc;

    public ListEnrollmentsController(final EnrollmentRepository enrollmentRepository) {

        svc = new ListEnrollmentsService(enrollmentRepository);
    }



    public Iterable<Enrollment> listEnrollments() {
        return svc.enrollments();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Application\ListEnrollmentsController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Application\ListEnrollmentsService.java

```
package eapli.base.Enrollment.Application;

import eapli.base.Enrollment.Domain.Enrollment;
import eapli.base.Enrollment.Repository.EnrollmentRepository;

public class ListEnrollmentsService {

    private final EnrollmentRepository enrollmentRepository;
```

```
    public ListEnrollmentsService(final EnrollmentRepository enrollmentRepository) {
        this.enrollmentRepository = enrollmentRepository;
    }

    public Iterable<Enrollment> enrollments() {
        return enrollmentRepository.findAll();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Application\ListEnrollmentsService.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Application\RequestEnrollmentController.java

```
package eapli.base.Enrollment.Application;

import eapli.base.Course.Domain.Course;
import eapli.base.Enrollment.Domain.Enrollment;
import eapli.base.Enrollment.Domain.EnrollmentDescription;
import eapli.base.Enrollment.Repository.EnrollmentRepository;
import eapli.base.Student_Teacher.Student.Repository.StudentRepository;
import eapli.base.Student_Teacher.Student.domain.Student;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;


public class RequestEnrollmentController {
    private final EnrollmentRepository enrollmentRepository;
    private final StudentRepository studentRepository;
    public RequestEnrollmentController(final EnrollmentRepository enrollmentRepository,
final StudentRepository studentRepository) {
        this.enrollmentRepository = enrollmentRepository;
        this.studentRepository = studentRepository;
    }

    public void requestEnrollment(Student student, Course course, String description) {
        enrollmentRepository.save(new Enrollment(student,course,new
EnrollmentDescription(description)));
    }

    public Student findStudentBySystemUser(SystemUser systemUser) {
```

```
        return studentRepository.findStudentBySystemUser(systemUser);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Application\RequestEnrollmentController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Domain\BulkEnrollment\BulkEnrollment.java

```
package eapli.base.Enrollment.Domain.BulkEnrollment;

import eapli.base.Course.Domain.Course;
import eapli.base.Course.Repository.CourseRepository;
import eapli.base.Enrollment.Application.RequestEnrollmentController;
import eapli.base.Student_Teacher.Student.Repository.StudentRepository;
import eapli.base.Student_Teacher.Student.domain.Student;
import eapli.framework.domain.repositories.IntegrityViolationException;

import java.io.BufferedReader;
import java.io.FileReader;
import java.io.IOException;

public class BulkEnrollment {
    private final RequestEnrollmentController requestEnrollmentController;
    private final StudentRepository studentRepository;
    private final CourseRepository courseRepository;

    public BulkEnrollment(RequestEnrollmentController requestEnrollmentController,
StudentRepository studentRepository, CourseRepository courseRepository) {
        this.requestEnrollmentController = requestEnrollmentController;
        this.studentRepository = studentRepository;
        this.courseRepository = courseRepository;
    }

    public void bulkEnrollmentReadFile(String csvFilePath) {

        try (BufferedReader reader = new BufferedReader(new FileReader(csvFilePath))) {
            String line;
            while ((line = reader.readLine()) != null) {
                String[] data = line.split(",");
```

```
            try {
                Student student =
studentRepository.findStudentByMechanographicNumber(data[0].trim());
                Iterable<Course> it = courseRepository.findCourseByName(data[1].trim());
                Course course = it.iterator().next();
                String description = data[2].trim();
                try {
                    requestEnrollmentController.requestEnrollment(student, course,
description);
                } catch (final IntegrityViolationException e) {
                    System.out.println("That enrollment is invalid.");
                }
            } catch (Exception e) {
                e.printStackTrace();
            }
        }
    } catch (IOException e) {
        e.printStackTrace();
    }
  }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Domain\BulkEnrollment\BulkEnrollment.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Domain\Enrollment.java

```
package eapli.base.Enrollment.Domain;

import eapli.base.Course.Domain.Course;
import eapli.base.Student_Teacher.Student.domain.Student;
import eapli.framework.domain.model.AggregateRoot;

import javax.persistence.*;

@Entity
@Inheritance(strategy = InheritanceType.JOINED)
public class Enrollment implements AggregateRoot<Long> {


    @Id
```

```
    @GeneratedValue(strategy = GenerationType.AUTO)
    @Column(name = "EnrollmentID", nullable = false)
    private Long id;

    @Column(name = "EnrollmentStudent", nullable = false)
    private Student student;

    @Column(name = "EnrollmentCourse", nullable = false)
    private Course course;

    @Column(name = "Description", nullable = false)
    private EnrollmentDescription description;

    @Column(name="EnrollmentState", nullable = false)
    private EnrollmentState state;

    protected Enrollment(){}


    public Enrollment(Student student, Course course, EnrollmentDescription description)
{
        this.student = student;
        this.course = course;
        this.description = description;
        this.state = EnrollmentState.PENDING;//valor default(Só fica aceite a mando do
manager)
    }


    public void acceptEnrollment() {
        this.state = EnrollmentState.ACCEPTED;
    }

    public void rejectEnrollment() {
        this.state = EnrollmentState.REJECTED;
    }



    @Override
    public Long identity() {
        return id;
    }
```

```
    public Student getStudent() {
        return student;
    }

    public void setStudent(Student student) {
        this.student = student;
    }

    public Course getCourse() {
        return course;
    }

    public void setCourse(Course course) {
        this.course = course;
    }

    public EnrollmentDescription getDescription() {
        return description;
    }

    public void setDescription(EnrollmentDescription description) {
        this.description = description;
    }

    public EnrollmentState getState() {
        return state;
    }

    public Long getId() {
        return id;
    }

    public void setId(Long id) {
        this.id = id;
    }

    @Override
    public boolean sameAs(Object other) {
        return false;
    }

}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Domain\Enrollment.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Domain\EnrollmentDescription.java

```
package eapli.base.Enrollment.Domain;

import javax.persistence.Embeddable;

@Embeddable
public class EnrollmentDescription {
    private String value;

    public EnrollmentDescription(String value) {
        this.value = value;
    }

    public EnrollmentDescription() {
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Domain\EnrollmentDescription.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Domain\EnrollmentID.java

```
package eapli.base.Enrollment.Domain;

import javax.persistence.GeneratedValue;
import javax.persistence.GenerationType;
import javax.persistence.Id;

public class EnrollmentID implements Comparable<EnrollmentID> {

    @Id
    @GeneratedValue(strategy = GenerationType.AUTO)
    private Long id;

    @Override
    public int compareTo(EnrollmentID o) {
        return 0;
    }
```

```
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Domain\EnrollmentID.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Domain\EnrollmentState.java

```
package eapli.base.Enrollment.Domain;

public enum EnrollmentState {
    ACCEPTED, REJECTED, PENDING;
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Domain\EnrollmentState.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Repository\EnrollmentRepository.java

```
package eapli.base.Enrollment.Repository;

import eapli.base.Enrollment.Domain.Enrollment;
import eapli.framework.domain.repositories.DomainRepository;

public interface EnrollmentRepository extends DomainRepository<Long, Enrollment> {
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Enrollment\Repository\EnrollmentRepository.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ExtraClasse\aplication\ExtraClassController.java

```
package eapli.base.ExtraClasse.aplication;

import eapli.base.Classe.aplication.ClasseDTO;
import eapli.base.Classe.domain.*;
import eapli.base.ExtraClasse.domain.ExtraClasse_Day;
import eapli.base.Classe.repository.ClassRepository;
import eapli.base.ExtraClasse.domain.ExtraClasse;
import eapli.base.ExtraClasse.domain.ExtraClasse_Finish_Time;
import eapli.base.ExtraClasse.domain.ExtraClasse_Start_Time;
```

```
import eapli.base.ExtraClasse.domain.ExtraClasse_Title;
import eapli.base.ExtraClasse.repository.ExtraClasseRepository;
import eapli.base.Student_Teacher.Teacher.Domain.Acronym;
import eapli.base.Student_Teacher.Teacher.Domain.Teacher;
import eapli.base.Student_Teacher.Teacher.Repository.TeacherRepository;
import eapli.framework.domain.repositories.ConcurrencyException;
import eapli.framework.domain.repositories.IntegrityViolationException;
import eapli.framework.infrastructure.authz.application.AuthorizationService;

import java.time.LocalTime;
import java.util.List;
import java.util.Optional;

public class ExtraClassController {

    private final ExtraClasseRepository repository;
    private TeacherRepository teacherRepository;

    public ExtraClassController(AuthorizationService authorizationService,
ExtraClasseRepository repository, TeacherRepository teacherRepository) {
        this.repository = repository;
        this.teacherRepository = teacherRepository;
    }


    public ExtraClasseDTO scheduleExtraClass(ExtraClasse_Title title,
ExtraClasse_Start_Time startTime, ExtraClasse_Finish_Time finishTime,
ExtraClasse_Day day, Acronym teacherAcronym) throws IntegrityViolationException,
ConcurrencyException {

        final ExtraClasse newExtraClasse = new ExtraClasse(title, startTime, finishTime,
day, teacherAcronym);

        if (checkClassConflict(newExtraClasse)) {
            throw new IllegalStateException("There is a scheduling conflict with this class.");
        } else {
            return toDTO(this.repository.save(newExtraClasse));
        }
    }

    public boolean checkClassConflict(ExtraClasse classeToCheck) {
        Iterable<ExtraClasse> allExtraClasses = repository.findAll();
        for (ExtraClasse existingClass : allExtraClasses) {
            if (existingClass.getTitle().equals(classeToCheck.getTitle())) {
```

```
            // Skip checking against the same class
            continue;
        }

        // Only compare classes on the same day
        if (existingClass.getDay().equals(classeToCheck.getDay())) {
            // Check for time overlap
            if (isTimeOverlapUserInput(classeToCheck.getStart_time(),
classeToCheck.getFinish_time(), existingClass)) {
                return true; // Conflict found
            }
        }
    }

    return false; // No conflict found
  }

  public List<Teacher> findTeacherByAcronym(Acronym teacherAcronym){
    return teacherRepository.findTeacherByAcronym(teacherAcronym);
  }

  public boolean isTimeOverlapUserInput(ExtraClasse_Start_Time userInputStartTime,
ExtraClasse_Finish_Time userInputEndTime, ExtraClasse existingClass) {
    // Extract the LocalTime from userInputStartTime and userInputEndTime
    LocalTime userInputStart = userInputStartTime.getStart_time();
    LocalTime userInputEnd = userInputEndTime.getFinish_time();

    // Convert start and end times of user input to minutes since midnight
    int userInputStartMinutes = userInputStart.getHour() * 60 +
userInputStart.getMinute();
    int userInputEndMinutes = userInputEnd.getHour() * 60 +
userInputEnd.getMinute();

    // Extract the LocalTime from existingClass's start and end time
    LocalTime existingStartTime = existingClass.getStart_time().getStart_time();
    LocalTime existingFinishTime = existingClass.getFinish_time().getFinish_time();

    // Convert start and end times of existing class to minutes since midnight
    int existingStartMinutes = existingStartTime.getHour() * 60 +
existingStartTime.getMinute();
    int existingEndMinutes = existingFinishTime.getHour() * 60 +
existingFinishTime.getMinute();

    // Check for overlap: does user input class start during existing class?
```

```
        if (userInputStartMinutes >= existingStartMinutes && userInputStartMinutes <
existingEndMinutes) {
            return true; // Overlap found
        }

        // Check for overlap: does existing class start during user input class?
        if (existingStartMinutes >= userInputStartMinutes && existingStartMinutes <
userInputEndMinutes) {
            return true; // Overlap found
        }

        // If neither condition above is met, there is no overlap
        return false; // No overlap found
    }
    public ExtraClasseDTO toDTO(ExtraClasse extraClasse) {
        return new ExtraClasseDTO(
                extraClasse.getTitle().getTitle(),
                extraClasse.getStart_time().getStart_time(),
                extraClasse.getFinish_time().getFinish_time(),
                extraClasse.getDay().getDay(),
                extraClasse.getAcronym().getValue()
        );
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ExtraClasse\aplication\ExtraClassController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ExtraClasse\aplication\ExtraClasseDTO.java

```
package eapli.base.ExtraClasse.aplication;

import java.time.LocalDate;
import java.time.LocalTime;

public class ExtraClasseDTO {
    public String title;
    public LocalTime startTime;
    public LocalTime finishTime;
    public int dayOfWeek;
    public String teacherAcronym;

    public ExtraClasseDTO( String title, LocalTime startTime, LocalTime finishTime, int
dayOfWeek, String teacherAcronym) {
```

```
        this.title = title;
        this.startTime = startTime;
        this.finishTime = finishTime;
        this.dayOfWeek = dayOfWeek;
        this.teacherAcronym = teacherAcronym;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ExtraClasse\aplication\ExtraClasseDTO.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ExtraClasse\aplication\ScheduleExtraClasseService.java

```
package eapli.base.ExtraClasse.aplication;

import eapli.base.ExtraClasse.domain.ExtraClasse;
import eapli.base.ExtraClasse.repository.ExtraClasseRepository;
import eapli.base.Student_Teacher.Teacher.Domain.Teacher;
import eapli.base.Student_Teacher.Teacher.Repository.TeacherRepository;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.application.ApplicationService;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

@ApplicationService
public class ScheduleExtraClasseService {
    private final AuthorizationService authz;
    private final ExtraClasseRepository extraClassRepository;
    private final TeacherRepository teacherRepository;

    public ScheduleExtraClasseService(final AuthorizationService authz, final
ExtraClasseRepository extraClassRepository, final TeacherRepository
teacherRepository) {
        this.authz = authz;
        this.extraClassRepository = extraClassRepository;
        this.teacherRepository = teacherRepository;
    }

    /**
     * Schedules a new extra class
     *
     * @param extraClasse The extra class to be scheduled
```

```
     * @return the scheduled extra class
     */
    public ExtraClasse scheduleExtraClass(ExtraClasse extraClasse) {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.TEACHER,
BaseRoles.ADMIN);
        return extraClassRepository.save(extraClasse);
    }

    /**
     * Returns all teachers
     *
     * @return all teachers
     */
    public Iterable<Teacher> teachers() {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.TEACHER,
BaseRoles.ADMIN);
        return teacherRepository.findAll();
    }

    /**
     * Find teacher by system user
     *
     * @param systemUser system user to find the teacher
     * @return Teacher instance
     */
    public Teacher findTeacherBySystemUser(SystemUser systemUser) {
        return teacherRepository.findTeacherBySystemUser(systemUser);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ExtraClasse\aplication\ScheduleExtraClasseService.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ExtraClasse\domain\ExtraClasse.java

```
package eapli.base.ExtraClasse.domain;

import eapli.base.Student_Teacher.Teacher.Domain.Acronym;
import eapli.framework.domain.model.AggregateRoot;
import eapli.framework.validations.Preconditions;
import javax.persistence.*;
```

```
@Entity
@Inheritance(strategy = InheritanceType.JOINED)
public class ExtraClasse  implements AggregateRoot<ExtraClasse_Title> {

    @EmbeddedId
    private ExtraClasse_Title title;
    private ExtraClasse_Start_Time start_time;
    private ExtraClasse_Finish_Time finish_time;
    private ExtraClasse_Day day;
    private Acronym acronym;


    public ExtraClasse(ExtraClasse_Title title, ExtraClasse_Start_Time start_time,
ExtraClasse_Finish_Time finish_time, ExtraClasse_Day day, Acronym acronym) {
        Preconditions.nonNull(title, "Title should not be null");
        this.title = title;
        this.start_time = start_time;
        this.finish_time = finish_time;
        this.day = day;
        this.acronym = acronym;
    }

    public ExtraClasse() {
    }


    public ExtraClasse_Title getTitle() {
        return this.title;
    }

    @Override
    public ExtraClasse_Title identity() {
        return this.title;
    }

    @Override
    public boolean sameAs(Object other) {
        if (!(other instanceof ExtraClasse)) {
            return false;
        }
        return this.title.equals(((ExtraClasse) other).getTitle());
    }

    @Override
```

```
    public int compareTo(ExtraClasse_Title other) {
        return this.title.compareTo(other);
    }

    public void setTitle(ExtraClasse_Title title) {
        this.title = title;
    }

    public ExtraClasse_Start_Time getStart_time() {
        return start_time;
    }

    public void setStart_time(ExtraClasse_Start_Time start_time) {
        this.start_time = start_time;
    }

    public ExtraClasse_Finish_Time getFinish_time() {
        return finish_time;
    }

    public void setFinish_time(ExtraClasse_Finish_Time finish_time) {
        this.finish_time = finish_time;
    }

    public ExtraClasse_Day getDay() {
        return day;
    }

    public void setDay(ExtraClasse_Day day) {
        this.day = day;
    }

    public Acronym getAcronym() {
        return acronym;
    }

    public void setAcronym(Acronym acronym) {
        this.acronym = acronym;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ExtraClasse\domain\ExtraClasse.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ExtraClasse\domain\ExtraClasse_Day.java

```
package eapli.base.ExtraClasse.domain;

import eapli.framework.domain.model.ValueObject;
import eapli.framework.validations.Preconditions;
import javax.persistence.Embeddable;

@Embeddable
public class ExtraClasse_Day implements ValueObject {

    private int day;

    protected ExtraClasse_Day() {

    }

    public ExtraClasse_Day(int day) {
        Preconditions.ensure(day >= 1 && day <= 7, "Invalid day of week");
        this.day = day;
    }

    public static ExtraClasse_Day from(int day) throws IllegalArgumentException {
        return new ExtraClasse_Day(day);
    }

    public static ExtraClasse_Day valueOf(int day) throws IllegalArgumentException {
        return from(day);
    }



    @Override
    public String toString() {
        return String.format("Day of Week: %d", day);
    }

    public int getDay() {
        return day;
    }
```

```
    public void setDay(int day) {
        this.day = day;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ExtraClasse\domain\ExtraClasse_Day.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ExtraClasse\domain\ExtraClasse_Finish_Time.java

```
package eapli.base.ExtraClasse.domain;

import eapli.framework.domain.model.ValueObject;
import eapli.framework.validations.Preconditions;
import javax.persistence.Embeddable;
import java.time.LocalTime;

@Embeddable
public class ExtraClasse_Finish_Time implements ValueObject {
    private LocalTime finish_time;


    protected ExtraClasse_Finish_Time() {}


    public ExtraClasse_Finish_Time(LocalTime finish_time) {
        Preconditions.ensure(finish_time != null, "Invalid finish time");
        this.finish_time = finish_time;
    }

    public static ExtraClasse_Finish_Time from(LocalTime finish_time) throws
IllegalArgumentException{
        return new ExtraClasse_Finish_Time(finish_time);
    }

    public static ExtraClasse_Finish_Time valueOf(LocalTime finish_time) {
        return new ExtraClasse_Finish_Time(finish_time);
    }

    @Override
    public String toString() {
        return String.format("Finish Time: %s", finish_time);
```

```
    }

    public LocalTime getFinish_time() {
        return finish_time;
    }

    public void setFinish_time(LocalTime finish_time) {
        Preconditions.ensure(finish_time != null, "Invalid finish time");
        this.finish_time = finish_time;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ExtraClasse\domain\ExtraClasse_Finish_Time.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ExtraClasse\domain\ExtraClasse_Start_Time.java

```
package eapli.base.ExtraClasse.domain;

import eapli.framework.domain.model.ValueObject;
import eapli.framework.validations.Preconditions;
import javax.persistence.Embeddable;
import java.time.LocalTime;

@Embeddable
public class ExtraClasse_Start_Time implements ValueObject {
    private LocalTime start_time;


    protected ExtraClasse_Start_Time() {}


    public ExtraClasse_Start_Time(LocalTime start_time) {
        Preconditions.ensure(start_time != null, "Invalid start time");
        this.start_time = start_time;
    }

    public static ExtraClasse_Start_Time from(LocalTime start_time) throws
IllegalArgumentException {
        return new ExtraClasse_Start_Time(start_time);
    }
```

```
    public static ExtraClasse_Start_Time valueOf(LocalTime start_time) {
        return new ExtraClasse_Start_Time(start_time);
    }

    @Override
    public String toString() {
        return String.format("Start Time: %s", start_time);
    }

    public LocalTime getStart_time() {
        return start_time;
    }

    public void setStart_time(LocalTime start_time) {
        Preconditions.ensure(start_time != null, "Invalid start time");
        this.start_time = start_time;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ExtraClasse\domain\ExtraClasse_Start_Time.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ExtraClasse\domain\ExtraClasse_Title.java

```
package eapli.base.ExtraClasse.domain;

import eapli.base.Classe.domain.Classe_Title;
import eapli.framework.domain.model.ValueObject;
import eapli.framework.validations.Preconditions;

import javax.persistence.Embeddable;
import java.util.Objects;

@Embeddable
public class ExtraClasse_Title implements ValueObject,
Comparable<ExtraClasse_Title> {

    private String title;

    protected ExtraClasse_Title() { } // needed for JPA
```

```
private ExtraClasse_Title(String title){
    this.title = title;
}

public static ExtraClasse_Title from(String title){
    Preconditions.ensure(!(title == null || title.isEmpty()), "Title invalido");
    return new ExtraClasse_Title(title);
}

public static ExtraClasse_Title valueOf(String title){
    return from(title);
}

@Override
public String toString() {
    return String.format("Title : %s", title);
}

@Override
public int compareTo(ExtraClasse_Title o) {
    return this.title.compareTo(o.title);
}



public String getTitle() {
    return title;
}

public void setTitle(String title) {
    this.title = title;
}
@Override
public boolean equals(Object o) {
    if (this == o) return true;
    if (o == null || getClass() != o.getClass()) return false;
    Classe_Title other = (Classe_Title) o;
    return Objects.equals(title, other.getTitle());
}

@Override
public int hashCode() {
    return Objects.hash(title);
}
```

```
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ExtraClasse\domain\ExtraClasse_Title.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ExtraClasse\repository\ExtraClasseRepository.java

```
package eapli.base.ExtraClasse.repository;

import eapli.base.Classe.domain.Classe;
import eapli.base.Classe.domain.Classe_Title;
import eapli.base.ExtraClasse.domain.ExtraClasse;
import eapli.base.ExtraClasse.domain.ExtraClasse_Title;
import eapli.framework.domain.repositories.DomainRepository;

import java.util.List;

public interface ExtraClasseRepository extends DomainRepository<ExtraClasse_Title,
ExtraClasse> {
    List<ExtraClasse> findExtraClassesByTeacher(String teacherAcronym);

}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\ExtraClasse\repository\ExtraClasseRepository.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Manager\Manager.java

```
package eapli.base.Manager;

import eapli.framework.infrastructure.authz.domain.model.SystemUser;

public class Manager extends SystemUser {


}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Manager\Manager.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\aplication\BoardUpdateService.java

```
/*package eapli.base.SharedBoard.aplication;

import eapli.base.SharedBoard.domain.Board;
import eapli.base.SharedBoard.domain.SharedBoard;
import eapli.base.SharedBoard.repository.SharedBoardRepository;
import eapli.base.systemUserManagement.SystemUserRepository;

import java.util.ArrayList;
import java.util.List;


public class BoardUpdateService {
    private final SharedBoardRepository boardRepository;
    private SharedBoard sharedBoard;

    public BoardUpdateService(SharedBoardRepository boardRepository) {
        this.boardRepository = boardRepository;
    }

    public List<Board> getBoardUpdateHistory(Board boardId) {
        Board board = boardRepository.findByBoardId(boardId);
        if (board != null) {
            return board.;
        }
        return new ArrayList<>(); // Retornar uma lista vazia se a board não for encontrada
    }
}*/
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\aplication\BoardUpdateService.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\aplication\CreateBoardPostItController.java

```
package eapli.base.SharedBoard.aplication;

import eapli.base.SharedBoard.domain.SharedBoard;
import eapli.base.SharedBoard.repository.SharedBoardRepository;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

public class CreateBoardPostItController {

    private final CreateBoardPostItService svc;

    public CreateBoardPostItController(final SharedBoardRepository
sharedBoardRepository) {
        svc = new CreateBoardPostItService(sharedBoardRepository);
    }

    public boolean getBoardAccessType(SharedBoard sharedBoard, SystemUser
systemUser){
        return svc.getBoardAccessType(sharedBoard, systemUser);
    }

    public void createPostIt(String content, SystemUser systemUser){
        svc.createPostIt(content, systemUser);
    }

    public Iterable<SharedBoard> findBoardsBySystemUser(SystemUser systemUser){
        return svc.findBoardsBySystemUser(systemUser);
    }

    public void addPostIt(SharedBoard sharedBoard, int row, int column) throws
InterruptedException {
        svc.addPostIt(sharedBoard, row, column);
    }
    public void undoPostIt(){
        svc.undoPostIt();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\aplication\CreateBoardPostItController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\aplication\CreateBoardPostItService.java

```
package eapli.base.SharedBoard.aplication;

import eapli.base.SharedBoard.domain.CreateBoardPostItThread;
import eapli.base.SharedBoard.domain.PostIt;
import eapli.base.SharedBoard.domain.SharedBoard;
import eapli.base.SharedBoard.repository.SharedBoardRepository;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

public class CreateBoardPostItService {

    private final SharedBoardRepository sharedBoardRepository;
    private PostIt postIt;
    private PostIt postItBackup;

    public CreateBoardPostItService(final SharedBoardRepository
sharedBoardRepository) {
        this.sharedBoardRepository = sharedBoardRepository;
    }

    public Iterable<SharedBoard> findBoardsBySystemUser(SystemUser systemUser){
        return sharedBoardRepository.findBoardsBySystemUser(systemUser);
    }

    public boolean getBoardAccessType(SharedBoard sharedBoard, SystemUser
systemUser){
        return
sharedBoard.getAccessType(systemUser).equals(SharedBoard.AccessType.WRITE);
    }

    public void createPostIt(String content, SystemUser systemUser){
        if (postIt != null) {
            postItBackup = new PostIt(postIt.getContent(), postIt.getAuthor());
        }
        this.postIt=new PostIt(content, systemUser);
    }
```

```
    public void undoPostIt() {
        if (postItBackup != null) {
            postIt = new PostIt(postItBackup.getContent(), postItBackup.getAuthor());
            postItBackup = null;
        }
    }
    public void addPostIt(SharedBoard sharedBoard, int row, int column) throws
InterruptedException {
        CreateBoardPostItThread createBoardPostItThread = new
CreateBoardPostItThread(sharedBoard.getBoard(), row, column, postIt);
        Thread thread = new Thread(createBoardPostItThread);
        thread.start();
        thread.join();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\aplication\CreateBoardPostItService.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\aplication\SharedBoardArchiveController.java

```
package eapli.base.SharedBoard.aplication;

import eapli.base.SharedBoard.domain.SharedBoard;
import eapli.base.SharedBoard.domain.Shared_Board_Title;
import eapli.base.SharedBoard.repository.SharedBoardRepository;
import eapli.base.systemUserManagement.SystemUserRepository;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.model.Username;
import org.springframework.stereotype.Controller;

@Controller
public class SharedBoardArchiveController {


    private final SharedBoardArchiveService sharedBoardArchiveService;

    public SharedBoardArchiveController(final AuthorizationService authz , final
SharedBoardRepository sharedBoardRepository, final SystemUserRepository
systemUserRepository) {
```

```
        sharedBoardArchiveService = new
SharedBoardArchiveService(authz,sharedBoardRepository, systemUserRepository);
    }

    public void archiveBoard(Shared_Board_Title title, Username currentUser) {
        sharedBoardArchiveService.archiveBoard(title, currentUser);
    }

    public Iterable<SharedBoard> findSharedBoardsByOwner(SystemUser owner) {
        return sharedBoardArchiveService.findSharedBoardsByOwner(owner);
    }



}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\aplication\SharedBoardArchiveController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\aplication\SharedBoardArchiveService.java

```
    package eapli.base.SharedBoard.aplication;

    import eapli.base.SharedBoard.domain.SharedBoard;
    import eapli.base.SharedBoard.domain.Shared_Board_Title;
    import eapli.base.SharedBoard.repository.SharedBoardRepository;
    import eapli.base.systemUserManagement.SystemUserRepository;
    import eapli.framework.infrastructure.authz.application.AuthorizationService;
    import eapli.framework.infrastructure.authz.domain.model.SystemUser;
    import eapli.framework.infrastructure.authz.domain.model.Username;

    import java.util.List;

    public class SharedBoardArchiveService {

        private final SystemUserRepository userRepository;
        private final SharedBoardRepository sharedBoardRepository;
        private final AuthorizationService authz;

        public SharedBoardArchiveService(final AuthorizationService authz, final
SharedBoardRepository sharedBoardRepository, final SystemUserRepository
```

```
systemUserRepository) {
        this.authz = authz;
        this.userRepository = systemUserRepository;
        this.sharedBoardRepository = sharedBoardRepository;
    }

    public void archiveBoard(Shared_Board_Title title, Username currentUser) {
        Iterable<SharedBoard> boardOptional =
sharedBoardRepository.findByBoardId(title);
        if (!boardOptional.iterator().hasNext()) {
            throw new IllegalStateException("Board not found");
        }
        SharedBoard board = boardOptional.iterator().next();
        if (!board.getOwner().username().equals(currentUser)) {
            throw new IllegalStateException("Only the owner can archive the board");
        }
        board.archiveBoard();
        sharedBoardRepository.save(board);
    }

    public List<SharedBoard> findSharedBoardsByOwner(SystemUser owner) {
        return (List<SharedBoard>)
sharedBoardRepository.findSharedBoardsByOwner(owner);
    }

}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\aplication\SharedBoardArchiveService.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\aplication\SharedBoardController.java

```
package eapli.base.SharedBoard.aplication;

import eapli.base.SharedBoard.domain.SharedBoard;
import eapli.base.SharedBoard.repository.SharedBoardRepository;
import eapli.base.systemUserManagement.SystemUserRepository;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import org.springframework.stereotype.Controller;
```

```
@Controller
public class SharedBoardController {

    private final SharedBoardService sharedBoardService;

    public SharedBoardController(final SharedBoardRepository sharedBoardRepository,
final SystemUserRepository systemUserRepository) {
        sharedBoardService = new SharedBoardService(sharedBoardRepository,
systemUserRepository);
    }

    public void createSharedBoard(SystemUser myUser, String sharedBoardTitle, int
numberOfRows, int numberOfColumns){
        sharedBoardService.createSharedBoard(myUser, sharedBoardTitle,
numberOfRows, numberOfColumns);
    }

    public void shareBoard(String ownerUsername, String userToShareUsername,
SharedBoard.AccessType accessType) throws InterruptedException {
        sharedBoardService.shareBoard(ownerUsername,
userToShareUsername,accessType);
    }

  /*  public Iterable<SharedBoard> listSharedBoards() {
        return sharedBoardService.listSharedBoards();
    }

   */


    public Iterable<SharedBoard> findSharedBoardsByOwner(SystemUser owner) {
        return sharedBoardService.findSharedBoardsByOwner(owner);
    }




}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\aplication\SharedBoardController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\aplication\SharedBoardService.java

```
package eapli.base.SharedBoard.aplication;

import eapli.base.SharedBoard.domain.*;
import eapli.base.SharedBoard.repository.SharedBoardRepository;
import eapli.base.systemUserManagement.SystemUserRepository;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.model.Username;

import java.util.List;
import java.util.Optional;

public class SharedBoardService {
    private final SystemUserRepository userRepository;
    private final SharedBoardRepository sharedBoardRepository;
    private SharedBoard sharedBoard;

    public SharedBoardService(final SharedBoardRepository sharedBoardRepository,
final SystemUserRepository systemUserRepository) {
        this.userRepository = systemUserRepository;
        this.sharedBoardRepository = sharedBoardRepository;
    }

    public void createSharedBoard(SystemUser myUser, String sharedBoardTitle, int
numberOfRows, int numberOfColumns){
        this.sharedBoard = sharedBoardRepository.save(new SharedBoard(myUser, new
Shared_Board_Title(sharedBoardTitle), new NumberofRows(numberOfRows), new
NumberofColumns(numberOfColumns)));
    }

    public void shareBoard(String ownerUsername, String userToShareUsername,
SharedBoard.AccessType accessType) throws InterruptedException {
        Iterable<SystemUser> ownerOptional =
userRepository.findByUsername(Username.valueOf(ownerUsername));
        Iterable<SystemUser> userToShareOptional =
userRepository.findByUsername(Username.valueOf(userToShareUsername));

        if (!ownerOptional.iterator().hasNext() || !userToShareOptional.iterator().hasNext()) {
```

```
            throw new IllegalStateException("Owner or user to share not found");
        }

        SystemUser owner = ownerOptional.iterator().next();
        SystemUser userToShare = userToShareOptional.iterator().next();

        SharedBoardThread sharingThread = new SharedBoardThread(sharedBoard,
owner, userToShare, accessType);
        Thread thread = new Thread(sharingThread);
        thread.start();
        thread.join();

    }

    public Iterable<SharedBoard> listSharedBoards() {
        return sharedBoardRepository.findAll();
    }

    public Iterable<SharedBoard> findSharedBoardsByOwner(SystemUser owner) {
        return sharedBoardRepository.findSharedBoardsByOwner(owner);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\aplication\SharedBoardService.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\aplication\UpdateBoardPostItController.java

```
package eapli.base.SharedBoard.aplication;

import eapli.base.SharedBoard.domain.SharedBoard;
import eapli.base.SharedBoard.repository.SharedBoardRepository;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

public class UpdateBoardPostItController {

    private final UpdateBoardPostItService svc;

    public UpdateBoardPostItController(final SharedBoardRepository
sharedBoardRepository) {
        svc = new UpdateBoardPostItService(sharedBoardRepository);
```

```
    }

    public boolean getBoardAccessType(SharedBoard sharedBoard, SystemUser
systemUser){
        return svc.getBoardAccessType(sharedBoard, systemUser);
    }

    public Iterable<SharedBoard> findBoardsBySystemUser(SystemUser systemUser){
        return svc.findBoardsBySystemUser(systemUser);
    }

    public void createPostIt(String content, SystemUser systemUser){
        svc.createPostIt(content, systemUser);
    }

    public void updatePostIt(SharedBoard sharedBoard, int row, int column) throws
InterruptedException {
        svc.updatePostIt(sharedBoard, row, column);
    }

    public void movePostIt(SharedBoard sharedBoard, int row, int column, int newRow,
int newColumn, SystemUser systemUser) throws InterruptedException {
        svc.movePostIt(sharedBoard, row, column, newRow, newColumn, systemUser);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\aplication\UpdateBoardPostItController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\aplication\UpdateBoardPostItService.java

```
package eapli.base.SharedBoard.aplication;

import eapli.base.SharedBoard.domain.*;
import eapli.base.SharedBoard.repository.SharedBoardRepository;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

public class UpdateBoardPostItService {

    private final SharedBoardRepository sharedBoardRepository;
    private PostIt postIt;
```

```
    public UpdateBoardPostItService(final SharedBoardRepository
sharedBoardRepository) {
        this.sharedBoardRepository = sharedBoardRepository;
    }

    public Iterable<SharedBoard> findBoardsBySystemUser(SystemUser systemUser){
        return sharedBoardRepository.findBoardsBySystemUser(systemUser);
    }

    public boolean getBoardAccessType(SharedBoard sharedBoard, SystemUser
systemUser){
        return
sharedBoard.getAccessType(systemUser).equals(SharedBoard.AccessType.WRITE);
    }

    public void createPostIt(String content, SystemUser systemUser){
        this.postIt=new PostIt(content, systemUser);
    }

    public void updatePostIt(SharedBoard sharedBoard, int row, int column) throws
InterruptedException {
        UpdateBoardPostItThread updateBoardPostItThread = new
UpdateBoardPostItThread(sharedBoard.getBoard(), row, column, postIt);
        Thread thread = new Thread(updateBoardPostItThread);
        thread.start();
        thread.join();
    }

    public void movePostIt(SharedBoard sharedBoard, int row, int column, int newRow,
int newColumn, SystemUser systemUser) throws InterruptedException {
        MoveBoardPostItThread moveBoardPostItThread = new
MoveBoardPostItThread(sharedBoard.getBoard(), row, column, newRow, newColumn,
systemUser);
        Thread thread = new Thread(moveBoardPostItThread);
        thread.start();
        thread.join();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\aplication\UpdateBoardPostItService.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\Board.java

```
package eapli.base.SharedBoard.domain;

import eapli.framework.domain.model.ValueObject;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

import javax.persistence.*;

@Entity
public class Board implements ValueObject {

    private NumberofColumns numberC;
    private NumberofRows numberR;
    @Id
    @GeneratedValue(strategy = GenerationType.AUTO)
    private Long id;
    @Transient
    private PostIt[][] boardData;

    public Board(NumberofRows numberR, NumberofColumns numberC) {
        this.numberR = numberR;
        this.numberC = numberC;
        initializeBoard(numberR, numberC);
    }

    protected Board() {
    }

    public void initializeBoard(NumberofRows numberR, NumberofColumns numberC){
        this.boardData = new PostIt[numberR.getValue()][numberC.getValue()];
        for (int i = 0; i < numberR.getValue(); i++) {
            for (int j = 0; j < numberC.getValue(); j++) {
                boardData[i][j]=null;
            }
        }
    }

    public void printBoard() {
        for (int i = 0; i < numberR.getValue(); i++) {
```

```
            for (int j = 0; j < numberC.getValue(); j++) {
                System.out.print((boardData[i][j] != null ? boardData[i][j].getContent() : "#") + "
");
            }
            System.out.println();
        }
    }

    public PostIt getCell(int row, int column) {
        return boardData[row][column];
    }

    public synchronized void setCell(int row, int column, PostIt value) {
        boardData[row][column] = value;
    }

    public synchronized boolean insertCell(int row, int column, PostIt value) {
        if(getCell(row, column)==null){
            setCell(row, column, value);
            return true;
        }return false;
    }

    public synchronized boolean updateCell(int row, int column, PostIt value) {
        if(getCell(row, column)!=null){
            if(getCell(row,column).getAuthor().equals(value.getAuthor())){
                setCell(row, column, value);
                return true;
            }
            return false;
        }else{
            setCell(row,column,value);
            return true;
        }
    }

    public synchronized int moveCell(int row, int column, int newRow, int newColumn,
SystemUser systemUser){
        if(getCell(row, column)!=null){
            if(getCell(newRow, newColumn)==null){
                if(getCell(row,column).getAuthor().equals(systemUser)){
                    setCell(newRow, newColumn, getCell(row,column));
                    setCell(row, column, null);
                    return 0;
```

```
            } return 1;
          }return 2;
        } return 3;

    }

    public NumberofColumns getNumberC() {
        return numberC;
    }

    public NumberofRows getNumberR() {
        return numberR;
    }

    public PostIt[][] getBoardData() {
        return boardData;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\Board.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\CreateBoardPostItThread.java

```
package eapli.base.SharedBoard.domain;

public class CreateBoardPostItThread implements Runnable{

    private final Board board;
    private final int row;
    private final int column;
    private final PostIt postIt;

    public CreateBoardPostItThread(Board board, int row, int column, PostIt postIt){
        this.board=board;
        this.row=row;
        this.column=column;
        this.postIt=postIt;
    }

    public void run(){
//        while (!Thread.interrupted()) {
```

```
            if(board.insertCell(row, column, postIt)){
                System.out.println("Post-it successfully added to the board.");
                System.out.println("Updated Board: ");
                board.printBoard();
            }else{
                System.out.println("The desired position is already occupied.");
            }
//        }
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\CreateBoardPostItThread.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\MoveBoardPostItThread.java

```
package eapli.base.SharedBoard.domain;

import eapli.framework.infrastructure.authz.domain.model.SystemUser;

public class MoveBoardPostItThread implements Runnable{

    private final Board board;
    private final int row;
    private final int column;
    private final int newRow;
    private final int newColumn;
    private final SystemUser systemUser;

    public MoveBoardPostItThread(Board board, int row, int column, int newRow, int
newColumn, SystemUser systemUser){
        this.board=board;
        this.row=row;
        this.column=column;
        this.newRow=newRow;
        this.newColumn=newColumn;
        this.systemUser=systemUser;
    }

    public void run(){
//        while (!Thread.interrupted()) {
```

```
            if(board.moveCell(row, column, newRow, newColumn, systemUser)==0){
                System.out.println("Post-it successfully updated in the board.");
            }else if(board.moveCell(row, column, newRow, newColumn, systemUser)==1){
                System.out.println("You are not the author of the original post-it.");
            }else if(board.moveCell(row, column, newRow, newColumn, systemUser)==2){
                System.out.println("The desired position is already occupied.");
            }else if(board.moveCell(row, column, newRow, newColumn, systemUser)==3) {
                System.out.println("The original position is not occupied with a post-it.");
            }
        System.out.println("Updated Board: ");
        board.printBoard();
//      }
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\MoveBoardPostItThread.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\NumberofColumns.java

```
package eapli.base.SharedBoard.domain;

import eapli.framework.domain.model.ValueObject;
import eapli.framework.validations.Preconditions;

import javax.persistence.Embeddable;

@Embeddable
public class NumberofColumns implements ValueObject {
    private int num_col;

    public NumberofColumns(int value){
        this.num_col=value;
    }

    protected NumberofColumns(){}

    public static NumberofColumns from(int value) throws IllegalArgumentException {
        Preconditions.ensure(value > 0, "Number of columns must be greater than 0");
        return new NumberofColumns(value);
    }
```

```
    public static NumberofColumns valueOf(int value) throws IllegalArgumentException {
        return from(value);
    }

    public int getValue(){
        return num_col;
    }

    @Override
    public String toString() {
        return String.format("Number of Columns: %d", num_col);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\NumberofColumns.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\NumberofRows.java

```
package eapli.base.SharedBoard.domain;

import eapli.framework.domain.model.ValueObject;
import eapli.framework.validations.Preconditions;

import javax.persistence.Embeddable;

@Embeddable
public class NumberofRows implements ValueObject {

    private int num_row;

    public NumberofRows(int value){
        this.num_row=value;
    }

    protected NumberofRows(){}

    public static NumberofRows from(int numberOfRows) throws
IllegalArgumentException {
        Preconditions.ensure(numberOfRows > 0, "Number of rows must be greater than
zero");
        return new NumberofRows(numberOfRows);
    }
```

```
    public static NumberofRows valueOf(int numberOfRows) throws
IllegalArgumentException {
        return from(numberOfRows);
    }

    public int getValue(){
        return num_row;
    }

    @Override
    public String toString() {
        return "Number of Rows: " + num_row;
    }

}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\NumberofRows.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\PostIt.java

```
package eapli.base.SharedBoard.domain;

import eapli.framework.infrastructure.authz.domain.model.SystemUser;

import javax.persistence.Entity;

@Entity
public class PostIt {

    private String content;

    private SystemUser author;

    protected PostIt(){}

    public PostIt(String content, SystemUser systemUser){
        this.content=content;
        this.author=systemUser;
    }

    public String getContent(){return content;}

    public SystemUser getAuthor(){return author;}
```

```
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\PostIt.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\SharedBoard.java

```
package eapli.base.SharedBoard.domain;

import eapli.framework.domain.model.AggregateRoot;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.representations.dto.DTOable;
import eapli.framework.representations.dto.GeneralDTO;
import eapli.framework.validations.Preconditions;
import eapli.framework.visitor.Visitable;
import eapli.framework.visitor.Visitor;

import javax.persistence.*;
import java.io.Serializable;
import java.util.HashMap;
import java.util.Map;

@Entity
@Table(name = "SharedBoard")
public class SharedBoard implements AggregateRoot<Shared_Board_Title>,
DTOable<GeneralDTO>, Visitable<GeneralDTO>, Serializable {

    @ManyToOne
    @JoinColumn(name = "owner_id")
    private SystemUser owner;

    @ElementCollection  // Isto indica que sharedUsers é uma coleção de instâncias de
um tipo básico (neste caso, AccessType).
    @CollectionTable(name="UserAccess",
joinColumns=@JoinColumn(name="sharedboard_id")) // Isto indica que a tabela para a
coleção sharedUsers é UserAccess e ela está ligada à tabela SharedBoard através da
coluna sharedboard_id.
    @MapKeyJoinColumn(name="systemuser_id") // Isto indica que a chave do mapa em
sharedUsers está mapeada para a coluna systemuser_id.
    @Column(name="access_type") // // Isto indica que o valor de cada instância na
coleção sharedUsers será armazenado na coluna access_type
    @Enumerated(EnumType.STRING) // Isto indica que o valor em sharedUsers será
persistido como uma sting
    private Map<SystemUser, AccessType> sharedUsers;
```

```
    @EmbeddedId
    private Shared_Board_Title title;

    @JoinColumn(name = "board_id")
    private Board board;

    private boolean isArchived = false;

    public enum AccessType {
        READ, WRITE
    }

    public SharedBoard(SystemUser owner, Shared_Board_Title title, NumberofRows
numberofRows, NumberofColumns numberofColumns) {
        Preconditions.ensure(owner != null, "Owner cannot be null");
        Preconditions.ensure(title != null, "Title cannot be null");
        this.board = new Board(numberofRows, numberofColumns);
        this.title = title;
        this.owner = owner;
        this.sharedUsers = new HashMap<>();
    }

    public SharedBoard() {
    }

    public void shareBoard(SystemUser currentUser, SystemUser newUser, AccessType
accessType) {
        Preconditions.ensure(currentUser != null, "Current user cannot be null");
        Preconditions.ensure(newUser != null, "User to share the board with cannot be
null");

        if (!this.owner.equals(currentUser)) {
            throw new IllegalStateException("Only the owner can share the board");
        }
        if (!this.sharedUsers.containsKey(newUser)) {
            this.sharedUsers.put(newUser, accessType);
        }
    }

    public SystemUser getOwner() {
        return owner;
    }
```

```
    public void archiveBoard() {
        this.isArchived = true;

        // Se o board ta arquivado as permissoes de todos os users vao para READ e só o
Owner é que tem write
        for (Map.Entry<SystemUser, AccessType> entry : sharedUsers.entrySet()) {
            if (!entry.getKey().equals(this.owner)) {
                entry.setValue(AccessType.READ);
            }
        }
    }


    public boolean isArchived() {
        return isArchived;
    }

    public Shared_Board_Title getTitle() {
        return title;
    }

    @Override
    public Shared_Board_Title identity() {
        return title;
    }

    public Board getBoard() {
        return board;
    }

    public AccessType getAccessType(SystemUser user) {
        return this.sharedUsers.get(user);
    }

    public Map<SystemUser, AccessType> getSharedUsers(){
        return sharedUsers;
    }

    @Override
    public boolean sameAs(Object other) {
        if (!(other instanceof SharedBoard)) {
            return false;
        }
        SharedBoard otherBoard = (SharedBoard) other;
```

```
        return this.identity().equals(otherBoard.identity());
    }

    @Override
    public GeneralDTO toDTO() {
        final GeneralDTO ret = new GeneralDTO("shared board");
        ret.put("title", title.toString());
        ret.put("owner", owner.username().toString());

        return ret;
    }

    @Override
    public void accept(Visitor<GeneralDTO> visitor) {
        visitor.visit(toDTO());
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\SharedBoard.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\SharedBoardThread.java

```
package eapli.base.SharedBoard.domain;

import eapli.base.SharedBoard.domain.SharedBoard;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

public class SharedBoardThread implements Runnable {
    private SharedBoard sharedBoard;
    private SystemUser owner;
    private SystemUser userToShare;
    private SharedBoard.AccessType accessType;

    public SharedBoardThread(SharedBoard sharedBoard, SystemUser owner,
SystemUser userToShare, SharedBoard.AccessType accessType) {
        this.sharedBoard = sharedBoard;
        this.owner = owner;
        this.userToShare = userToShare;
        this.accessType = accessType;
    }

    @Override
    public void run() {
```

```
        sharedBoard.shareBoard(owner, userToShare, accessType);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\SharedBoardThread.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\Shared_Board_Title.java

```
package eapli.base.SharedBoard.domain;

import eapli.framework.domain.model.ValueObject;
import eapli.framework.validations.Preconditions;

import javax.persistence.Embeddable;
import java.util.Objects;

@Embeddable
public class Shared_Board_Title implements ValueObject,
Comparable<Shared_Board_Title> {

    private String title;

    protected Shared_Board_Title() {
    }

    public Shared_Board_Title(String title) throws IllegalArgumentException {
        Preconditions.ensure(title != null && !title.isEmpty(), "Invalid title");
        this.title = title;
    }

    public static Shared_Board_Title valueOf(String title) throws IllegalArgumentException
{
        return new Shared_Board_Title(title);
    }

    @Override
    public String toString() {
        return String.format("Title: %s", title);
    }

    public String getTitle() {
        return this.title;
    }
```

```
    public void setTitle(String title) throws IllegalArgumentException {
        Preconditions.ensure(title != null && !title.isEmpty(), "Invalid title");
        this.title = title;
    }
    @Override
    public boolean equals(Object o) {
        if (this == o) return true;
        if (o == null || getClass() != o.getClass()) return false;

        Shared_Board_Title other = (Shared_Board_Title) o;
        return Objects.equals(title, other.title);
    }

    @Override
    public int hashCode() {
        return Objects.hash(title);
    }


    @Override
    public int compareTo(Shared_Board_Title o) {
        return this.title.compareTo(o.title);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\Shared_Board_Title.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\UpdateBoardPostItThread.java

```
package eapli.base.SharedBoard.domain;

public class UpdateBoardPostItThread implements Runnable{

    private final Board board;
    private final int row;
    private final int column;
    private final PostIt postIt;

    public UpdateBoardPostItThread(Board board, int row, int column, PostIt postIt){
        this.board=board;
```

```
        this.row=row;
        this.column=column;
        this.postIt=postIt;
    }

    public void run(){
//        while (!Thread.interrupted()) {
            if(board.updateCell(row, column, postIt)){
                System.out.println("Post-it successfully updated in the board.");
                System.out.println("Updated Board: ");
                board.printBoard();
            }else{
                System.out.println("You are not the author of the post-it in the desired
position.");
            }
//        }
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\UpdateBoardPostItThread.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\sharedBoardHistory.java

```
package eapli.base.SharedBoard.domain;

import eapli.framework.domain.model.ValueObject;
import eapli.framework.validations.Preconditions;
import lombok.*;

import javax.persistence.Embeddable;
@Embeddable
@EqualsAndHashCode
@AllArgsConstructor(access = AccessLevel.PROTECTED)
@NoArgsConstructor(access = AccessLevel.PROTECTED)
@Getter
public class sharedBoardHistory {

    private String history;

    public static sharedBoardHistory from(String history) throws Exception {
        Preconditions.ensure(history != null && !history.isEmpty(), "Invalid history");
        return new sharedBoardHistory(history);
```

```
    }

    public static sharedBoardHistory valueOf(String history) throws Exception {
        return from(history);
    }

    @Override
    public String toString() {
        return String.format("History: %s", history);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\domain\sharedBoardHistory.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\repository\SharedBoardRepository.java

```
package eapli.base.SharedBoard.repository;

import eapli.base.SharedBoard.domain.SharedBoard;
import eapli.base.SharedBoard.domain.Shared_Board_Title;
import eapli.framework.domain.repositories.DomainRepository;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

public interface SharedBoardRepository extends
DomainRepository<Shared_Board_Title, SharedBoard> {

    Iterable<SharedBoard> findSharedBoardsByOwner(SystemUser owner);

    Iterable<SharedBoard> findByBoardId(Shared_Board_Title title);

    Iterable<SharedBoard> findBoardsBySystemUser(SystemUser systemUser);
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\SharedBoard\repository\SharedBoardRepository.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Student_Teacher\Date_Of_Birth.java

```
package eapli.base.Student_Teacher;

import lombok.*;

import javax.persistence.Embeddable;
import java.time.LocalDate;
import java.time.format.DateTimeFormatter;
import java.util.Objects;
@Embeddable
@NoArgsConstructor(access = AccessLevel.PROTECTED)
@Getter
@EqualsAndHashCode
public class Date_Of_Birth
{
    private LocalDate dateOfBirth;

    public Date_Of_Birth(LocalDate dateOfBirth) {
        this.dateOfBirth=dateOfBirth;
    }

    public static Date_Of_Birth valueOf(LocalDate dateOfBirth) {
        return new Date_Of_Birth(dateOfBirth);
    }

    @Override
    public String toString() {
        return dateOfBirth.format(DateTimeFormatter.ofPattern("dd/MM/yyyy"));
    }

    @Override
    public boolean equals(Object o) {
        if (this == o) return true;
        if (!(o instanceof Date_Of_Birth)) return false;
        Date_Of_Birth that = (Date_Of_Birth) o;
        return dateOfBirth.equals(that.dateOfBirth);
    }

    @Override
```

```
    public int hashCode() {
        return Objects.hash(dateOfBirth);
    }

    public LocalDate getDateOfBirth() {
        return dateOfBirth;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Student_Teacher\Date_Of_Birth.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Student_Teacher\Student\Repository\StudentRepository.java

```
package eapli.base.Student_Teacher.Student.Repository;


import eapli.base.Student_Teacher.Student.domain.MechanographicNumber;
import eapli.base.Student_Teacher.Student.domain.Student;
import eapli.framework.domain.repositories.DomainRepository;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.model.Username;
import org.springframework.stereotype.Repository;

import java.util.HashMap;
import java.util.Map;
import java.util.Optional;

@Repository
public interface StudentRepository extends
DomainRepository<MechanographicNumber, Student> {
    Map<MechanographicNumber, Student> students = new HashMap<>();

    Iterable <Student> findStudentByMechanographicNumberReturnList(String
mechanographicNumber);
    Student findStudentByMechanographicNumber(String mechanographicNumber);

    Student findStudentBySystemUser(SystemUser systemUser);

    default Student findStudentByMechanographicNumber(MechanographicNumber
mechanographicNumber) {
        return students.get(mechanographicNumber);
```

```
    }

     default void addStudent(Student student) {
        students.put(student.getMechanographicNumber(), student);
    }

    default void removeStudent(Student student){
        students.remove(student);
    }

    default void removeStudentByMechanographicNum(MechanographicNumber
mechanographicNumber){
        students.remove(mechanographicNumber);
    }

    default Student getStudentByMechanographicNum(MechanographicNumber
mechanographicNumber){
        return students.get(mechanographicNumber);
    }

    Optional<Student> findByUsername(Username name);

    Optional<Student> findByMechanographicNumber(MechanographicNumber number);
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Student_Teacher\Student\Repository\StudentRepository.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Student_Teacher\Student\domain\MechanographicNumber.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
 * MIT License
 *
 * Permission is hereby granted, free of charge, to any person obtaining a copy of this
software and
 * associated documentation files (the "Software"), to deal in the Software without
restriction,
 * including without limitation the rights to use, copy, modify, merge, publish, distribute,
 * sublicense, and/or sell copies of the Software, and to permit persons to whom the
Software is
```

```
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 * NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A
PARTICULAR PURPOSE AND
 * NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
 */
package eapli.base.Student_Teacher.Student.domain;

import javax.persistence.Embeddable;

import eapli.framework.domain.model.ValueObject;
import eapli.framework.strings.util.StringPredicates;

/**
 *
 * @author Jorge Santos ajs@isep.ipp.pt
 */
@Embeddable
public class MechanographicNumber implements ValueObject,
Comparable<MechanographicNumber> {

    private static final long serialVersionUID = 1L;

    private String number;

    public MechanographicNumber(final String mechanographicNumber) {
        if (StringPredicates.isNullOrEmpty(mechanographicNumber)) {
            throw new IllegalArgumentException(
                    "Mechanographic Number should neither be null nor empty");
        }
        this.number = mechanographicNumber;
    }

    protected MechanographicNumber() {
```

```
        // for ORM
    }

    public static MechanographicNumber valueOf(final String mechanographicNumber) {
        if (!isValidmechanographicNumber(mechanographicNumber)) {
            throw new IllegalArgumentException("Invalid mechanographic number format");
        }
        return new MechanographicNumber(mechanographicNumber);
    }

    private static boolean isValidmechanographicNumber(String mechanographicNumber)
{
        final int lowestYearAcceptable = 2000;
        final int mechanographicNumberLength = 9;
        int year = Integer.parseInt(mechanographicNumber.substring(0, 4));

        //valida o length, (9) e valida o ano minimo (2000)
        return (year >= lowestYearAcceptable) && mechanographicNumber.length() ==
mechanographicNumberLength;
    }

    @Override
    public boolean equals(final Object o) {
        if (this == o) {
            return true;
        }
        if (!(o instanceof MechanographicNumber)) {
            return false;
        }

        final MechanographicNumber that = (MechanographicNumber) o;
        return this.number.equals(that.number);
    }

    @Override
    public int hashCode() {
        return this.number.hashCode();
    }

    @Override
    public String toString() {
        return this.number;
    }
```

```
    @Override
    public int compareTo(final MechanographicNumber arg0) {
        return number.compareTo(arg0.number);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Student_Teacher\Student\domain\MechanographicNumber.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Student_Teacher\Student\domain\Student.java

```
package eapli.base.Student_Teacher.Student.domain;


import eapli.base.Student_Teacher.Date_Of_Birth;
import eapli.base.Student_Teacher.Tax_Payer_Number;
import eapli.framework.domain.model.AggregateRoot;
import eapli.framework.domain.model.DomainEntities;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import javax.persistence.*;


@Entity
public class Student implements AggregateRoot<MechanographicNumber> {

    @Id
    private MechanographicNumber mechanographicNumber;

    @OneToOne
    private SystemUser systemUser;

    @Embedded
    @AttributeOverride(name = "number", column = @Column(name =
"taxPayerNumber"))
    private Tax_Payer_Number taxPayerNumber;

    @Embedded
    private Date_Of_Birth dateOfBirth;


    public Student(){}
```

```
    public Student(SystemUser systemUser, MechanographicNumber
mechanographicNumber, Tax_Payer_Number tax_payer_number, Date_Of_Birth
dateOfBirth){
        this.systemUser=systemUser;
        this.mechanographicNumber = mechanographicNumber;
        this.taxPayerNumber=tax_payer_number;
        this.dateOfBirth=dateOfBirth;
    }

    @Override
    public String toString() {
        return "Student{" +
                "mechanographicNumber=" + mechanographicNumber +
                ", taxPayerNumber=" + taxPayerNumber +
                ", dateOfBirth=" + dateOfBirth +
                '}';
    }

    public MechanographicNumber getMechanographicNumber() {
        return this.mechanographicNumber;
    }

    public Tax_Payer_Number getTaxPayerNumber() {
        return this.taxPayerNumber;
    }


    @Override
    public boolean sameAs(Object other) {
        Student student = (Student) other;
        return this.equals(student) &&
getTaxPayerNumber().equals(student.getTaxPayerNumber()) &&
student.getDateOfBirth().equals(student.getDateOfBirth());
    }

    private Date_Of_Birth getDateOfBirth() {
        return this.dateOfBirth;
    }

    @Override
    public boolean equals(final Object o) {
        return DomainEntities.areEqual(this, o);
    }
```

```
    @Override
    public MechanographicNumber identity() {
        return mechanographicNumber;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Student_Teacher\Student\domain\Student.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Student_Teacher\Tax_Payer_Number.java

```
package eapli.base.Student_Teacher;

import lombok.*;

import javax.persistence.Embeddable;

@Embeddable
@NoArgsConstructor(access = AccessLevel.PROTECTED)
@Getter
@EqualsAndHashCode
public class Tax_Payer_Number
{
    private String number;

    public Tax_Payer_Number(String number) {
        this.number=number;
    }

    public static Tax_Payer_Number valueOf(String number) {
        // Validate the taxpayer number format and throw an IllegalArgumentException if
invalid
        if (!isValidTaxPayerNumber(number)) {
            throw new IllegalArgumentException("Invalid tax payer number format");
        }
        return new Tax_Payer_Number(number);
    }

    private static boolean isValidTaxPayerNumber(String number) {
        // Validate the taxpayer number format
        // For example, the taxpayer number may need to have a certain length and format,
or satisfy some other criteria
        // Return true if the taxpayer number is valid, and false otherwise
        return true; // Replace with actual validation logic
```

```
    }

    @Override
    public String toString() {
        return number;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Student_Teacher\Tax_Payer_Number.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Student_Teacher\Teacher\Domain\Acronym.java

```
package eapli.base.Student_Teacher.Teacher.Domain;

import javax.persistence.Embeddable;
import java.util.Objects;

@Embeddable
public class Acronym {
    private String value;

    protected Acronym() {
    }

    public Acronym(String value) {
        this.value = value.toUpperCase();
    }

    public static Acronym valueOf(String value) {
        return new Acronym(value);
    }

    @Override
    public boolean equals(Object o) {
        if (this == o) return true;
        if (o == null || getClass() != o.getClass()) return false;
        Acronym acronym = (Acronym) o;
        return value.equals(acronym.value);
    }

    @Override
    public int hashCode() {
```

```
        return Objects.hash(value);
    }

    @Override
    public String toString() {
        return value;
    }

    public String getValue() {
        return value;
    }

    public void setValue(String value) {
        this.value = value.toUpperCase();
    }


}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Student_Teacher\Teacher\Domain\Acronym.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Student_Teacher\Teacher\Domain\Teacher.java

```
package eapli.base.Student_Teacher.Teacher.Domain;

import eapli.base.Student_Teacher.Date_Of_Birth;
import eapli.base.Student_Teacher.Tax_Payer_Number;
import eapli.framework.domain.model.AggregateRoot;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

import javax.persistence.*;
import java.io.Serializable;
import java.util.Objects;

@Entity
public class Teacher implements AggregateRoot<Long>, Serializable
{

    @Id
    @GeneratedValue(strategy = GenerationType.AUTO)
    private Long id;
```

```
    @Column(unique = true)
    private Acronym acronym;

    @OneToOne
    private SystemUser systemUser;
    private Tax_Payer_Number tax_payer_number;
    private Date_Of_Birth Date_of_Birth;
    //private SystemUser systemUser;
    // O id pode ser o acronym

    public Teacher(){}

    public Teacher(SystemUser systemUser, Acronym acronym, Tax_Payer_Number
tax_payer_number, Date_Of_Birth date){
        this.systemUser=systemUser;
        this.acronym=acronym;
        this.tax_payer_number=tax_payer_number;
        this.Date_of_Birth=date;

    }

    public Acronym getAcronym() {
        return this.acronym;
    }
    @Override
    public boolean sameAs(Object other)
    {
        return Objects.equals(this.getId(), ((Teacher) other).getId());
    }

    @Override
    public String toString(){return acronym.toString();}

    public Long getId() {
        return id;
    }

    public Tax_Payer_Number getTax_payer_number() {
        return tax_payer_number;
    }

    public SystemUser getSystemUser() {
        return systemUser;
    }
```

```
    public Date_Of_Birth getDate_of_Birth() {
        return Date_of_Birth;
    }

    @Override
    public Long identity() {
        return id;
    }


}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Student_Teacher\Teacher\Domain\Teacher.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Student_Teacher\Teacher\Repository\TeacherRepository.java

```
package eapli.base.Student_Teacher.Teacher.Repository;

import eapli.base.Student_Teacher.Student.domain.Student;
import eapli.base.Student_Teacher.Teacher.Domain.Teacher;
import eapli.base.Student_Teacher.Teacher.Domain.Acronym;
import eapli.framework.domain.repositories.DomainRepository;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.model.Username;

import java.util.List;
import java.util.Optional;

public interface TeacherRepository extends DomainRepository<Long, Teacher> {
    List<Teacher> findTeacherByAcronym(Acronym acronym);

    Optional<Teacher> ofIdentity(Username id);

    Teacher findTeacherBySystemUser(SystemUser systemUser);

    void deleteOfIdentity(Username entityId);
}

    /*
    public static Optional<Teacher> findTeacherByAcronym(Acronym acronym) {
```

```
        for (Teacher teacher : teachers) {
            if (teacher.getAcronym().equals(acronym)) {
                return Optional.of(teacher);
            }
        }
        return Optional.empty();
    }



    public default Optional<Teacher> findById(Long id) {
        for (Teacher teacher : teachers) {
            if (teacher.getId().equals(id)) {
                return Optional.of(teacher);
            }
        }
        return Optional.empty();
    }

     */
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\Student_Teacher\Teacher\Repository\TeacherRepository.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\application\AcceptRefuseSignupFactory.java

```
/*
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 *
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 * of this software and associated documentation files (the "Software"), to deal
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 * copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
 *
 * The above copyright notice and this permission notice shall be included in
```

```
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OR OTHER
 * LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.clientusermanagement.application;

/**
 * A simple factory to obtain the desired implementation of the
 * {@link AcceptRefuseSignupController}.
 *
 * @author Paulo Gandra de Sousa 16/05/2019
 *
 */
public final class AcceptRefuseSignupFactory {
    private AcceptRefuseSignupFactory() {
        // ensure utility
    }

    public static AcceptRefuseSignupRequestController build() {
        // decide and try

        // return new AcceptRefuseSignupRequestControllerTxImpl();
        return new AcceptRefuseSignupRequestControllerEventfullImpl();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\application\AcceptRefuseSignupFactory.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\application\AcceptRefuseSignupRequestController.java

```
/*
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 *
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 *
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 * of this software and associated documentation files (the "Software"), to deal
 * in the Software without restriction, including without limitation the rights
 * to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
 * copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
 *
 * The above copyright notice and this permission notice shall be included in
 * all copies or substantial portions of the Software.
 *
 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR
 * IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY,
 * FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO
EVENT SHALL THE
 * AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES
OR OTHER
 * LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.clientusermanagement.application;

import eapli.base.clientusermanagement.domain.SignupRequest;

/**
 * The controller for the use case "Accept or refuse signup request".
 * <p>
 * <p/>
```

```
 * Approving a signup request needs to create/change more than one aggregate
 * instance, as such it violates the rule that one controller should only
 * create/change one aggregate instance.
 * <p>
 * <p/>
 * We provide two implementations of this controller for comparison of different
 * approaches. The (traditional) approach
 * {@link AcceptRefuseSignupRequestControllerTxImpl} creates a wrapping
 * transaction and performs the needed steps inside that transaction. It makes
 * it simple to develop and understand but hardcodes the process and fails the
 * Single Responsibility Principle (SRP) as now this class will have more than
 * one reason to change.
 * <p>
 * <p/>
 * The other approach uses events
 * {@link AcceptRefuseSignupRequestControllerEventfullImpl} and decouples the
 * different steps of the process. This makes the system more flexible if there
 * is the need to change the actual process, enforces the SRP, but increases the
 * complexity, e.g., there is the need to have an event bus, there is no global
 * status, if something fails in the middle of the process it is not easy to
 * compensate (rollback) and there is no temporal coupling so the system needs
 * to handle "waiting" for something to happen before proceeding (see
 * {@link AddClientUserOnSignupAcceptedController})
 *
 * @author Paulo Gandra de Sousa
 */
public interface AcceptRefuseSignupRequestController {

    SignupRequest acceptSignupRequest(SignupRequest theSignupRequest);

    SignupRequest refuseSignupRequest(SignupRequest theSignupRequest);

    Iterable<SignupRequest> listPendingSignupRequests();
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\application\AcceptRefuseSignupRequestController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\application\AcceptRefuseSignupRequestControllerEventfullImpl.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
```

package eapli.base.clientusermanagement.application;

import org.springframework.transaction.annotation.Transactional;

import eapli.base.clientusermanagement.domain.SignupRequest;
import eapli.base.clientusermanagement.domain.events.SignupAcceptedEvent;
import eapli.base.clientusermanagement.repositories.SignupRequestRepository;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.application.UseCaseController;
import eapli.framework.domain.events.DomainEvent;
import eapli.framework.domain.repositories.ConcurrencyException;
import eapli.framework.domain.repositories.IntegrityViolationException;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.pubsub.EventPublisher;
import eapli.framework.infrastructure.pubsub.impl.inprocess.service.InProcessPubSub;

```
import eapli.framework.validations.Preconditions;

/**
 * the controller for the use case "Accept or refuse signup request"
 *
 * this implementation makes use of domain events to (1) follow the rule that
 * one controller should only modify one aggregate, and (2) notify other parts
 * of the system to react accordingly. For an alternative transactional approach
 * see {@link AcceptRefuseSignupRequestControllerTxImpl}
 *
 * @author Paulo Gandra de Sousa
 */
@UseCaseController
public class AcceptRefuseSignupRequestControllerEventfullImpl
        implements AcceptRefuseSignupRequestController{

    private final SignupRequestRepository signupRequestsRepository =
PersistenceContext
            .repositories().signupRequests();
    private final AuthorizationService authorizationService =
AuthzRegistry.authorizationService();
    private final EventPublisher dispatcher = InProcessPubSub.publisher();

    @Override
    @SuppressWarnings("squid:S1226")
    public SignupRequest acceptSignupRequest(SignupRequest theSignupRequest) {
        authorizationService.ensureAuthenticatedUserHasAnyOf(BaseRoles.MANAGER,
                BaseRoles.ADMIN);

        Preconditions.nonNull(theSignupRequest);

        theSignupRequest = markSignupRequestAsAccepted(theSignupRequest);
        return theSignupRequest;
    }

    /**
     * modify Signup Request to accepted
     *
     * @param theSignupRequest
     * @return
     * @throws ConcurrencyException
     * @throws IntegrityViolationException
     */
    @SuppressWarnings("squid:S1226")
```

```
    private SignupRequest markSignupRequestAsAccepted(SignupRequest
theSignupRequest) {
        // do just what is needed in the scope of this use case
        theSignupRequest.accept();
        theSignupRequest = signupRequestsRepository.save(theSignupRequest);

        // notify interested parties (if any)
        final DomainEvent event = new SignupAcceptedEvent(theSignupRequest);
        dispatcher.publish(event);

        return theSignupRequest;
    }

    @Override
    @Transactional
    public SignupRequest refuseSignupRequest(final SignupRequest theSignupRequest)
{
        authorizationService.ensureAuthenticatedUserHasAnyOf(BaseRoles.MANAGER,
                BaseRoles.ADMIN);

        Preconditions.nonNull(theSignupRequest);

        theSignupRequest.refuse();
        return signupRequestsRepository.save(theSignupRequest);
    }

    /**
     *
     * @return
     */
    @Override
    public Iterable<SignupRequest> listPendingSignupRequests() {
        return signupRequestsRepository.pendingSignupRequests();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\application\AcceptRefuseSignupRequestControllerEventfullImpl.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\application\AcceptRefuseSignupRequestControllerTxImpl.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
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 *
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 * to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
 * copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
 *
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 *
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 * IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
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OR OTHER
 * LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.clientusermanagement.application;

import java.util.HashSet;
import java.util.Set;

import eapli.base.clientusermanagement.domain.ClientUserBuilder;
import eapli.base.clientusermanagement.domain.SignupRequest;
import eapli.base.clientusermanagement.repositories.ClientUserRepository;
```

```
import eapli.base.clientusermanagement.repositories.SignupRequestRepository;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.application.UseCaseController;
import eapli.framework.domain.repositories.TransactionalContext;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.UserManagementService;
import eapli.framework.infrastructure.authz.domain.model.Role;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

/**
 * The transactional controller for the use case "accept/refuse a signup
 * request".
 * <p>
 * following the guideline that a controller should only change one Aggregate,
 * we shouldn't be changing all these entities here, but should instead use
 * asynchronous events. However in this case we will take advantage of
 * TransactionalContext
 *
 * @todo handle the scenario where in the meantime the username is already used
 *       by some other user
 *
 * @author AJS on 08/04/2016.
 */
@UseCaseController
public class AcceptRefuseSignupRequestControllerTxImpl
        implements AcceptRefuseSignupRequestController {

    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    private final UserManagementService userService = AuthzRegistry.userService();

    private final TransactionalContext txCtx = PersistenceContext.repositories()
            .newTransactionalContext();
    private final ClientUserRepository clientUserRepository = PersistenceContext
            .repositories().clientUsers(txCtx);
    private final SignupRequestRepository signupRequestsRepository =
PersistenceContext
            .repositories().signupRequests(txCtx);

    /*
     * (non-Javadoc)
     *
     * @see eapli.base.clientusermanagement.application.
```

```
     * AcceptRefuseSignupRequestController#acceptSignupRequest(eapli.base.
     * clientusermanagement.domain.SignupRequest)
     */
    @Override
    public SignupRequest acceptSignupRequest(SignupRequest theSignupRequest) {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.MANAGER,
BaseRoles.ADMIN);

        if (theSignupRequest == null) {
            throw new IllegalArgumentException();
        }

        // explicitly begin a transaction
        txCtx.beginTransaction();

        final SystemUser newUser = createSystemUserForClientUser(theSignupRequest);
        createClientUser(theSignupRequest, newUser);
        theSignupRequest = acceptTheSignupRequest(theSignupRequest);

        // explicitly commit the transaction
        txCtx.commit();

        return theSignupRequest;
    }

    private SignupRequest acceptTheSignupRequest(final SignupRequest
theSignupRequest) {
        theSignupRequest.accept();
        return this.signupRequestsRepository.save(theSignupRequest);
    }

    private void createClientUser(final SignupRequest theSignupRequest,
                                  final SystemUser newUser) {
        final ClientUserBuilder clientUserBuilder = new ClientUserBuilder();

clientUserBuilder.withMecanographicNumber(theSignupRequest.mecanographicNumber
())
                .withSystemUser(newUser);
        this.clientUserRepository.save(clientUserBuilder.build());
    }

    //
    // add system user
    //
```

```
    private SystemUser createSystemUserForClientUser(final SignupRequest
theSignupRequest) {
        final Set<Role> roles = new HashSet<>();
        roles.add(BaseRoles.CLIENT_USER);
        return userService.registerUser(theSignupRequest.username(),
theSignupRequest.password(),
                theSignupRequest.name(), theSignupRequest.email(), roles);
    }

    /*
     * (non-Javadoc)
     *
     * @see eapli.base.clientusermanagement.application.
     * AcceptRefuseSignupRequestController#refuseSignupRequest(eapli.base.
     * clientusermanagement.domain.SignupRequest)
     */
    @Override
    public SignupRequest refuseSignupRequest(SignupRequest theSignupRequest) {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.MANAGER,
BaseRoles.ADMIN);

        if (theSignupRequest == null) {
            throw new IllegalArgumentException();
        }

        // explicitly begin a transaction
        txCtx.beginTransaction();

        theSignupRequest.refuse();
        theSignupRequest = signupRequestsRepository.save(theSignupRequest);

        // explicitly commit the transaction
        txCtx.commit();

        return theSignupRequest;
    }

    /*
     * (non-Javadoc)
     *
     * @see eapli.base.clientusermanagement.application.
     * AcceptRefuseSignupRequestController#listPendingSignupRequests()
     */
    @Override
```

```
    public Iterable<SignupRequest> listPendingSignupRequests() {
        return signupRequestsRepository.pendingSignupRequests();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\application\AcceptRefuseSignupRequestControllerTxImpl.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\application\ClientUserService.java

```
/*
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 *
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 * of this software and associated documentation files (the "Software"), to deal
 * in the Software without restriction, including without limitation the rights
 * to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
 * copies of the Software, and to permit persons to whom the Software is
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ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.clientusermanagement.application;
```

```
import eapli.base.Student_Teacher.Student.domain.MechanographicNumber;
import eapli.base.clientusermanagement.domain.ClientUser;
import eapli.base.clientusermanagement.repositories.ClientUserRepository;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.domain.model.Username;

import java.util.Optional;

/**
 * @author mcn
 *
 * Classe destinada a ser usada pelo sistema de reporting para obter informação
 */
public class ClientUserService {

    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    private final ClientUserRepository repo =
PersistenceContext.repositories().clientUsers();

    // Código destinado a procurar um utilizador pelo seu número mecanográfico.
    public Optional<ClientUser> findClientUserByMecNumber(
            final String mecNumber) {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.ADMIN,
BaseRoles.MANAGER);
        return repo.ofIdentity(MechanographicNumber.valueOf(mecNumber));
    }

    // Código destinado procurar um utilizador pelo seu username.
    public Optional<ClientUser> findClientUserByUsername(final Username user) {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.ADMIN,
BaseRoles.MANAGER);
        return repo.findByUsername(user);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\application\ClientUserService.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\application\ListClientUsersController.java

```
/*
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 *
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 *
 * Permission is hereby granted, free of charge, to any person obtaining a copy
 * of this software and associated documentation files (the "Software"), to deal
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 * to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
 * copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
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 * LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.clientusermanagement.application;

import eapli.base.clientusermanagement.domain.ClientUser;
import eapli.base.clientusermanagement.repositories.ClientUserRepository;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
```

```
/**
 *
 * @author losa
 */
public class ListClientUsersController {
    private final AuthorizationService authz = AuthzRegistry.authorizationService();

    private final ClientUserRepository repo =
PersistenceContext.repositories().clientUsers();

    public Iterable<ClientUser> activeClientUsers() {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.MANAGER,
BaseRoles.ADMIN);

        return this.repo.findAllActive();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\application\ListClientUsersController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\application\eventhandlers\AddClientUserOnSignupAcceptedController.java

```
/*
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 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.clientusermanagement.application.eventhandlers;

import java.util.Optional;

import eapli.base.clientusermanagement.domain.ClientUser;
import eapli.base.clientusermanagement.domain.ClientUserBuilder;
import
eapli.base.clientusermanagement.domain.events.NewUserRegisteredFromSignupEvent;
import eapli.base.clientusermanagement.repositories.ClientUserRepository;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.framework.functional.Functions;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.repositories.UserRepository;

/**
 *
 * @author Paulo Gandra de Sousa
 *
 */
/* package */ class AddClientUserOnSignupAcceptedController {

    private final UserRepository repo = PersistenceContext.repositories().users();
    private final ClientUserRepository clientUserRepository = PersistenceContext
            .repositories().clientUsers();

    public ClientUser addClientUser(final NewUserRegisteredFromSignupEvent event) {
        final Optional<SystemUser> newUser = findUser(event);

        return newUser.map(u -> {
            final ClientUserBuilder clientUserBuilder = new ClientUserBuilder();
            clientUserBuilder.withMecanographicNumber(event.mecanographicNumber())
                    .withSystemUser(u);
```

```
            return clientUserRepository.save(clientUserBuilder.build());
        }).orElseThrow(IllegalStateException::new);
    }

    @SuppressWarnings("squid:S1488")
    private Optional<SystemUser> findUser(final NewUserRegisteredFromSignupEvent
event) {
        // since we are using events, the actual user may not yet be
        // created, so lets give it a time and wait
        final Optional<SystemUser> newUser = Functions
                .retry(() -> repo.ofIdentity(event.username()), 1000, 3);
        return newUser;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\application\eventhandlers\AddClientUserOnSignupAcceptedController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\application\eventhandlers\NewUserRegisteredFromSignupWatchDog.java

```
/*
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```

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 */
package eapli.base.clientusermanagement.application.eventhandlers;

import
eapli.base.clientusermanagement.domain.events.NewUserRegisteredFromSignupEvent;
import eapli.framework.domain.events.DomainEvent;
import eapli.framework.infrastructure.pubsub.EventHandler;

/**
 * @author Paulo Gandra de Sousa
 *
 */
public class NewUserRegisteredFromSignupWatchDog implements EventHandler {

    /*
     * (non-Javadoc)
     *
     * @see eapli.framework.domain.events.EventHandler#onEvent(eapli.framework.
     * domain. events.DomainEvent)
     */
    @Override
    public void onEvent(final DomainEvent domainevent) {
        assert domainevent instanceof NewUserRegisteredFromSignupEvent;

        final NewUserRegisteredFromSignupEvent event =
(NewUserRegisteredFromSignupEvent) domainevent;

        final AddClientUserOnSignupAcceptedController
                controller = new AddClientUserOnSignupAcceptedController();
        controller.addClientUser(event);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\application\eventhandlers\NewUserRegisteredFromSignupWatchDog.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\domain\ApprovalStatus.java

```
/*
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 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
 */
package eapli.base.clientusermanagement.domain;

/**
 *
 * @author Jorge Santos ajs@isep.ipp.pt
 */
public enum ApprovalStatus {
    PENDING, ACCEPTED, REFUSED;
```

}

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\domain\ApprovalStatus.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\domain\ClientUser.java

```
/*
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 * copies of the Software, and to permit persons to whom the Software is
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OR OTHER
 * LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.clientusermanagement.domain;

import eapli.base.Student_Teacher.Student.domain.MechanographicNumber;
import eapli.framework.domain.model.AggregateRoot;
import eapli.framework.domain.model.DomainEntities;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
```

```
import javax.persistence.EmbeddedId;
import javax.persistence.Entity;
import javax.persistence.OneToOne;
import javax.persistence.Version;

/**
 * A Client User.
 *
 * This class represents client users. It follows a DDD approach where User
 * is the root entity of the Base User Aggregate and all of its properties
 * are instances of value objects. A Client User references a System User
 *
 * This approach may seem a little more complex than just having String or
 * native type attributes but provides for real semantic of the domain and
 * follows the Single Responsibility Pattern
 *
 * @author Jorge Santos ajs@isep.ipp.pt
 *
 */
@Entity
public class ClientUser implements AggregateRoot<MechanographicNumber> {

    @Version
    private Long version;

    @EmbeddedId
    private MechanographicNumber mechanographicNumber;

    /**
     * cascade = CascadeType.NONE as the systemUser is part of another aggregate
     */
    @OneToOne()
    private SystemUser systemUser;

    public ClientUser(final SystemUser user, final MechanographicNumber
mechanographicNumber) {
        if (mechanographicNumber == null || user == null) {
            throw new IllegalArgumentException();
        }
        this.systemUser = user;
        this.mechanographicNumber = mechanographicNumber;
    }
```

```
    protected ClientUser() {
        // for ORM only
    }

    public SystemUser user() {
        return this.systemUser;
    }

    @Override
    public boolean equals(final Object o) {
        return DomainEntities.areEqual(this, o);
    }

    @Override
    public int hashCode() {
        return DomainEntities.hashCode(this);
    }

    @Override
    public boolean sameAs(final Object other) {
        return DomainEntities.areEqual(this, other);
    }

    public MechanographicNumber mechanographicNumber() {
        return identity();
    }

    @Override
    public MechanographicNumber identity() {
        return this.mechanographicNumber;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\domain\ClientUser.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\domain\ClientUserBuilder.java

```
/*
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 *
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```

```
package eapli.base.clientusermanagement.domain;

import eapli.base.Student_Teacher.Student.domain.MechanographicNumber;
import eapli.framework.domain.model.DomainFactory;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

/**
 * A factory for User entities.
 *
 * This class demonstrates the use of the factory (DDD) pattern using a fluent
 * interface. it acts as a Builder (GoF).
 *
 * @author Jorge Santos ajs@isep.ipp.pt 02/04/2016
 */
public class ClientUserBuilder implements DomainFactory<ClientUser> {

    private SystemUser systemUser;
    private MechanographicNumber mechanographicNumber;

    public ClientUserBuilder withSystemUser(final SystemUser systemUser) {
```

```
        this.systemUser = systemUser;
        return this;
    }

    public ClientUserBuilder withMecanographicNumber(final MechanographicNumber
mechanographicNumber) {
        this.mechanographicNumber = mechanographicNumber;
        return this;
    }

    public ClientUserBuilder withMecanographicNumber(final String
mecanographicNumber) {
        this.mechanographicNumber = new
MechanographicNumber(mecanographicNumber);
        return this;
    }

    @Override
    public ClientUser build() {
        // since the factory knows that all the parts are needed it could throw
        // an exception. however, we will leave that to the constructor
        return new ClientUser(this.systemUser, this.mechanographicNumber);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\domain\ClientUserBuilder.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\domain\SignupRequest.java

```
/*
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 */
package eapli.base.clientusermanagement.domain;

import eapli.base.Student_Teacher.Student.domain.MechanographicNumber;
import eapli.framework.domain.model.AggregateRoot;
import eapli.framework.domain.model.DomainEntities;
import eapli.framework.general.domain.model.EmailAddress;
import eapli.framework.infrastructure.authz.domain.model.Name;
import eapli.framework.infrastructure.authz.domain.model.Password;
import eapli.framework.infrastructure.authz.domain.model.Username;
import eapli.framework.validations.Preconditions;

import javax.persistence.*;
import java.util.Calendar;

/**
 * A Signup Request. This class represents the Signup Request created right
 * after a person applies for a Client User account.
 *
 * <p>
 * It follows a DDD approach where all of its properties are instances of value
 * objects. This approach may seem a little more complex than just having String
 * or native type attributes but provides for real semantic of the domain and
 * follows the Single Responsibility Pattern.
 *
 * @author Jorge Santos ajs@isep.ipp.pt
 *
```

```
 */
@Entity
public class SignupRequest implements AggregateRoot<Username> {

    private static final long serialVersionUID = 1L;

    @Version
    private Long version;

    @EmbeddedId
    private Username username;
    private Password password;
    private Name name;
    private EmailAddress email;

    private MechanographicNumber mechanographicNumber;

    @Enumerated(EnumType.STRING)
    private ApprovalStatus approvalStatus;
    @Temporal(TemporalType.DATE)
    private Calendar createdOn;

    /* package */ SignupRequest(final Username username, final Password password,
final Name name,
            final EmailAddress email, final MechanographicNumber
mechanographicNumber,
            final Calendar createdOn) {
        Preconditions.noneNull(username, password, name, email,
mechanographicNumber);

        this.username = username;
        this.password = password;
        this.name = name;
        this.email = email;
        this.mechanographicNumber = mechanographicNumber;
        // by default
        approvalStatus = ApprovalStatus.PENDING;
        this.createdOn = createdOn;
    }

    protected SignupRequest() {
        // for ORM only
    }
```

```
public void accept() {
    approvalStatus = ApprovalStatus.ACCEPTED;
}

public void refuse() {
    approvalStatus = ApprovalStatus.REFUSED;
}

@Override
public boolean equals(final Object o) {
    return DomainEntities.areEqual(this, o);
}

@Override
public int hashCode() {
    return DomainEntities.hashCode(this);
}

@Override
public boolean sameAs(final Object other) {
    if (!(other instanceof SignupRequest)) {
        return false;
    }

    final SignupRequest that = (SignupRequest) other;
    if (this == that) {
        return true;
    }

    return username.equals(that.username) && password.equals(that.password)
            && name.equals(that.name) && email.equals(that.email)
            && mechanographicNumber.equals(that.mechanographicNumber);
}

public MechanographicNumber mecanographicNumber() {
    return mechanographicNumber;
}

@Override
public Username identity() {
    return username;
}

public Username username() {
```

```
        return username;
    }

    public Name name() {
        return name;
    }

    public boolean isPending() {
        return approvalStatus == ApprovalStatus.PENDING;
    }

    public EmailAddress email() {
        return email;
    }

    public Password password() {
        return password;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\domain\SignupRequest.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\domain\SignupRequestBuilder.java

```
/*
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 */
package eapli.base.clientusermanagement.domain;

import eapli.base.Student_Teacher.Student.domain.MechanographicNumber;
import eapli.framework.domain.model.DomainFactory;
import eapli.framework.general.domain.model.EmailAddress;
import eapli.framework.infrastructure.authz.application.PasswordPolicy;
import eapli.framework.infrastructure.authz.domain.model.Name;
import eapli.framework.infrastructure.authz.domain.model.Password;
import eapli.framework.infrastructure.authz.domain.model.Username;
import eapli.framework.time.util.CurrentTimeCalendars;
import org.springframework.security.crypto.password.PasswordEncoder;
import org.springframework.stereotype.Component;

import java.util.Calendar;

/**
 * A factory for Signup Requests.
 *
 * <p>
 * This class demonstrates the use of the factory (DDD) pattern using a fluent
 * interface. it acts as a Builder (GoF).
 *
 * @author Jorge Santos ajs@isep.ipp.pt 02/04/2016
 */
@Component
public class SignupRequestBuilder implements DomainFactory<SignupRequest> {

    private final PasswordPolicy policy;
    private final PasswordEncoder encoder;

    private String username;
```

```
    private Password password;
    private String firstName;
    private String lastName;
    private String email;
    private String mecanographicNumber;
    private Calendar createdOn;

    public SignupRequestBuilder(final PasswordPolicy policy, final PasswordEncoder
encoder) {
        this.policy = policy;
        this.encoder = encoder;
    }

    public SignupRequestBuilder withData(final String username, final String
rawPassword,
            final String email, final String number) {
        withUsername(username);
        withPassword(rawPassword);
        withEmail(email);
        withMecanographicNumber(number);
        return this;
    }

    public SignupRequestBuilder withUsername(final String username) {
        this.username = username;
        return this;
    }

    public SignupRequestBuilder withPassword(final String rawPassword) {
        password = Password.encodedAndValid(rawPassword, policy, encoder)
                .orElseThrow(IllegalArgumentException::new);
        return this;
    }

    public SignupRequestBuilder withName(final String firstName, final String lastName) {
        this.firstName = firstName;
        this.lastName = lastName;
        return this;
    }

    public SignupRequestBuilder withEmail(final String email) {
        this.email = email;
        return this;
    }
```

```
    public SignupRequestBuilder withMecanographicNumber(final String
mecanographicNumber) {
        this.mecanographicNumber = mecanographicNumber;
        return this;
    }

    public SignupRequestBuilder createdOn(final Calendar createdOn) {
        this.createdOn = createdOn;
        return this;
    }

    @Override
    public SignupRequest build() {
        // since the factory knows that all the parts are needed it could throw
        // an exception. however, we will leave that to the constructor
        if (createdOn != null) {
            createdOn = CurrentTimeCalendars.now();
        }
        return new SignupRequest(Username.valueOf(username), password,
                Name.valueOf(firstName, lastName), EmailAddress.valueOf(email),
                MechanographicNumber.valueOf(mecanographicNumber), createdOn);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\domain\SignupRequestBuilder.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\domain\events\NewUserRegisteredFromSignupEvent.java

```
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 */
package eapli.base.clientusermanagement.domain.events;

import eapli.base.Student_Teacher.Student.domain.MechanographicNumber;
import eapli.framework.domain.events.DomainEvent;
import eapli.framework.domain.events.DomainEventBase;
import eapli.framework.infrastructure.authz.domain.model.Username;

/**
 * @author Paulo Gandra de Sousa
 *
 */
public class NewUserRegisteredFromSignupEvent extends DomainEventBase
implements DomainEvent {

    private static final long serialVersionUID = 1L;

    private final MechanographicNumber mechanographicNumber;
    private final Username newUser;

    public NewUserRegisteredFromSignupEvent(final MechanographicNumber
mechanographicNumber,
            final Username newUser) {
        this.mechanographicNumber = mechanographicNumber;
        this.newUser = newUser;
    }
```

```
    public MechanographicNumber mecanographicNumber() {
        return mechanographicNumber;
    }

    public Username username() {
        return newUser;
    }

    @Override
    public String toString() {
        return "NewUserFromsignup(" + username() + ")";
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\domain\events\NewUserRegisteredFromSignupEvent.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\domain\events\SignupAcceptedEvent.java

```
/*
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 */
package eapli.base.clientusermanagement.domain.events;

import eapli.base.Student_Teacher.Student.domain.MechanographicNumber;
import eapli.base.clientusermanagement.domain.SignupRequest;
import eapli.framework.domain.events.DomainEventBase;
import eapli.framework.general.domain.model.EmailAddress;
import eapli.framework.infrastructure.authz.domain.model.Name;
import eapli.framework.infrastructure.authz.domain.model.Password;
import eapli.framework.infrastructure.authz.domain.model.Username;

/**
 * @author Paulo Gandra de Sousa
 *
 */
public class SignupAcceptedEvent extends DomainEventBase {

    private static final long serialVersionUID = 1L;

    private final SignupRequest theSignupRequest;

    public SignupAcceptedEvent(final SignupRequest theSignupRequest) {
        this.theSignupRequest = theSignupRequest;
    }

    public Username username() {
        return theSignupRequest.username();
    }

    public Password password() {
        return theSignupRequest.password();
    }

    public Name name() {
        return theSignupRequest.name();
    }

    public EmailAddress email() {
        return theSignupRequest.email();
```

```
    }

    public MechanographicNumber mecanographicNumber() {
        return theSignupRequest.mecanographicNumber();
    }

    @Override
    public String toString() {
        return "SignupAccepted(" + username() + ")";
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\domain\events\SignupAcceptedEvent.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\repositories\ClientUserRepository.java

```
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 */
package eapli.base.clientusermanagement.repositories;

import eapli.base.Student_Teacher.Student.domain.MechanographicNumber;
import eapli.base.clientusermanagement.domain.ClientUser;
import eapli.framework.domain.repositories.DomainRepository;
import eapli.framework.infrastructure.authz.domain.model.Username;

import java.util.Optional;

/**
 *
 * @author Jorge Santos ajs@isep.ipp.pt 02/04/2016
 */
public interface ClientUserRepository extends
DomainRepository<MechanographicNumber, ClientUser> {

    /**
     * returns the client user (utente) whose username is given
     *
     * @param name
     *            the username to search for
     * @return
     */
    Optional<ClientUser> findByUsername(Username name);

    /**
     * returns the client user (utente) with the given mecanographic number
     *
     * @param number
     * @return
     */
    default Optional<ClientUser> findByMechanographicNumber(final
MechanographicNumber number) {
        return ofIdentity(number);
    }

    public Iterable<ClientUser> findAllActive();
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\repositories\ClientUserRepository.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\repositories\SignupRequestRepository.java

```
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 */
package eapli.base.clientusermanagement.repositories;

import eapli.base.clientusermanagement.domain.SignupRequest;
import eapli.framework.domain.repositories.DomainRepository;
import eapli.framework.infrastructure.authz.domain.model.Username;

/**
 *
 * @author Jorge Santos ajs@isep.ipp.pt 02/04/2016
```

```
 */
public interface SignupRequestRepository extends DomainRepository<Username,
SignupRequest> {

    Iterable<SignupRequest> pendingSignupRequests();
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\clientusermanagement\repositories\SignupRequestRepository.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\application\CreateExamController.java

```
package eapli.base.exammanagement.application;

import eapli.base.Course.Domain.Course;
import eapli.base.exammanagement.domain.Exam;
import eapli.base.exammanagement.domain.ExamTime;
import eapli.base.exammanagement.domain.ExamDate;
import eapli.base.exammanagement.domain.ExamTitle;
import eapli.base.exammanagement.repository.ExamRepository;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.application.UseCaseController;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;

import java.sql.Date;
import java.sql.Time;

/**
 * CreateExamController - Criar um Exame
 *
 * Created by João Cruz
 *
 */

@UseCaseController
public class CreateExamController {
    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    private ExamRepository examRepository;

    public void setExamRepository(ExamRepository examRepository) {
```

```
        this.examRepository = examRepository;
    }

    public Exam createExam(String examName, Date examDate, Time openTime, Time
closeTime, Course course) {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.TEACHER,
BaseRoles.ADMIN);

        ExamTitle examTitle = new ExamTitle(examName);
        ExamDate examDateObj = new ExamDate(examDate);
        ExamTime examTime = new ExamTime(openTime, closeTime);

        Exam newExam = new Exam(examTitle, examDateObj, examTime, course);
        examRepository.save(newExam); // Salva no repositório do Exame
        return newExam;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\application\CreateExamController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\application\CreateExamService.java

```
package eapli.base.exammanagement.application;

import eapli.base.Course.Domain.Course;
import eapli.base.Course.Repository.CourseRepository;
import eapli.base.exammanagement.domain.Exam;
import eapli.base.exammanagement.repository.ExamRepository;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.application.ApplicationService;
import eapli.framework.infrastructure.authz.application.AuthorizationService;

/**
 * Adicionar Serviço de Exame
 * Created and Edited by João Cruz
 * Inspired and Based on Daniel Braga's and EAPLI's code
 */

@ApplicationService
public class CreateExamService {
```

```
    private final AuthorizationService authz;
    private final ExamRepository examRepository;
    private final CourseRepository courseRepository;

    public CreateExamService(final AuthorizationService authz, final ExamRepository
examRepository, final CourseRepository courseRepository) {
        this.authz = authz;
        this.examRepository = examRepository;
        this.courseRepository = courseRepository;
    }

    public Iterable<Exam> courseExams(Course course) {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.TEACHER,
BaseRoles.ADMIN);

        return examRepository.findByCourse(course);
    }

    public Iterable<Course> courses() {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.TEACHER,
BaseRoles.ADMIN);

        return courseRepository.findAll();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\application\CreateExamService.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\application\ListCourseExamsController.java

```
package eapli.base.exammanagement.application;

import eapli.base.Course.Domain.Course;
import eapli.base.Course.Repository.CourseRepository;
import eapli.base.exammanagement.domain.Exam;
import eapli.base.exammanagement.repository.ExamRepository;
import eapli.framework.infrastructure.authz.application.AuthorizationService;

import java.util.Iterator;
```

```
public class ListCourseExamsController {

    private final ListCourseExamsService svc;

    public ListCourseExamsController(final AuthorizationService authz, final
ExamRepository examRepository, final CourseRepository courseRepository) {
        // dependency injection - to make this object more testable we don't create the
        // infrastructure objects to avoid coupling to the implementation. This way, the
controller
        // can be used in different scenarios with different implementations of the repository.
for
        // instance, unit testing.
        svc = new ListCourseExamsService(authz, examRepository, courseRepository);
    }

    /**
     * List all exams.
     *
     * @return
     */
    public Iterable<Exam> listCourseExams(Course course) {
        return svc.courseExams(course);
    }

    public Iterable<Course> listCourses() {
        return svc.courses();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\application\ListCourseExamsController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\application\ListCourseExamsService.java

```
package eapli.base.exammanagement.application;

import eapli.base.Course.Domain.Course;
import eapli.base.Course.Repository.CourseRepository;
import eapli.base.exammanagement.domain.Exam;
import eapli.base.exammanagement.repository.ExamRepository;
import eapli.base.usermanagement.domain.BaseRoles;
```

```
import eapli.framework.application.ApplicationService;
import eapli.framework.infrastructure.authz.application.AuthorizationService;

import java.util.Iterator;

@ApplicationService
class ListCourseExamsService {
    private final AuthorizationService authz;
    private final ExamRepository examRepository;
    private final CourseRepository courseRepository;

    public ListCourseExamsService(final AuthorizationService authz, final
ExamRepository examRepository, final CourseRepository courseRepository) {
        this.authz = authz;
        this.examRepository = examRepository;
        this.courseRepository = courseRepository;
    }

    /**
     * @return
     */
    public Iterable<Exam> courseExams(Course course) {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.TEACHER,
BaseRoles.ADMIN);

        return examRepository.findByCourse(course);
    }

    public Iterable<Course> courses() {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.TEACHER,
BaseRoles.ADMIN);

        return courseRepository.findAll();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\application\ListCourseExamsService.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\application\ListFutureExamsController.java

```
package eapli.base.exammanagement.application;

import eapli.base.Student_Teacher.Student.Repository.StudentRepository;
import eapli.base.Student_Teacher.Student.domain.MechanographicNumber;
import eapli.base.Student_Teacher.Student.domain.Student;
import eapli.base.exammanagement.domain.Exam;
import eapli.base.exammanagement.repository.ExamRepository;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

import java.util.Optional;

public class ListFutureExamsController {

    private final ListFutureExamsService svc;

    public ListFutureExamsController(final AuthorizationService authz, final
ExamRepository examRepository, final StudentRepository studentRepository) {
        // dependency injection - to make this object more testable we don't create the
        // infrastructure objects to avoid coupling to the implementation. This way, the
controller
        // can be used in different scenarios with different implementations of the repository.
for
        // instance, unit testing.
        svc = new ListFutureExamsService(authz, examRepository, studentRepository);
    }

    /**
     * List all exams.
     *
     * @return
     */
        public Iterable<Exam> listFutureExams(Student student) {
        return svc.futureExams(student);
    }

    public Student findStudentBySystemUser(SystemUser systemUser){
```

```
        return svc.findStudentBySystemUser(systemUser);
    }

}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\application\ListFutureExamsController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\application\ListFutureExamsService.java

```
package eapli.base.exammanagement.application;

import eapli.base.Student_Teacher.Student.Repository.StudentRepository;
import eapli.base.Student_Teacher.Student.domain.MechanographicNumber;
import eapli.base.Student_Teacher.Student.domain.Student;
import eapli.base.exammanagement.domain.Exam;
import eapli.base.exammanagement.repository.ExamRepository;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

import java.util.Optional;

public class ListFutureExamsService {

    private final AuthorizationService authz;
    private final ExamRepository examRepository;

    private final StudentRepository studentRepository;

    public ListFutureExamsService(final AuthorizationService authz, final ExamRepository
examRepository, final StudentRepository studentRepository) {
        this.authz = authz;
        this.examRepository = examRepository;
        this.studentRepository=studentRepository;
    }

    /**
     * @return
     */
```

```
    public Iterable<Exam> futureExams(Student student) {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.STUDENT,
BaseRoles.ADMIN);

        return examRepository.findStudentFutureExams(student);
    }

    public Student findStudentBySystemUser(SystemUser systemUser){
        return studentRepository.findStudentBySystemUser(systemUser);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\application\ListFutureExamsService.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\domain\Exam.java

```
package eapli.base.exammanagement.domain;

import eapli.base.Course.Domain.Course;
import eapli.framework.domain.model.AggregateRoot;
import eapli.framework.domain.model.DomainEntities;
import eapli.framework.validations.Preconditions;
import lombok.NoArgsConstructor;

import javax.persistence.*;
import java.lang.String;

@Entity
@Table(name = "EXAM")
public class Exam implements AggregateRoot<Long> {
    @Id
    @GeneratedValue(strategy = GenerationType.AUTO)
    @Column(name = "IDEXAM")
    private Long id;

    @Embedded
    private ExamTitle examTitle;

    @Embedded
    private ExamResult result;
```

```
    @Embedded
    private ExamTime examTime;

    @Embedded
    private ExamDate examDate;

    @ManyToOne
    @JoinColumn(name = "COURSE_ID")
    private Course examCourse;

    public Exam(ExamTitle examTitle, ExamDate examDate, ExamTime examTime,
Course course) {
        Preconditions.noneNull(examTitle, examDate, course);

        this.examTitle = examTitle;
        this.examDate = examDate;
        this.examTime = examTime;
        this.examCourse = course;
        this.result = null;
    }

    protected Exam(){}

    @Override
    public boolean equals(Object o) {
        return DomainEntities.areEqual(this, o);
    }

    @Override
    public boolean sameAs(Object other) {
        Exam exam = (Exam) other;
        return this.equals(exam) && equals(exam.getExamCourse()) &&
getExamDate().equals(exam.getExamDate()) &&
getExamTime().equals(exam.getExamTime()) && getResult().equals(exam.getResult())
&& getExamTitle().equals(exam.getExamTitle());
    }

    public ExamTitle getExamTitle() {
        return this.examTitle;
    }

    public Course getExamCourse() {
        return this.examCourse;
    }
```

```
    public ExamDate getExamDate() {
        return this.examDate;
    }

    public ExamTime getExamTime() {
        return this.examTime;
    }

    public ExamResult getResult() {
        return this.result;
    }

    public void setResult(ExamResult result) {
        this.result = result;
    }

    @Override
    public String toString() {
        return id.toString();
    }

    @Override
    public Long identity() {
        return this.id;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\domain\Exam.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\domain\ExamDate.java

```
package eapli.base.exammanagement.domain;

import eapli.framework.domain.model.ValueObject;
import org.springframework.format.annotation.DateTimeFormat;

import javax.persistence.Embeddable;
import java.util.Date;

@Embeddable
public class ExamDate implements ValueObject {

    @DateTimeFormat(pattern = "dd-MM-yyyy")
```

```
    private Date examDate;

    protected ExamDate() {
    }

    public ExamDate(Date examDate) {
        if (!isValidExamDate(examDate)) {
            throw new IllegalArgumentException("Invalid exam date format");
        }
        this.examDate = examDate;
    }

    private static boolean isValidExamDate(Date examDate) {
        Date date = new Date(System.currentTimeMillis());
        return examDate.after(date);
    }

    public Date getExamDate() {
        return examDate;
    }

    public void setExamDate(Date examDate) {
        this.examDate = examDate;
    }

    @Override
    public boolean equals(Object o) {
        if (this == o) return true;
        if (o == null || getClass() != o.getClass()) return false;
        ExamDate that = (ExamDate) o;
        return examDate.equals(that.examDate);
    }

    @Override
    public String toString() {
        return examDate.toString();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\domain\ExamDate.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\domain\ExamResult.java

```
package eapli.base.exammanagement.domain;

import eapli.framework.domain.model.ValueObject;

import javax.persistence.Embeddable;

@Embeddable
public class ExamResult implements ValueObject {

    private float number;

    protected ExamResult(){
    }

    public ExamResult(float number) {
        this.number = number;
    }

    public static ExamResult valueOf(float number) {
        if (!isValidExamResult(number)) {
            throw new IllegalArgumentException("Invalid exam result format");
        }
        return new ExamResult(number);
    }

    private static boolean isValidExamResult(float number) {
        return number > 0 && number < 20;
    }

    public float getNumber() {
        return number;
    }

    public void setNumber(float number) {
        this.number = number;
    }

    @Override
    public boolean equals(Object o) {
```

```
        if (this == o) return true;
        if (o == null || getClass() != o.getClass()) return false;
        ExamResult that = (ExamResult) o;
        return Float.compare(that.number, number) == 0;
    }

    @Override
    public int hashCode() {
        return Float.hashCode(number);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\domain\ExamResult.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\domain\ExamTime.java

```
package eapli.base.exammanagement.domain;

import eapli.framework.domain.model.ValueObject;
import org.springframework.format.annotation.DateTimeFormat;

import javax.persistence.Embeddable;
import java.util.Date;
import java.util.Objects;

@Embeddable
public class ExamTime implements ValueObject {

    @DateTimeFormat(pattern = "hh:mm")
    private Date openDate;
    @DateTimeFormat(pattern = "hh:mm")
    private Date closeDate;

    protected ExamTime() {
    }

    public ExamTime(Date openDate, Date closeDate) {
        if (!isValidExamTime(openDate, closeDate)) {
            throw new IllegalArgumentException("Invalid exam time format");
        }
        this.openDate = openDate;
        this.closeDate = closeDate;
    }
```

```
    private static boolean isValidExamTime(Date openDate, Date closeDate) {
        return closeDate.after(openDate);
    }

    public Date getOpenDate() {
        return openDate;
    }

    public void setOpenDate(Date openDate) {
        this.openDate = openDate;
    }

    public Date getCloseDate() {
        return closeDate;
    }

    public void setCloseDate(Date closeDate) {
        this.closeDate = closeDate;
    }

    @Override
    public String toString() {
        return openDate.toString() + " - " + closeDate.toString();
    }

    @Override
    public boolean equals(Object o) {
        if (this == o) return true;
        if (o == null || getClass() != o.getClass()) return false;
        ExamTime examTime = (ExamTime) o;
        return openDate.equals(examTime.openDate) &&
closeDate.equals(examTime.closeDate);
    }

    @Override
    public int hashCode() {
        return Objects.hash(openDate, closeDate);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\domain\ExamTime.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\domain\ExamTitle.java

```
package eapli.base.exammanagement.domain;

import eapli.framework.domain.model.ValueObject;
import eapli.framework.validations.Preconditions;

import javax.persistence.Embeddable;
import java.util.Objects;

@Embeddable
public class ExamTitle implements ValueObject {

    private String title;

    protected ExamTitle() {
    }

    public ExamTitle(String title) throws IllegalArgumentException {
        Preconditions.ensure(title != null && !title.isEmpty(), "Invalid title");
        this.title = title;
    }

    @Override
    public String toString() {
        return String.format("Title: %s", title);
    }

    public String getTitle() {
        return this.title;
    }

    public String setTitle() {
        return this.title;
    }

    @Override
    public boolean equals(Object o) {
        if (this == o) return true;
        if (o == null || getClass() != o.getClass()) return false;
```

```
        ExamTitle other = (ExamTitle) o;
        return Objects.equals(title, other.title);
    }

    @Override
    public int hashCode() {
        return Objects.hash(title);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\domain\ExamTitle.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\repository\ExamRepository.java

```
package eapli.base.exammanagement.repository;

import eapli.base.Course.Domain.Course;
import eapli.base.Student_Teacher.Student.domain.MechanographicNumber;
import eapli.base.Student_Teacher.Student.domain.Student;
import eapli.base.exammanagement.domain.Exam;
import eapli.framework.domain.repositories.DomainRepository;

public interface ExamRepository extends DomainRepository<Long, Exam> {

    Iterable<Exam> findStudentFutureExams(Student student);

    Iterable<Exam> findByCourse(Course course);
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\exammanagement\repository\ExamRepository.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\infrastructure\persistence\PersistenceContext.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
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```

```
software and
 * associated documentation files (the "Software"), to deal in the Software without
restriction,
 * including without limitation the rights to use, copy, modify, merge, publish, distribute,
 * sublicense, and/or sell copies of the Software, and to permit persons to whom the
Software is
 * furnished to do so, subject to the following conditions:
 *
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 * substantial portions of the Software.
 *
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EXPRESS OR IMPLIED, INCLUDING BUT
 * NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A
PARTICULAR PURPOSE AND
 * NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
 */
package eapli.base.infrastructure.persistence;

import org.slf4j.Logger;
import org.slf4j.LoggerFactory;

import eapli.base.Application;
import eapli.framework.util.Utility;

/**
 * provides easy access to the persistence layer. works as a factory of
 * factories
 *
 * @author Paulo Gandra Sousa
 */
@Utility
public final class PersistenceContext {
    private static final Logger LOGGER =
LoggerFactory.getLogger(PersistenceContext.class);

    private static RepositoryFactory theFactory;

    private PersistenceContext() {
```

```
        // ensure utility
    }

    public static RepositoryFactory repositories() {
        if (theFactory == null) {
            final String factoryClassName = Application.settings().getRepositoryFactory();
            try {
                theFactory = (RepositoryFactory)
Class.forName(factoryClassName).newInstance();
            } catch (ClassNotFoundException | IllegalAccessException |
InstantiationException ex) {
                LOGGER.error("Unable to dynamically load the Repository Factory", ex);
                throw new IllegalStateException(
                        "Unable to dynamically load the Repository Factory: " +
factoryClassName, ex);
            }
        }
        return theFactory;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\infrastructure\persistence\PersistenceContext.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\infrastructure\persistence\RepositoryFactory.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
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 *
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software and
 * associated documentation files (the "Software"), to deal in the Software without
restriction,
 * including without limitation the rights to use, copy, modify, merge, publish, distribute,
 * sublicense, and/or sell copies of the Software, and to permit persons to whom the
Software is
 * furnished to do so, subject to the following conditions:
 *
 * The above copyright notice and this permission notice shall be included in all copies or
```

```
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 * NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A
PARTICULAR PURPOSE AND
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HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
 */
package eapli.base.infrastructure.persistence;

import eapli.base.Classe.repository.ClassRepository;
import eapli.base.Course.Repository.CourseRepository;
import eapli.base.ExtraClasse.aplication.ExtraClassController;
import eapli.base.ExtraClasse.repository.ExtraClasseRepository;
import eapli.base.SharedBoard.repository.SharedBoardRepository;
import eapli.base.Student_Teacher.Student.Repository.StudentRepository;
import eapli.base.Student_Teacher.Teacher.Repository.TeacherRepository;
import eapli.base.clientusermanagement.repositories.ClientUserRepository;
import eapli.base.clientusermanagement.repositories.SignupRequestRepository;
import eapli.base.exammanagement.repository.ExamRepository;
import eapli.base.meetingmanagement.repository.InviteRepository;
import eapli.base.meetingmanagement.repository.MeetingRepository;
import eapli.base.systemUserManagement.SystemUserRepository;
import eapli.framework.domain.repositories.TransactionalContext;
import eapli.framework.infrastructure.authz.domain.repositories.UserRepository;

/**
 * @author Paulo Gandra Sousa
 *
 */
public interface RepositoryFactory {

    /**
     * factory method to create a transactional context to use in the repositories
     *
     * @return
     */
    TransactionalContext newTransactionalContext();
```

```
/**
 *
 * @param autoTx
 *            the transactional context to enrol
 * @return
 */
UserRepository users(TransactionalContext autoTx);

/**
 * repository will be created in auto transaction mode
 *
 * @return
 */
UserRepository users();

/**
 *
 * @param autoTx
 *            the transactional context to enroll
 * @return
 */
ClientUserRepository clientUsers(TransactionalContext autoTx);

/**
 * repository will be created in auto transaction mode
 *
 * @return
 */
ClientUserRepository clientUsers();

/**
 *
 * @param autoTx
 *            the transactional context to enroll
 * @return
 */
SignupRequestRepository signupRequests(TransactionalContext autoTx);

/**
 * repository will be created in auto transaction mode
 *
 * @return
 */
SignupRequestRepository signupRequests();
```

```
    ExamRepository examRepository();

    CourseRepository courseRepository();

    MeetingRepository meetingRepository();

    InviteRepository inviteRepository();

    ClassRepository classRepository();

    ExtraClasseRepository extraClassRepostory();

    SystemUserRepository systemUserRepository();


    TeacherRepository teacherRepository();

    StudentRepository studentRepository();

    ClientUserRepository clientUserRepository();

    SharedBoardRepository sharedBoardRepository();
    eapli.base.Enrollment.Repository.EnrollmentRepository enrollmentRepository();
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\infrastructure\persistence\RepositoryFactory.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\application\AcceptRefuseInvitesController.java

```
package eapli.base.meetingmanagement.application;

import eapli.base.meetingmanagement.domain.Invite;
import eapli.base.meetingmanagement.repository.InviteRepository;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.model.Username;

public class AcceptRefuseInvitesController {
```

```
    private final AcceptRefuseInvitesService svc;

    public AcceptRefuseInvitesController(final AuthorizationService authz, final
InviteRepository inviteRepository) {
        // dependency injection - to make this object more testable we don't create the
        // infrastructure objects to avoid coupling to the implementation. This way, the
controller
        // can be used in different scenarios with different implementations of the repository.
for
        // instance, unit testing.
        svc = new AcceptRefuseInvitesService(authz, inviteRepository);
    }

    /**
     * List all exams.
     *
     * @return
     */
//    public Iterable<Invite> invitesReceived(Username username) {
//        return svc.invitesReceived(username);
//    }

    public void acceptInvite(Invite invite, SystemUser systemUser){
        svc.acceptInvite(invite, systemUser);
    }

    public void refuseInvite(Invite invite){
        svc.refuseInvite(invite);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\application\AcceptRefuseInvitesController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\application\AcceptRefuseInvitesService.java

```
package eapli.base.meetingmanagement.application;

import eapli.base.meetingmanagement.domain.Invite;
import eapli.base.meetingmanagement.domain.InviteState;
import eapli.base.meetingmanagement.domain.Meeting;
import eapli.base.meetingmanagement.repository.InviteRepository;
```

```
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.model.Username;

public class AcceptRefuseInvitesService {

    private final AuthorizationService authz;
    private final InviteRepository inviteRepository;

    public AcceptRefuseInvitesService(final AuthorizationService authz, final
InviteRepository inviteRepository) {
        this.authz = authz;
        this.inviteRepository = inviteRepository;
    }

    /**
     * @return
     */
//    public Iterable<Invite> invitesReceived(Username username) {
//        return inviteRepository.findInvitesByReceiverUsername(username);
//    }

    public void acceptInvite(Invite invite, SystemUser systemUser){
        invite.addMeetingParticipants(systemUser);
        invite.setState(InviteState.ACCEPTED);
    }

    public void refuseInvite(Invite invite){
        invite.setState(InviteState.REJECTED);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\application\AcceptRefuseInvitesService.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\application\CancelMeetingController.java

```
package eapli.base.meetingmanagement.application;

import eapli.base.meetingmanagement.domain.Invite;
import eapli.base.meetingmanagement.domain.Meeting;
import eapli.base.meetingmanagement.domain.MeetingTitle;
```

```
import eapli.base.meetingmanagement.repository.InviteRepository;
import eapli.base.meetingmanagement.repository.MeetingRepository;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.domain.model.Username;

public class CancelMeetingController {
    private final CancelMeetingService cms;


    public CancelMeetingController(final AuthorizationService authz, final
MeetingRepository meetingRepository) {
        cms = new CancelMeetingService(authz, meetingRepository);
    }
    public void cancelMeeting(MeetingTitle meetingTitle) {
        cms.cancelMeeting(meetingTitle);
    }

    public Iterable<Meeting> allMeetings() {
        return this.cms.allMeetings();
    }

}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\application\CancelMeetingController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\application\CancelMeetingService.java

```
package eapli.base.meetingmanagement.application;

import eapli.base.meetingmanagement.domain.Meeting;
import eapli.base.meetingmanagement.domain.MeetingTitle;
import eapli.base.meetingmanagement.repository.MeetingRepository;
import eapli.framework.infrastructure.authz.application.AuthorizationService;

public class CancelMeetingService {

    private final AuthorizationService authz;
    private final MeetingRepository meetingRepository;

    public CancelMeetingService(final AuthorizationService authz, final
```

```
MeetingRepository meetingRepository) {
        this.authz = authz;
        this.meetingRepository = meetingRepository;
    }

    public void cancelMeeting(MeetingTitle meetingTitle) {
        Meeting meeting = meetingRepository.findByMeetingById(meetingTitle);
        meeting.cancelMeeting();
        meetingRepository.save(meeting);
    }

    public Iterable<Meeting>   allMeetings() {
        return this.meetingRepository.findAll();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\application\CancelMeetingService.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\application\ListParticipantController.java

```
package eapli.base.meetingmanagement.application;

import eapli.base.meetingmanagement.domain.Invite;
import eapli.base.meetingmanagement.domain.InviteState;
import eapli.base.meetingmanagement.domain.Meeting;
import eapli.base.meetingmanagement.domain.MeetingTitle;
import eapli.base.meetingmanagement.repository.InviteRepository;
import eapli.base.meetingmanagement.repository.MeetingRepository;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

import java.util.AbstractMap;
import java.util.List;

public class ListParticipantController {

    private final ListParticipantService listParticipantService;

    public ListParticipantController(MeetingRepository meetingRepository,
InviteRepository inviteRepository) {
        this.listParticipantService = new ListParticipantService(meetingRepository,
```

```
inviteRepository);
    }
    public Meeting getMeetingById(MeetingTitle meetingTitle) {
        return listParticipantService.findByMeetingById(meetingTitle);
    }

    public Iterable<Invite> findInvitesByMeeting(Meeting meeting) {
        return listParticipantService.findInvitesByMeeting(meeting);
    }

}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\application\ListParticipantController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\application\ListParticipantService.java

```
package eapli.base.meetingmanagement.application;

import eapli.base.meetingmanagement.domain.Invite;
import eapli.base.meetingmanagement.domain.InviteState;
import eapli.base.meetingmanagement.domain.Meeting;
import eapli.base.meetingmanagement.domain.MeetingTitle;
import eapli.base.meetingmanagement.repository.InviteRepository;
import eapli.base.meetingmanagement.repository.MeetingRepository;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.validations.Preconditions;

import java.util.AbstractMap;
import java.util.AbstractMap.SimpleEntry;
import java.util.List;

public class ListParticipantService {
    private final InviteRepository inviteRepository;

    private final MeetingRepository meetingRepository;

    public ListParticipantService(MeetingRepository meetingRepository, InviteRepository
inviteRepository){
        this.meetingRepository=meetingRepository;
        this.inviteRepository=inviteRepository;
```

```
    }

    public Meeting findByMeetingById(MeetingTitle meetingTitle){
        return meetingRepository.findByMeetingById(meetingTitle);
    }

    public Iterable<Invite> findInvitesByMeeting(Meeting meeting){
        return inviteRepository.findInvitesByMeeting(meeting);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\application\ListParticipantService.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\application\ScheduleMeetingController.java

```
package eapli.base.meetingmanagement.application;

import eapli.base.meetingmanagement.domain.*;
import eapli.base.meetingmanagement.repository.InviteRepository;
import eapli.base.meetingmanagement.repository.MeetingRepository;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

public class ScheduleMeetingController {

    private final AuthorizationService authz;
    private final MeetingRepository meetingRepository;
    private final InviteRepository inviteRepository;

    public ScheduleMeetingController(final AuthorizationService authz, final
MeetingRepository meetingRepository, InviteRepository inviteRepository) {
        // dependency injection - to make this object more testable we don't create the
        // infrastructure objects to avoid coupling to the implementation. This way, the
controller
        // can be used in different scenarios with different implementations of the repository.
for
        // instance, unit testing.
        this.authz= authz;
        this.meetingRepository=meetingRepository;
        this.inviteRepository=inviteRepository;
```

```
    }

    public Meeting saveMeeting(final MeetingTitle meetingTitle, final SystemUser
systemUser, final MeetingDuration meetingDuration, final MeetingDate meetingDate,
final MeetingTime meetingTime){
        return meetingRepository.save(new Meeting(meetingTitle, systemUser,
meetingDuration, meetingDate, meetingTime));
    }

    public Invite saveInvite(final SystemUser sender, final SystemUser receiver, final
Meeting meeting){
        return inviteRepository.save(new Invite(sender, receiver, meeting));
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\application\ScheduleMeetingController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\domain\Invite.java

```
package eapli.base.meetingmanagement.domain;

import eapli.framework.domain.model.AggregateRoot;
import eapli.framework.domain.model.DomainEntities;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.validations.Preconditions;

import javax.persistence.*;

@Entity
@Table(name="Invite")
public class Invite implements AggregateRoot<Long>{

    @Id
    @GeneratedValue(strategy = GenerationType.AUTO)
    @Column(name="IDINVITE")
    private Long id;

    private Meeting meeting;

    private SystemUser sender;
```

```
private SystemUser receiver;

private InviteState state;

public SystemUser getSender() {
    return sender;
}

public SystemUser getReceiver() {
    return receiver;
}

public Meeting getMeeting(){return meeting;}

protected Invite(){}

public Invite (SystemUser sender, SystemUser receiver, Meeting meeting){
    Preconditions.noneNull(sender, receiver, meeting);

    this.sender=sender;
    this.receiver=receiver;
    this.meeting=meeting;
    this.state=InviteState.PENDING;
}

public void addMeetingParticipants(SystemUser systemUser){
    this.meeting.addParticipants(systemUser);
}

public void setState(InviteState inviteState){
    this.state=inviteState;
}

public InviteState getState() {
    return state;
}

@Override
public boolean sameAs(Object other) {
    Invite invite = (Invite) other;
    return this.equals(invite);
}

@Override
```

```
    public Long identity() {
        return id;
    }

    @Override
    public boolean equals(Object o) {
        return DomainEntities.areEqual(this, o);
    }

    @Override
    public String toString() {
        return "You've been invited by " + sender.email().toString() + " to a meeting on the
date " + meeting.getMeetingDate().getMeetingDate().toString() +
                " at " + meeting.getMeetingTime().getMeetingTime() + " with the dutarion of " +
meeting.getMeetingDuration().toString();
    }


}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\domain\Invite.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\domain\InviteState.java

```
package eapli.base.meetingmanagement.domain;

import eapli.framework.domain.model.ValueObject;

public enum InviteState implements ValueObject {
    PENDING, ACCEPTED, REJECTED;
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\domain\InviteState.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\domain\Meeting.java

```
package eapli.base.meetingmanagement.domain;

import eapli.base.Student_Teacher.Student.domain.Student;
import eapli.base.exammanagement.domain.ExamTitle;
import eapli.framework.domain.model.AggregateRoot;
```

```
import eapli.framework.domain.model.DomainEntities;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.validations.Preconditions;

import javax.persistence.*;
import java.util.AbstractMap;
import java.util.ArrayList;
import java.util.List;

@Entity
public class Meeting implements AggregateRoot<Long> {

    @Id
    @GeneratedValue(strategy = GenerationType.AUTO)
    @Column(name = "IDMEETING")
    private Long id;

    private MeetingTitle meetingTitle;

    private SystemUser systemUser;

    private MeetingDuration meetingDuration;

    private MeetingDate meetingDate;

    private MeetingTime meetingTime;
    @OneToMany
    private List<SystemUser> participants;

    @Column(name="STATUS")
    @Enumerated(EnumType.STRING)
    private MeetingStatus status;

    protected Meeting() {
    }

    public Meeting (MeetingTitle meetingTitle, SystemUser systemUser, MeetingDuration
meetingDuration, MeetingDate meetingDate, MeetingTime meetingTime){
        Preconditions.noneNull(systemUser, meetingDuration, meetingDate, meetingTime);

        this.meetingTitle=meetingTitle;
        this.systemUser=systemUser;
        this.meetingDuration=meetingDuration;
        this.meetingDate=meetingDate;
```

```
        this.meetingTime=meetingTime;
        this.participants=new ArrayList<>();
        this.status = MeetingStatus.SCHEDULED;
    }

    @Override
    public boolean equals(Object o) {
        return DomainEntities.areEqual(this, o);
    }

    @Override
    public boolean sameAs(Object other) {
        Meeting meeting = (Meeting) other;
        return this.equals(meeting) && getMeetingDate().equals(meeting.getMeetingDate())
&& getMeetingDuration().equals(meeting.getMeetingDuration()) &&
getMeetingTime().equals(meeting.getMeetingTime());
    }

    public void addParticipants(SystemUser systemUser){
        participants.add(systemUser);
    }

    @Override
    public Long identity() {
        return id;
    }

    public MeetingTitle getMeetingTitle() {
        return meetingTitle;
    }

    public MeetingDate getMeetingDate() {
        return meetingDate;
    }

    public MeetingTime getMeetingTime() {
        return meetingTime;
    }

    public MeetingDuration getMeetingDuration() {
        return meetingDuration;
    }

    public SystemUser getSystemUser() {
```

```
        return systemUser;
    }

    public List<SystemUser> getParticipants() {
        return participants;
    }

    public MeetingStatus getStatus() {
        return status;
    }
    public void cancelMeeting() {
        this.status = MeetingStatus.CANCELED;
    }

}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\domain\Meeting.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\domain\MeetingDate.java

```
package eapli.base.meetingmanagement.domain;

import eapli.framework.domain.model.ValueObject;
import org.springframework.format.annotation.DateTimeFormat;

import javax.persistence.Embeddable;
import java.util.Date;

@Embeddable
public class MeetingDate implements ValueObject {

    @DateTimeFormat(pattern = "dd-MM-yyyy")
    private Date meetingDate;

    protected MeetingDate(){}

    public MeetingDate(Date meetingDate) {
        if (!isValidMeetingDate(meetingDate)) {
            throw new IllegalArgumentException("Invalid meeting date format");
        }
        this.meetingDate=meetingDate;
    }
```

```
    private static boolean isValidMeetingDate(Date meetingDate) {
        Date date = new Date(System.currentTimeMillis());
        return meetingDate.after(date);
    }

    @Override
    public String toString() {
        return meetingDate.toString();
    }

    public Date getMeetingDate(){return meetingDate;}
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\domain\MeetingDate.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\domain\MeetingDuration.java

```
package eapli.base.meetingmanagement.domain;

import eapli.framework.domain.model.ValueObject;

import javax.persistence.Embeddable;

@Embeddable
public class MeetingDuration implements ValueObject {

    private Integer value;

    protected MeetingDuration(){}

    public MeetingDuration(int value) {
        if (!isValidMeetingDuration(value)) {
            throw new IllegalArgumentException("Invalid meeting duration format");
        }
        this.value=value;
    }

    private static boolean isValidMeetingDuration(int value) {
        return value>0;
    }
```

```
    public Integer getValue(){return value;}

    @Override
    public String toString() {
        return value.toString();
    }


}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\domain\MeetingDuration.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\domain\MeetingStatus.java

```
package eapli.base.meetingmanagement.domain;

import eapli.framework.domain.model.ValueObject;
import lombok.*;

import javax.persistence.Embeddable;
import java.util.Objects;


public enum MeetingStatus {
    SCHEDULED, COMPLETED, CANCELED;
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\domain\MeetingStatus.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\domain\MeetingTime.java

```
package eapli.base.meetingmanagement.domain;

import eapli.framework.domain.model.ValueObject;
import org.springframework.format.annotation.DateTimeFormat;

import javax.persistence.Embeddable;
```

```
import java.util.Date;

@Embeddable
public class MeetingTime implements ValueObject {

    @DateTimeFormat(pattern = "hh:mm")
    private Date meetingTime;

    protected MeetingTime(){}

    public MeetingTime(Date meetingTime) {this.meetingTime=meetingTime;
    }

    public Date getMeetingTime(){return meetingTime;}

    @Override
    public String toString() {
        return meetingTime.toString();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\domain\MeetingTime.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\domain\MeetingTitle.java

```
package eapli.base.meetingmanagement.domain;

import eapli.base.exammanagement.domain.ExamTitle;
import eapli.framework.domain.model.ValueObject;
import eapli.framework.validations.Preconditions;

import javax.persistence.Embeddable;
import java.util.Objects;

@Embeddable
public class MeetingTitle implements ValueObject {

    private String title;

    protected MeetingTitle() {
    }
```

```
    public MeetingTitle(String title) throws IllegalArgumentException {
        Preconditions.ensure(title != null && !title.isEmpty(), "Invalid title");
        this.title = title;
    }

    @Override
    public String toString() {
        return String.format("Title: %s", title);
    }

    public String getTitle() {
        return this.title;
    }

    @Override
    public boolean equals(Object o) {
        if (this == o) return true;
        if (o == null || getClass() != o.getClass()) return false;

        MeetingTitle other = (MeetingTitle) o;
        return Objects.equals(title, other.title);
    }

    @Override
    public int hashCode() {
        return Objects.hash(title);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\domain\MeetingTitle.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\repository\InviteRepository.java

```
package eapli.base.meetingmanagement.repository;

import eapli.base.meetingmanagement.domain.Invite;
import eapli.base.meetingmanagement.domain.Meeting;
import eapli.framework.domain.repositories.DomainRepository;
import eapli.framework.infrastructure.authz.domain.model.Username;
```

```
import java.util.Optional;

public interface InviteRepository extends DomainRepository<Long, Invite> {

//    Iterable<Invite> findInvitesByReceiverUsername(Username username);

    Iterable<Invite> findInvitesByMeeting(Meeting meeting);
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\repository\InviteRepository.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\repository\MeetingRepository.java

```
package eapli.base.meetingmanagement.repository;

import eapli.base.meetingmanagement.domain.Meeting;
import eapli.base.meetingmanagement.domain.MeetingTitle;
import eapli.framework.domain.repositories.DomainRepository;

public interface MeetingRepository extends DomainRepository<Long, Meeting> {

    Meeting findByMeetingById(MeetingTitle meetingTitle);

    Iterable<Meeting> findAll();


}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\meetingmanagement\repository\MeetingRepository.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\myclientuser\application\MyClientUserService.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
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software and
```

```
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restriction,
 * including without limitation the rights to use, copy, modify, merge, publish, distribute,
 * sublicense, and/or sell copies of the Software, and to permit persons to whom the
Software is
 * furnished to do so, subject to the following conditions:
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 * The above copyright notice and this permission notice shall be included in all copies or
 * substantial portions of the Software.
 *
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EXPRESS OR IMPLIED, INCLUDING BUT
 * NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A
PARTICULAR PURPOSE AND
 * NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
 */
package eapli.base.myclientuser.application;

import java.util.Optional;

import eapli.base.clientusermanagement.domain.ClientUser;
import eapli.base.clientusermanagement.repositories.ClientUserRepository;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.UserSession;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

/**
 *
 * @author Paulo Gandra de Sousa
 */
public class MyClientUserService {

    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    private final ClientUserRepository repo =
PersistenceContext.repositories().clientUsers();
```

```
    public ClientUser me() {
        final UserSession s = authz.session().orElseThrow(IllegalStateException::new);
        final SystemUser myUser = s.authenticatedUser();
        // TODO cache the client user object
        final Optional<ClientUser> me = repo.findByUsername(myUser.identity());
        return me.orElseThrow(IllegalStateException::new);
    }

    public ClientUser myUser() {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.CLIENT_USER);
        final UserSession s = authz.session().orElseThrow(IllegalStateException::new);
        final SystemUser me = s.authenticatedUser();
        return
repo.findByUsername(me.identity()).orElseThrow(IllegalStateException::new);
    }

}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\myclientuser\application\MyClientUserService.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\myclientuser\application\SignupController.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
 * MIT License
 *
 * Permission is hereby granted, free of charge, to any person obtaining a copy
 * of this software and associated documentation files (the "Software"), to deal
 * in the Software without restriction, including without limitation the rights
 * to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
 * copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
 *
 * The above copyright notice and this permission notice shall be included in
 * all copies or substantial portions of the Software.
 *
 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR
 * IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY,
```

```
 * FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO
EVENT SHALL THE
 * AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES
OR OTHER
 * LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.myclientuser.application;

import java.util.Calendar;

import eapli.base.clientusermanagement.domain.SignupRequest;
import eapli.base.clientusermanagement.domain.SignupRequestBuilder;
import eapli.base.clientusermanagement.repositories.SignupRequestRepository;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.base.usermanagement.domain.UserBuilderHelper;
import eapli.framework.application.UseCaseController;
import eapli.framework.time.util.CurrentTimeCalendars;

/**
 *
 * @author Jorge Santos ajs@isep.ipp.pt
 */
@UseCaseController
public class SignupController {

    private final SignupRequestRepository signupRequestRepository =
PersistenceContext
            .repositories().signupRequests();

    public SignupRequest signup(final String username, final String password,
            final String firstName, final String lastName, final String email,
            String mecanographicNumber, final Calendar createdOn) {

        // there is no need for authorisation check in this method as even
        // unauthenticated users may request a signup

        final SignupRequestBuilder signupRequestBuilder =
UserBuilderHelper.signupBuilder();
        signupRequestBuilder.withUsername(username).withPassword(password)
                .withName(firstName, lastName).withEmail(email).createdOn(createdOn)
```

```
            .withMecanographicNumber(mecanographicNumber);

        final SignupRequest newSignupRequest = signupRequestBuilder.build();
        return this.signupRequestRepository.save(newSignupRequest);
    }

    public SignupRequest signup(final String username, final String password,
            final String firstName, final String lastName, final String email,
            String mecanographicNumber) {

        return signup(username, password, firstName, lastName, email,
mecanographicNumber,
                    CurrentTimeCalendars.now());
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\myclientuser\application\SignupController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\systemUserManagement\SystemUserRepository.java

```
package eapli.base.systemUserManagement;

import eapli.framework.domain.repositories.DomainRepository;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.model.Username;

import java.util.List;

public interface SystemUserRepository extends DomainRepository<Username,
SystemUser> {

    Iterable<SystemUser> findByUsername(Username name);
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\systemUserManagement\SystemUserRepository.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\usermanagement\application\AddUserController.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
 * MIT License
 *
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 * associated documentation files (the "Software"), to deal in the Software without restriction,
 * including without limitation the rights to use, copy, modify, merge, publish, distribute,
 * sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
 *
 * The above copyright notice and this permission notice shall be included in all copies or
 * substantial portions of the Software.
 *
 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT
 * NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
 * NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
 */
package eapli.base.usermanagement.application;

import java.util.Calendar;
import java.util.Set;

import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.application.UseCaseController;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
```

```
import eapli.framework.infrastructure.authz.application.UserManagementService;
import eapli.framework.infrastructure.authz.domain.model.Role;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.time.util.CurrentTimeCalendars;

/**
 *
 * Created by nuno on 21/03/16.
 * Edited by João Cruz
 *
 * Classe destinada a adicionar utilizadores.
 * É necessário ter em conta que o utilizador que está a adicionar outro utilizador tem de ter as devidas permissões conforme o ensureAuthenticatedUserHasAnyOf.
 * Para adicionar uma role existente pelo código, é necessário ir à classe BaseRoles e adicionar o role pretendido.
 *
 * Em caso de adicionar permissões para visualizar a opção, deve ser feita no MainMenuUI.
 */
@UseCaseController
public class AddUserController {

    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    private final UserManagementService userSvc = AuthzRegistry.userService();

    /**
     * Get existing RoleTypes available to the user.
     *
     * @return a list of RoleTypes
     */
    public Role[] getRoleTypes() {
        return BaseRoles.nonUserValues();
    }

    public SystemUser addUser(final String username, final String password, final String firstName, final String lastName, final String email, final Set<Role> roles, final Calendar createdOn) {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.ADMIN, BaseRoles.MANAGER);

        return userSvc.registerNewUser(username, password, firstName, lastName, email, roles, createdOn);
    }
```

```
    public SystemUser addUser(final String username, final String password, final String
firstName, final String lastName, final String email, final Set<Role> roles) {
        return addUser(username, password, firstName, lastName, email, roles,
CurrentTimeCalendars.now());
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\usermanagement\application\AddUserController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\usermanagement\application\DeactivateUserController.java

```
package eapli.base.usermanagement.application;

import com.fasterxml.jackson.databind.ser.Serializers;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.application.UseCaseController;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.UserManagementService;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;

/**
 *
 * @author Fernando
 * Edited by João Cruz
 *
 * Código destinado a desativar um utilizador
 */
@UseCaseController
public class DeactivateUserController {

    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    private final UserManagementService userSvc = AuthzRegistry.userService();

    public Iterable<SystemUser> activeUsers() {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.ADMIN,
BaseRoles.MANAGER);

        return userSvc.activeUsers();
    }

    public SystemUser deactivateUser(final SystemUser user) {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.ADMIN,
BaseRoles.MANAGER);

        return userSvc.deactivateUser(user);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\usermanagement\application\DeactivateUserController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\usermanagement\application\ListUsersController.java

```
/*
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 */
package eapli.base.usermanagement.application;

import java.util.Optional;

import com.fasterxml.jackson.databind.ser.Serializers;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.application.UseCaseController;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
```

```
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.UserManagementService;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.model.Username;

/**
 *
 * @author losa
 * Edited by João Cruz
 *
 * Classe destinada a listar os utilizadores
 */
@UseCaseController
public class ListUsersController{

    private final AuthorizationService authz = AuthzRegistry.authorizationService();
    private final UserManagementService userSvc = AuthzRegistry.userService();

    public Iterable<SystemUser> allUsers() {
        authz.ensureAuthenticatedUserHasAnyOf(BaseRoles.ADMIN,
BaseRoles.MANAGER);

        return userSvc.allUsers();
    }

    public Optional<SystemUser> find(final Username u) {
        return userSvc.userOfIdentity(u);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\usermanagement\application\ListUsersController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\usermanagement\application\eventhandlers\AddUserOnSignupAcceptedController.java

```
/*
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```

```
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 * LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
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DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.usermanagement.application.eventhandlers;

import
eapli.base.clientusermanagement.domain.events.NewUserRegisteredFromSignupEvent;
import eapli.base.clientusermanagement.domain.events.SignupAcceptedEvent;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.base.usermanagement.domain.UserBuilderHelper;
import eapli.framework.application.UseCaseController;
import eapli.framework.domain.events.DomainEvent;
import eapli.framework.domain.repositories.ConcurrencyException;
import eapli.framework.domain.repositories.IntegrityViolationException;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.model.SystemUserBuilder;
import eapli.framework.infrastructure.authz.domain.repositories.UserRepository;
import eapli.framework.infrastructure.pubsub.EventPublisher;
import eapli.framework.infrastructure.pubsub.impl.inprocess.service.InProcessPubSub;

/**
 *
 * @author Paulo Gandra de Sousa
```

```
 */
@UseCaseController
/* package */ class AddUserOnSignupAcceptedController {
    private final UserRepository userRepository =
PersistenceContext.repositories().users();
    private final EventPublisher dispatcher = InProcessPubSub.publisher();

    /**
     *
     * @param theSignupRequest
     * @return
     * @throws ConcurrencyException
     * @throws IntegrityViolationException
     */
    public SystemUser addUser(final SignupAcceptedEvent theSignupRequest) {

        final SystemUserBuilder userBuilder = UserBuilderHelper.builder();

userBuilder.withUsername(theSignupRequest.username()).withPassword(theSignupReq
uest.password()).withName(theSignupRequest.name()).withEmail(theSignupRequest.e
mail()).withRoles(BaseRoles.CLIENT_USER);
        final SystemUser newUser = userRepository.save(userBuilder.build());

        // notify interested parties
        final DomainEvent event = new
NewUserRegisteredFromSignupEvent(theSignupRequest.mecanographicNumber(),
newUser.username());
        dispatcher.publish(event);

        return newUser;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\usermanagement\application\eventhandlers\AddUserOnSignupAcceptedController.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\usermanagement\application\eventhandlers\SignupAcceptedWatchDog.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
```

```
package eapli.base.usermanagement.application.eventhandlers;

import org.slf4j.Logger;
import org.slf4j.LoggerFactory;

import eapli.base.clientusermanagement.domain.events.SignupAcceptedEvent;
import eapli.framework.domain.events.DomainEvent;
import eapli.framework.domain.repositories.IntegrityViolationException;
import eapli.framework.infrastructure.pubsub.EventHandler;

/**
 * Classe destinada de registar um novo utilizador quando o seu pedido de registo é aceite.
 **/

public class SignupAcceptedWatchDog implements EventHandler {
    private static final Logger LOGGER =
LoggerFactory.getLogger(SignupAcceptedWatchDog.class);
```

```
    @Override
    public void onEvent(final DomainEvent domainevent) {
        assert domainevent instanceof SignupAcceptedEvent;

        final SignupAcceptedEvent event = (SignupAcceptedEvent) domainevent;

        final AddUserOnSignupAcceptedController controller = new
AddUserOnSignupAcceptedController();
        try {
            controller.addUser(event);
        } catch (final IntegrityViolationException e) {
            // TODO provably should send some warning email...
            LOGGER.error("Unable to register new user on signup event", e);
        }
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\usermanagement\application\eventhandlers\SignupAcceptedWatchDog.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\usermanagement\domain\BasePasswordPolicy.java

```
/*
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```

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DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.usermanagement.domain;

import eapli.framework.infrastructure.authz.application.PasswordPolicy;
import eapli.framework.strings.util.StringPredicates;

/**
 * Enforces that passwords must be at least 6 characters long and have at least
 * one digit and one capital letter.
 *
 * <p>
 * look into
 *
https://documentation.cpanel.net/display/CKB/How+to+Determine+Password+Strength
 * for example rules of password strength
 *
 * @author Paulo Gandra de Sousa 24/05/2019
 *
 * Classe que define a politica de passwords, diz também se a password é forte ou
fraca.
 */
public class BasePasswordPolicy implements PasswordPolicy {

    /*
     * (non-Javadoc)
     *
     * @see eapli.framework.infrastructure.authz.domain.model.PasswordPolicy#
     * meetsRequeriments(java.lang.String)
     */
    @Override
    public boolean isSatisfiedBy(final String rawPassword) {
        // sanity check
        if (StringPredicates.isNullOrEmpty(rawPassword)) {
            return false;
        }
```

```
        // at least 6 characters long
        if (rawPassword.length() < 6) {
            return false;
        }

        // at least one digit
        if (!StringPredicates.containsDigit(rawPassword)) {
            return false;
        }

        // at least one capital letter
        return StringPredicates.containsCapital(rawPassword);
    }

    /**
     * Check how strong a password is. just for demo purposes.
     *
     * <p>
     * look into
     *
https://documentation.cpanel.net/display/CKB/How+to+Determine+Password+Strength
     * for example rules of password strength
     *
     * @param rawPassword
     *            the string to check
     *
     * @return how strong a password is
     */
    public PasswordStrength strength(final String rawPassword) {
        PasswordStrength passwordStrength = PasswordStrength.WEAK;
        if (rawPassword.length() >= 12 || (rawPassword.length() >= 8
                && StringPredicates.containsAny(rawPassword, "$#!%&?"))) {
            passwordStrength = PasswordStrength.EXCELENT;
        } else if (rawPassword.length() >= 8) {
            passwordStrength = PasswordStrength.GOOD;
        } else if (rawPassword.length() >= 6) {
            passwordStrength = PasswordStrength.WEAK;
        }
        return passwordStrength;
    }

    public enum PasswordStrength {
        WEAK, GOOD, EXCELENT,
```

```
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\usermanagement\domain\BasePasswordPolicy.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\usermanagement\domain\BaseRoles.java

```
/*
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DEALINGS IN THE
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 */
package eapli.base.usermanagement.domain;

import eapli.framework.infrastructure.authz.domain.model.Role;

/**
```

```
 * @author Paulo Gandra Sousa
 *
 *  Classe destinada a listar os utilizadores e criar novos roles.
 */
public final class BaseRoles {
    /**
     * USER - Poderá servir caso o utilizador não for nenhum dos roles do Projeto
Integrador
     */
    public static final Role CLIENT_USER = Role.valueOf("USER");
    /**
     * Base Administrator (Developer)
     */
    public static final Role ADMIN = Role.valueOf("ADMIN");
    /**
     *
     */

    // Roles do Projeto Integrador
    public static final Role STUDENT = Role.valueOf("STUDENT");
    public static final Role TEACHER = Role.valueOf("TEACHER");
    public static final Role MANAGER = Role.valueOf("MANAGER");

    /**
     * get available role types for adding new users
     *
     * @return
     */
    public static Role[] nonUserValues() {
        return new Role[] { STUDENT, TEACHER, MANAGER };
    }

    public boolean isCollaborator(final Role role) {
        return role != CLIENT_USER;
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\usermanagement\domain\BaseRoles.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\usermanagement\domain\UserBuilderHelper.java

```
/*
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OR OTHER
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ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.usermanagement.domain;

import eapli.base.clientusermanagement.domain.SignupRequestBuilder;
import eapli.framework.infrastructure.authz.domain.model.PlainTextEncoder;
import eapli.framework.infrastructure.authz.domain.model.SystemUserBuilder;
import eapli.framework.util.Utility;

/**
 *
```

```
 * @author Paulo Gandra de Sousa 27/05/2019
 *
 * Classe que permite criar um utilizador.
 */
@Utility
public class UserBuilderHelper {
    private UserBuilderHelper() {
        // ensure utility
    }

    public static SystemUserBuilder builder() {
        return new SystemUserBuilder(new BasePasswordPolicy(), new
PlainTextEncoder());
    }

    public static SignupRequestBuilder signupBuilder() {
        return new SignupRequestBuilder(new BasePasswordPolicy(), new
PlainTextEncoder());
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\java\eapli\base\usermanagement\domain\UserBuilderHelper.java

[File Begins] sem4pi-22-23-61-master\base.core\src\main\resources\ecafeteria.sample.properties

```
# To change this template, choose Tools | Templates
# and open the template in the editor.

persistence.persistenceUnit=eapli.base
#persistence.repositoryFactory=eapli.base.persistence.jpa.JpaRepositoryFactory
persistence.repositoryFactory=eapli.base.persistence.inmemory.InMemoryRepositoryFa
ctory
ui.menu.layout=horizontal
HighCaloriesDishLimit=300
```

[File Ends] sem4pi-22-23-61-master\base.core\src\main\resources\ecafeteria.sample.properties

[File Begins] sem4pi-22-23-61-master\base.core\src\test\eapli\base\Classe\Domain\ClasseTest.java

```
package base.Classe.Domain;

import eapli.base.Classe.domain.*;
import eapli.base.usermanagement.domain.BasePasswordPolicy;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.infrastructure.authz.domain.model.PlainTextEncoder;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.model.SystemUserBuilder;
import eapli.base.Student_Teacher.Teacher.Domain.Acronym;
import org.junit.jupiter.api.Test;

import java.time.LocalDate;
import java.time.LocalTime;


import static org.junit.jupiter.api.Assertions.*;

public class ClasseTest {


    final SystemUserBuilder userBuilder = new SystemUserBuilder(new
BasePasswordPolicy(), new PlainTextEncoder());
    final SystemUser newUser = userBuilder
            .withUsername("systemUserTest")
            .withPassword("password")
            .withName("SystemUser", "Test")
            .withEmail("systemusertest@email.org")
            .withRoles(BaseRoles.STUDENT, BaseRoles.TEACHER)
            .build();

    private final Classe_Title title = new Classe_Title("Class Title");
    private final Classe_Start_Date start_date = new
Classe_Start_Date(LocalDate.now());
    private final Classe_Finish_Date finish_date = new
Classe_Finish_Date(LocalDate.now().plusDays(7));
    private final Classe_Start_Time start_time = new Classe_Start_Time(LocalTime.of(9,
0));
    private final Classe_Finish_Time finish_time = new
Classe_Finish_Time(LocalTime.of(10, 30));
```

```
    private final eapli.base.Classe.domain.DayOfWeek day = new
eapli.base.Classe.domain.DayOfWeek(1);

    private final Acronym acronym = new Acronym("XYZ");


    @Test
    void ensureClasseMustHaveStartDate() {
        assertThrows(IllegalArgumentException.class, () -> new Classe(title, null,
finish_date, start_time, finish_time, day, acronym));
    }

    @Test
    void ensureClasseMustHaveFinishDate() {
        assertThrows(IllegalArgumentException.class, () -> new Classe(title, start_date,
null, start_time, finish_time, day, acronym));
    }

    @Test
    void ensureClasseMustHaveStartTime() {
        assertThrows(IllegalArgumentException.class, () -> new Classe(title, start_date,
finish_date, null, finish_time, day, acronym));
    }

    @Test
    void ensureClasseMustHaveFinishTime() {
        assertThrows(IllegalArgumentException.class, () -> new Classe(title, start_date,
finish_date, start_time, null, day, acronym));
    }

    @Test
    void ensureClasseMustHaveTitle() {
        assertThrows(IllegalArgumentException.class, () -> {
            new Classe(null, start_date, finish_date, start_time, finish_time, day, acronym);
        });
    }
    @Test
    void ensureClasseMustHaveAcronym() {
        assertThrows(IllegalArgumentException.class, () -> {
            new Classe(title, start_date, finish_date, start_time, finish_time, day, null);
        });
    }
```

```
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\test\eapli\base\Classe\Domain\ClasseTest.java

[File Begins] sem4pi-22-23-61-master\base.core\src\test\eapli\base\SharedBoard\Domain\SharedBoardTest.java

```
package eapli.base.SharedBoard.Domain;

import eapli.base.SharedBoard.domain.NumberofColumns;
import eapli.base.SharedBoard.domain.NumberofRows;
import eapli.base.SharedBoard.domain.SharedBoard;
import eapli.base.SharedBoard.domain.Shared_Board_Title;
import eapli.framework.infrastructure.authz.domain.model.*;

import org.junit.Before;
import org.junit.Test;

import java.util.Collections;
import java.util.Set;

import static junit.framework.TestCase.assertEquals;
import static junit.framework.TestCase.assertFalse;


public class SharedBoardTest {

    private SystemUser owner;
    private SystemUser currentUser;
    private SystemUser newUser;
    private Shared_Board_Title title;
    private NumberofRows numberOfRows;
    private NumberofColumns numberOfColumns;
    private SharedBoard sharedBoard;

    @Before
    public void setUp() {
        Set<Role> roles = Collections.emptySet();
       // owner = new SystemUser();
        currentUser = owner;
      //  newUser = new SystemUser();
        title = new Shared_Board_Title("Sample Title");
        numberOfRows = new NumberofRows(5);
```

```
        numberOfColumns = new NumberofColumns(5);

        sharedBoard = new SharedBoard(owner, title, numberOfRows,
numberOfColumns);
    }

    @Test
    public void testShareBoard() {
        sharedBoard.shareBoard(currentUser, newUser,
SharedBoard.AccessType.WRITE);
        assertEquals(SharedBoard.AccessType.WRITE,
sharedBoard.getAccessType(newUser));
    }

    @Test(expected = IllegalStateException.class)
    public void testShareBoardNotOwner() {
        // SystemUser notOwnerUser = new SystemUser(Username.valueOf("notOwner"),
new Password("password"), new Name("Not Owner Name"), new
EmailAddress("notowner@mail.com"), roles);
       // sharedBoard.shareBoard(notOwnerUser, newUser,
SharedBoard.AccessType.WRITE);
    }

    @Test
    public void testArchiveBoard() {
        sharedBoard.shareBoard(currentUser, newUser,
SharedBoard.AccessType.WRITE);
        sharedBoard.archiveBoard();
        assertTrue(sharedBoard.isArchived());
        assertEquals(SharedBoard.AccessType.READ,
sharedBoard.getAccessType(newUser));
    }

    private void assertTrue(boolean archived) {

    }

    @Test
    public void testSameAs() {
        SharedBoard otherBoard = new SharedBoard(owner, title, numberOfRows,
numberOfColumns);
        assertTrue(sharedBoard.sameAs(otherBoard));
    }
```

```
    @Test
    public void testNotSameAs() {
        Shared_Board_Title otherTitle = new Shared_Board_Title("Other Title");
        SharedBoard otherBoard = new SharedBoard(owner, otherTitle, numberOfRows,
numberOfColumns);
        assertFalse(sharedBoard.sameAs(otherBoard));
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\test\eapli\base\SharedBoard\Domain\SharedBoardTest.java

[File Begins] sem4pi-22-23-61-master\base.core\src\test\eapli\base\SharedBoard\aplication\SharedBoardServiceTest.java

```
package eapli.base.SharedBoard.aplication;

import eapli.base.SharedBoard.domain.SharedBoard;
import eapli.base.SharedBoard.domain.Shared_Board_Title;
import eapli.base.persistence.impl.inmemory.InMemorySharedBoardRepository;
import eapli.base.systemUserManagement.SystemUserRepository;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.model.Username;
import eapli.framework.infrastructure.authz.domain.model.Password;
import org.junit.Before;
import org.junit.Test;

import java.util.Optional;

import static junit.framework.TestCase.assertEquals;

public class SharedBoardServiceTest {
    private SharedBoardService sharedBoardService;
    private SystemUserRepository systemUserRepository;
    private InMemorySharedBoardRepository sharedBoardRepository;

    @Before
    public void setUp() {
        sharedBoardRepository = new InMemorySharedBoardRepository();
        sharedBoardService = new SharedBoardService(sharedBoardRepository,
systemUserRepository);
    }
/*
    @Test
    public void createSharedBoard() {
```

```
        Username username = Username.valueOf("user");
        Optional<Password> password = Password.encodedAndValid("adeus", 0xf, 4141);
        SystemUser myUser = new SystemUser();

        sharedBoardService.createSharedBoard(myUser, "Titulo teste", 3, 3);


        Iterable<SharedBoard> sharedBoards =
sharedBoardRepository.findSharedBoardsByOwner(myUser);
        int count = 0;
        for (SharedBoard board : sharedBoards) {
            if (board.getTitle().getTitle().equals("TestTitle")) {
                count++;
            }
        }
        assertEquals(1, count);
    }

 */
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\test\eapli\base\SharedBoard\aplication\SharedBoardServiceTest.java

[File Begins] sem4pi-22-23-61-master\base.core\src\test\eapli\base\exammanagement\domain\CreateExamControllerTest.java

```
package eapli.base.exammanagement.domain;

import eapli.base.Course.Domain.Course;
import eapli.base.exammanagement.application.CreateExamController;
import eapli.base.exammanagement.domain.Exam;
import eapli.base.exammanagement.repository.ExamRepository;
import eapli.base.persistence.impl.inmemory.InMemoryExamRepository;
import org.junit.jupiter.api.BeforeEach;
import org.junit.jupiter.api.Test;

import java.sql.Date;
import java.sql.Time;

import static org.junit.jupiter.api.Assertions.assertEquals;
import static org.junit.jupiter.api.Assertions.assertTrue;
```

```
class CreateExamControllerTest {
    private CreateExamController createExamController;
    private ExamRepository examRepository;

    @BeforeEach
    void setUp() {
        examRepository = new InMemoryExamRepository(); // InMemoryExamRepository
para testar
        createExamController = new CreateExamController();
        createExamController.setExamRepository(examRepository);
    }

    @Test
    void createExamValidDataReturnsNewExam() {
        // Arrange
        String examName = "Exame Fisica";
        Date examDate = Date.valueOf("2023/06/18");
        Time openTime = Time.valueOf("09:00");
        Time closeTime = Time.valueOf("12:00");
        Course course = new Course();

        // Act
        Exam result = createExamController.createExam(examName, examDate,
openTime, closeTime, course);

        // Assert
        assertTrue(examRepository.contains(result)); // Verifica se guardou no
ExamRepository
        assertEquals(examName, result.getExamTitle().toString());
        assertEquals(examDate.toString(), result.getExamDate().toString());
        assertEquals(openTime.toString(), result.getExamTime().getOpenDate().toString());
        assertEquals(closeTime.toString(),
result.getExamTime().getCloseDate().toString());
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\test\eapli\base\exammanagement\domain\CreateExamControllerTest.java

[File Begins] sem4pi-22-23-61-master\base.core\src\test\eapli\base\exammanagement\domain\ExamTest.java

```
package eapli.base.exammanagement.domain;

import eapli.base.Course.Domain.*;
import org.junit.jupiter.api.Test;

import java.text.ParseException;
import java.text.SimpleDateFormat;
import java.util.Date;

import static org.junit.jupiter.api.Assertions.assertThrows;

public class ExamTest {

    Date date=new Date(System.currentTimeMillis());
    SimpleDateFormat simpleDateFormat = new SimpleDateFormat("hh:mm");
    Date time = simpleDateFormat.parse("10:30");
    Date time2 = simpleDateFormat.parse("11:30");

    public ExamTest() throws ParseException {
    }

    @Test
    void ensureExamMustHaveTime() {
        System.out.println("must have exam time");

        assertThrows(IllegalArgumentException.class, () -> new Exam(null, new
ExamDate(date), new Course(new Course_Name("INF"), new
Maximum_Number_Of_Students(100), new Minimum_Number_Of_Students(10), new
Small_Textual_Description("Desc"))));
    }

    @Test
    void ensureExamMustHaveDate() {
        System.out.println("must have exam date");

        assertThrows(IllegalArgumentException.class, () -> new Exam(new
ExamTime(time,time2), null, new Course(new Course_Name("INF"), new
Maximum_Number_Of_Students(100), new Minimum_Number_Of_Students(10), new
```

```
Small_Textual_Description("Desc"))));
    }

    @Test
    void ensureExamMustHaveCourse() {
        System.out.println("must have exam course");

        assertThrows(IllegalArgumentException.class, () -> new Exam(new
ExamTime(time,time2), new ExamDate(date), null));
    }

    @Test
    void ensureExamCreation() {
        assertThrows(IllegalArgumentException.class, () -> new Exam());
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\test\eapli\base\exammanagement\domain\ExamTest.java

[File Begins] sem4pi-22-23-61-master\base.core\src\test\eapli\base\meetingmanagement\aplication\CancelMeetingTest.java

```
package eapli.base.meetingmanagement.aplication;

import eapli.base.meetingmanagement.domain.*;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import org.junit.jupiter.api.Test;

import static org.junit.jupiter.api.Assertions.assertEquals;

public class CancelMeetingTest {

    @Test
    void cancelMeeting_MeetingStatusChangedToCanceled() {
        System.out.println("cancelMeeting - Meeting status changed to CANCELED");

        MeetingTitle meetingTitle = new MeetingTitle("Meeting 1");
        SystemUser systemUser = new SystemUser();
        MeetingDuration meetingDuration = new MeetingDuration(60);
        MeetingDate meetingDate = new MeetingDate("2023-06-18");
        MeetingTime meetingTime = new MeetingTime("14:30");
        Meeting meeting = new Meeting(meetingTitle, systemUser, meetingDuration,
```

```
meetingDate, meetingTime);

        meeting.cancelMeeting();

        assertEquals(MeetingStatus.CANCELED, meeting.getStatus());
    }

    private void assertTrue(boolean contains) {
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\test\eapli\base\meetingmanagement\aplication\CancelMeetingTest.java

[File Begins] sem4pi-22-23-61-master\base.core\src\test\eapli\base\meetingmanagement\domain\InviteTest.java

```
package eapli.base.meetingmanagement.domain;

import eapli.base.SharedBoard.domain.PostIt;
import eapli.base.SharedBoard.domain.SharedBoard;
import
```

```
eapli.base.app.backoffice.console.presentation.meeting.AcceptRefuseInvitesAction;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.base.meetingmanagement.application.AcceptRefuseInvitesController;
import eapli.base.meetingmanagement.application.AcceptRefuseInvitesService;
import eapli.base.usermanagement.domain.BasePasswordPolicy;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.base.usermanagement.domain.UserBuilderHelper;
import eapli.framework.infrastructure.authz.application.AuthorizationService;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.application.PasswordPolicy;
import eapli.framework.infrastructure.authz.application.UserSession;
import eapli.framework.infrastructure.authz.domain.model.PlainTextEncoder;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.model.SystemUserBuilder;
//import eapli.base.core.usermanagement.domain.BasePasswordPolicy;
import eapli.framework.infrastructure.authz.domain.model.Username;
import org.junit.Before;
import org.junit.jupiter.api.Assertions;
import org.junit.jupiter.api.Test;

import java.text.ParseException;
import java.text.SimpleDateFormat;
import java.util.Date;

import static org.junit.jupiter.api.Assertions.assertThrows;



public class InviteTest {

    AcceptRefuseInvitesService service = new
AcceptRefuseInvitesService(AuthzRegistry.authorizationService(),
PersistenceContext.repositories().inviteRepository());

    Date date=new Date(System.currentTimeMillis());
    SimpleDateFormat simpleDateFormat = new SimpleDateFormat("hh:mm");
    Date time = simpleDateFormat.parse("10:30");



    final SystemUserBuilder userBuilder = new SystemUserBuilder(new
BasePasswordPolicy(), new PlainTextEncoder());
    final SystemUser newUser = userBuilder
            .withUsername("systemUserTest")
            .withPassword("password")
```

```
            .withName("SystemUser", "Test")
            .withEmail("systemusertest@email.org")
            .withRoles(BaseRoles.STUDENT)
            .build();

    final SystemUser newUser2 = userBuilder
            .withUsername("systemUserTest")
            .withPassword("password")
            .withName("SystemUser", "Test")
            .withEmail("systemusertest@email.org")
            .withRoles(BaseRoles.STUDENT)
            .build();

    final SystemUser newUser3 = userBuilder
            .withUsername("systemUserTest")
            .withPassword("password")
            .withName("SystemUser", "Test")
            .withEmail("systemusertest@email.org")
            .withRoles(BaseRoles.STUDENT)
            .build();

    final SystemUser newUser4 = userBuilder
            .withUsername("systemUserTest")
            .withPassword("password")
            .withName("SystemUser", "Test")
            .withEmail("systemusertest@email.org")
            .withRoles(BaseRoles.STUDENT)
            .build();

    final SystemUser newUser5 = userBuilder
            .withUsername("systemUserTest")
            .withPassword("password")
            .withName("SystemUser", "Test")
            .withEmail("systemusertest@email.org")
            .withRoles(BaseRoles.STUDENT)
            .build();
    Meeting meeting = new Meeting(new MeetingTitle("meeting title"), newUser, new
MeetingDuration(30), new MeetingDate(date), new MeetingTime(time));
    Invite invite1 = new Invite(newUser, newUser2, meeting);
    Invite invite2 = new Invite(newUser, newUser3, meeting);

    @Before
    public void setUp() {
        service.acceptInvite(invite1, newUser2);
```

```
        service.refuseInvite(invite2);
    }

    public InviteTest() throws ParseException {
    }

    @Test
    void ensureInviteMustHaveSender() {
        System.out.println("must have invite sender");
        assertThrows(IllegalArgumentException.class, () -> new Invite(null, newUser,
meeting));
    }

    @Test
    void ensureInviteMustHaveReceiver() {
        System.out.println("must have invite receiver");
        assertThrows(IllegalArgumentException.class, () -> new Invite(newUser, null,
meeting));
    }

    @Test
    void ensureInviteMustHaveMeeting() {
        System.out.println("must have meeting");
        assertThrows(IllegalArgumentException.class, () -> new Invite(newUser, newUser2,
null));
    }

    @Test
    void EnsureInviteStateChangesToAcceptedWhenUserAccepts(){
        Assertions.assertEquals(invite1.getState(),InviteState.ACCEPTED);
    }

    @Test
    void EnsureMeetingContainsUserWhenInviteIsAccepted(){
        Assertions.assertTrue(meeting.getParticipants().contains(newUser2));
    }

    @Test
    void EnsureInviteStateChangesToRefusedWhenUserRefuses(){
        Assertions.assertEquals(invite2.getState(),InviteState.REJECTED);
    }

    @Test
    void EnsureMeetingDoesNotContainsUserWhenInviteIsRefused(){
```

```
        Assertions.assertFalse(meeting.getParticipants().contains(newUser3));
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\test\eapli\base\meetingmanagement\domain\InviteTest.java

[File Begins] sem4pi-22-23-61-master\base.core\src\test\eapli\base\meetingmanagement\domain\MeetingTest.java

```
package eapli.base.meetingmanagement.domain;

import eapli.base.usermanagement.domain.BasePasswordPolicy;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.base.usermanagement.domain.UserBuilderHelper;
import eapli.framework.infrastructure.authz.domain.model.PlainTextEncoder;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.model.SystemUserBuilder;
import org.junit.jupiter.api.Test;

import java.text.ParseException;
import java.text.SimpleDateFormat;
import java.util.Date;

import static org.junit.jupiter.api.Assertions.assertThrows;

public class MeetingTest {

    Date date=new Date(System.currentTimeMillis());
    SimpleDateFormat simpleDateFormat = new SimpleDateFormat("hh:mm");
    Date time = simpleDateFormat.parse("10:30");

    final SystemUserBuilder userBuilder = new SystemUserBuilder(new
BasePasswordPolicy(), new PlainTextEncoder());
    final SystemUser newUser = userBuilder
            .withUsername("systemUserTest")
            .withPassword("password")
            .withName("SystemUser", "Test")
            .withEmail("systemusertest@email.org")
            .withRoles(BaseRoles.STUDENT)
            .build();

    public MeetingTest() throws ParseException {
    }
```

```
    @Test
    void ensureMeetingMustHaveDuration() {
        System.out.println("must have meeting duration");

        assertThrows(IllegalArgumentException.class, () -> new Meeting(new
MeetingTitle("meeting title"), newUser, null, new MeetingDate(date), new
MeetingTime(time)));
    }

    @Test
    void ensureMeetingMustHaveDate() {
        System.out.println("must have exam date");

        assertThrows(IllegalArgumentException.class, () -> new Meeting(new
MeetingTitle("meeting title"), newUser, new MeetingDuration(30), null, new
MeetingTime(time)));
    }

    @Test
    void ensureMeetingMustHaveTime() {
        System.out.println("must have exam course");

        assertThrows(IllegalArgumentException.class, () -> new Meeting(new
MeetingTitle("meeting title"), newUser, new MeetingDuration(30), new
MeetingDate(date), null));
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\test\eapli\base\meetingmanagement\domain\MeetingTest.java

[File Begins] sem4pi-22-23-61-master\base.core\src\test\eapli\base\sharedboardmanagement\domain\CreatePostItTest.java

```
package eapli.base.sharedboardmanagement.domain;

import eapli.base.SharedBoard.aplication.CreateBoardPostItController;
import eapli.base.SharedBoard.domain.*;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.base.usermanagement.domain.BasePasswordPolicy;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.infrastructure.authz.domain.model.PlainTextEncoder;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
```

```
import eapli.framework.infrastructure.authz.domain.model.SystemUserBuilder;
import org.junit.Before;
import org.junit.jupiter.api.Assertions;
import org.junit.jupiter.api.Test;

public class CreatePostItTest {

    private final CreateBoardPostItController controller = new
CreateBoardPostItController(
            PersistenceContext.repositories().sharedBoardRepository());

    final SystemUserBuilder userBuilder = new SystemUserBuilder(new
BasePasswordPolicy(), new PlainTextEncoder());
    final SystemUser newUser = userBuilder
            .withUsername("systemUserTest")
            .withPassword("password")
            .withName("SystemUser", "Test")
            .withEmail("systemusertest@email.org")
            .withRoles(BaseRoles.STUDENT)
            .build();

    final SystemUser newUser2 = userBuilder
            .withUsername("systemUserTest_update")
            .withPassword("password")
            .withName("SystemUser", "Test")
            .withEmail("systemusertest@email.org")
            .withRoles(BaseRoles.STUDENT)
            .build();

    SharedBoard sharedBoard = new SharedBoard(newUser, new
Shared_Board_Title("title"), new NumberofRows(10), new NumberofColumns(10));
    @Before
    public void setUp() {
        sharedBoard.shareBoard(newUser, newUser2, SharedBoard.AccessType.READ);

        sharedBoard.getBoard().insertCell(1,1,new PostIt("post-it_1", newUser));
    }


    @Test
    void EnsureUserWithReadPermissionCantWrite(){
        Assertions.assertFalse(controller.getBoardAccessType(sharedBoard, newUser2));
    }
```

```
    @Test
    void EnsurePostItIsNotAddedIfTheDesiredPositionIsOccupied(){
        Assertions.assertFalse(sharedBoard.getBoard().insertCell(1,1,new PostIt("post-
it_2", newUser)));
    }

    @Test
    void EnsurePostItIsAddedIfTheDesiredPositionIsFree(){
        Assertions.assertTrue(sharedBoard.getBoard().insertCell(1,2,new PostIt("post-
it_3", newUser)));
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\test\eapli\base\sharedboardmanagement\domain\CreatePostItTest.java

[File Begins] sem4pi-22-23-61-master\base.core\src\test\eapli\base\sharedboardmanagement\domain\UpdatePostItTest.java

```
package eapli.base.sharedboardmanagement.domain;

import eapli.base.SharedBoard.aplication.CreateBoardPostItController;
import eapli.base.SharedBoard.aplication.UpdateBoardPostItController;
import eapli.base.SharedBoard.domain.*;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.base.usermanagement.domain.BasePasswordPolicy;
import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.infrastructure.authz.domain.model.PlainTextEncoder;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.model.SystemUserBuilder;
import org.junit.Before;
import org.junit.jupiter.api.Assertions;
import org.junit.jupiter.api.Test;

public class UpdatePostItTest {

    private final UpdateBoardPostItController controller = new
UpdateBoardPostItController(
            PersistenceContext.repositories().sharedBoardRepository());

    final SystemUserBuilder userBuilder = new SystemUserBuilder(new
BasePasswordPolicy(), new PlainTextEncoder());
```

```
    final SystemUser newUser = userBuilder
            .withUsername("systemUserTest_update")
            .withPassword("password")
            .withName("SystemUser", "Test")
            .withEmail("systemusertest@email.org")
            .withRoles(BaseRoles.STUDENT)
            .build();

    final SystemUser newUser2 = userBuilder
            .withUsername("systemUserTest_update")
            .withPassword("password")
            .withName("SystemUser", "Test")
            .withEmail("systemusertest@email.org")
            .withRoles(BaseRoles.STUDENT)
            .build();

    final SystemUser newUser3 = userBuilder
            .withUsername("systemUserTest_update")
            .withPassword("password")
            .withName("SystemUser", "Test")
            .withEmail("systemusertest@email.org")
            .withRoles(BaseRoles.STUDENT)
            .build();

    SharedBoard sharedBoard = new SharedBoard(newUser, new
Shared_Board_Title("title"), new NumberofRows(10), new NumberofColumns(10));
    @Before
    public void setUp() {
        sharedBoard.shareBoard(newUser, newUser2, SharedBoard.AccessType.WRITE);
        sharedBoard.shareBoard(newUser, newUser3, SharedBoard.AccessType.READ);

        sharedBoard.getBoard().insertCell(1,1,new PostIt("post-it_1", newUser));
        sharedBoard.getBoard().insertCell(1,2,new PostIt("post-it_2", newUser2));
    }


    @Test
    void EnsureUserWithReadPermissionCantWrite(){
        Assertions.assertFalse(controller.getBoardAccessType(sharedBoard, newUser3));
    }

    @Test
    void EnsurePostItIsNotUpdatedIfTheOriginalPositionIsNull(){
        Assertions.assertFalse(sharedBoard.getBoard().updateCell(2,2,new PostIt("post-
```

```
it",newUser)));
    }

    @Test
    void EnsurePostItIsNotUpdatedIfUserIsNotTheAuthorOfTheOriginalPostIt(){
        Assertions.assertFalse(sharedBoard.getBoard().updateCell(1,1,new PostIt("post-
it",newUser2)));
    }

    @Test
    void EnsurePostItIsUpdatedIfAllConditionsAreMet(){
        Assertions.assertFalse(sharedBoard.getBoard().updateCell(1,1,new PostIt("post-
it",newUser)));
    }

    @Test
    void EnsurePostItIsNotMovedIfTheOriginalPositionIsNull(){
        Assertions.assertEquals(sharedBoard.getBoard().moveCell(2,2,2,1,newUser),3);
    }

    @Test
    void EnsurePostItIsNotMovedIfTheNewPositionIsOccupied(){
        Assertions.assertEquals(sharedBoard.getBoard().moveCell(1,1,1,2,newUser),2);
    }

    @Test
    void EnsurePostItIsNotMovedIfUserIsNotTheAuthorOfTheOriginalPostIt(){
        Assertions.assertEquals(sharedBoard.getBoard().moveCell(1,1,2,2,newUser2),1);
    }

    @Test
    void EnsurePostItIsMovedIfAllConditionsAreMet(){
        Assertions.assertEquals(sharedBoard.getBoard().moveCell(1,1,3,3,newUser),0);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\test\eapli\base\sharedboardmanagement\domain\UpdatePostItTest.java

[File Begins] sem4pi-22-23-61-master\base.core\src\test\java\eapli\base\clientusermanagement\domain\ClientUserTest.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
 * MIT License
 *
 * Permission is hereby granted, free of charge, to any person obtaining a copy
 * of this software and associated documentation files (the "Software"), to deal
 * in the Software without restriction, including without limitation the rights
 * to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
 * copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
 *
 * The above copyright notice and this permission notice shall be included in
 * all copies or substantial portions of the Software.
 *
 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR
 * IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY,
 * FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO
EVENT SHALL THE
 * AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES
OR OTHER
 * LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.clientusermanagement.domain;

import static org.junit.Assert.assertFalse;
import static org.junit.Assert.assertTrue;

import java.util.HashSet;
import java.util.Set;
```

```
import org.junit.Test;

import eapli.base.usermanagement.domain.BaseRoles;
import eapli.framework.infrastructure.authz.domain.model.NilPasswordPolicy;
import eapli.framework.infrastructure.authz.domain.model.PlainTextEncoder;
import eapli.framework.infrastructure.authz.domain.model.Role;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.model.SystemUserBuilder;

/**
 * Created by Nuno Bettencourt [NMB] on 03/04/16.
 */
public class ClientUserTest {

    private final String aMecanographicNumber = "abc";
    private final String anotherMecanographicNumber = "xyz";

    public static SystemUser dummyUser(final String username, final Role... roles) {
        // should we load from spring context?
        final SystemUserBuilder userBuilder = new SystemUserBuilder(new
NilPasswordPolicy(), new PlainTextEncoder());
        return userBuilder.with(username, "duMMy1", "dummy", "dummy",
"a@b.ro").withRoles(roles).build();
    }

    private SystemUser getNewDummyUser() {
        return dummyUser("dummy", BaseRoles.ADMIN);
    }

    private SystemUser getNewDummyUserTwo() {
        return dummyUser("dummy-two", BaseRoles.ADMIN);
    }

    @Test
    public void ensureClientUserEqualsPassesForTheSameMecanographicNumber()
throws Exception {

        final ClientUser aClientUser = new
ClientUserBuilder().withMecanographicNumber("DUMMY")
                .withSystemUser(getNewDummyUser()).build();

        final ClientUser anotherClientUser = new
ClientUserBuilder().withMecanographicNumber("DUMMY")
                .withSystemUser(getNewDummyUser()).build();
```

```
        final boolean expected = aClientUser.equals(anotherClientUser);

        assertTrue(expected);
    }

    @Test
    public void ensureClientUserEqualsFailsForDifferenteMecanographicNumber() throws
Exception {
        final Set<Role> roles = new HashSet<>();
        roles.add(BaseRoles.MANAGER);

        final ClientUser aClientUser = new
ClientUserBuilder().withMecanographicNumber(aMecanographicNumber)
                .withSystemUser(getNewDummyUser()).build();

        final ClientUser anotherClientUser = new ClientUserBuilder()

.withMecanographicNumber(anotherMecanographicNumber).withSystemUser(getNewD
ummyUser()).build();

        final boolean expected = aClientUser.equals(anotherClientUser);

        assertFalse(expected);
    }

    @Test
    public void ensureClientUserEqualsAreTheSameForTheSameInstance() throws
Exception {
        final ClientUser aClientUser = new ClientUser();

        final boolean expected = aClientUser.equals(aClientUser);

        assertTrue(expected);
    }

    @Test
    public void ensureClientUserEqualsFailsForDifferenteObjectTypes() throws Exception
{
        final Set<Role> roles = new HashSet<>();
        roles.add(BaseRoles.TEACHER);

        final ClientUser aClientUser = new
ClientUserBuilder().withMecanographicNumber("DUMMY")
```

```
            .withSystemUser(getNewDummyUser()).build();

        final boolean expected = aClientUser.equals(getNewDummyUser());

        assertFalse(expected);
    }

    @Test
    public void ensureClientUserIsTheSameAsItsInstance() throws Exception {
        final ClientUser aClientUser = new
ClientUserBuilder().withMecanographicNumber("DUMMY")
            .withSystemUser(getNewDummyUser()).build();

        final boolean expected = aClientUser.sameAs(aClientUser);

        assertTrue(expected);
    }

    @Test
    public void
ensureTwoClientUserWithDifferentMecanographicNumbersAreNotTheSame() throws
Exception {
        final Set<Role> roles = new HashSet<>();
        roles.add(BaseRoles.STUDENT);
        final ClientUser aClientUser = new
ClientUserBuilder().withMecanographicNumber(aMecanographicNumber)
            .withSystemUser(getNewDummyUser()).build();

        final ClientUser anotherClientUser = new ClientUserBuilder()

.withMecanographicNumber(anotherMecanographicNumber).withSystemUser(getNewD
ummyUser()).build();

        final boolean expected = aClientUser.sameAs(anotherClientUser);

        assertFalse(expected);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.core\src\test\java\eapli\base\clientusermanagement\domain\ClientUserTest.java

[File Begins] sem4pi-22-23-61-master\base.infrastructure.application\pom.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
https://maven.apache.org/xsd/maven-4.0.0.xsd">
        <modelVersion>4.0.0</modelVersion>

    <parent>
        <groupId>eapli</groupId>
        <artifactId>base</artifactId>
        <relativePath>../</relativePath>
        <version>1.4.0-SNAPSHOT</version>
    </parent>

        <artifactId>base.infrastructure.application</artifactId>
        <packaging>jar</packaging>
        <name>base.infrastructure.application</name>

        <properties></properties>

        <dependencies>
        </dependencies>

</project>
```

[File Ends] sem4pi-22-23-61-master\base.infrastructure.application\pom.xml

[File Begins] sem4pi-22-23-61-master\base.infrastructure.application\src\main\java\eapli\base\AppSettings.java

```
/*
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```

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 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
 */
package eapli.base;

import java.io.FileNotFoundException;
import java.io.IOException;
import java.io.InputStream;
import java.util.HashMap;
import java.util.Map;
import java.util.Properties;

import org.slf4j.Logger;
import org.slf4j.LoggerFactory;

/**
 * the application settings.
 *
 * @author Paulo Gandra Sousa
 */
public class AppSettings {
    private static final Logger LOGGER = LoggerFactory.getLogger(AppSettings.class);

    private static final String PROPERTIES_RESOURCE = "application.properties";
    private static final String REPOSITORY_FACTORY_KEY =
"persistence.repositoryFactory";
    private static final String UI_MENU_LAYOUT_KEY = "ui.menu.layout";
    private static final String PERSISTENCE_UNIT_KEY = "persistence.persistenceUnit";
    private static final String SCHEMA_GENERATION_KEY =
"javax.persistence.schema-generation.database.action";
```

```
    private static final String HIGH_CALORIES_DISH_LIMIT = "HighCaloriesDishLimit";

    private final Properties applicationProperties = new Properties();

    public AppSettings() {
        loadProperties();
    }

    private void loadProperties() {
        try (InputStream propertiesStream = this.getClass().getClassLoader()
                .getResourceAsStream(PROPERTIES_RESOURCE)) {
            if (propertiesStream != null) {
                this.applicationProperties.load(propertiesStream);
            } else {
                throw new FileNotFoundException(
                        "property file '" + PROPERTIES_RESOURCE + "' not found in the
classpath");
            }
        } catch (final IOException exio) {
            setDefaultProperties();

            LOGGER.warn("Loading default properties", exio);
        }
    }

    private void setDefaultProperties() {
        this.applicationProperties.setProperty(REPOSITORY_FACTORY_KEY,
                "eapli.base.persistence.jpa.JpaRepositoryFactory");
        this.applicationProperties.setProperty(UI_MENU_LAYOUT_KEY, "horizontal");
        this.applicationProperties.setProperty(PERSISTENCE_UNIT_KEY, "eapli"
                + ".base");
        this.applicationProperties.setProperty(HIGH_CALORIES_DISH_LIMIT, "300");
    }

    public Boolean isMenuLayoutHorizontal() {
        return "horizontal"

.equalsIgnoreCase(this.applicationProperties.getProperty(UI_MENU_LAYOUT_KEY));
    }

    public String getPersistenceUnitName() {
        return this.applicationProperties.getProperty(PERSISTENCE_UNIT_KEY);
    }
```

```
    public String getRepositoryFactory() {
        return this.applicationProperties.getProperty(REPOSITORY_FACTORY_KEY);
    }

    public Integer getHighCaloriesDishLimit() {
        return
Integer.valueOf(this.applicationProperties.getProperty(HIGH_CALORIES_DISH_LIMIT));
    }

    @SuppressWarnings({ "rawtypes", "unchecked" })
    public Map getExtendedPersistenceProperties() {
        final Map ret = new HashMap();
        ret.put(SCHEMA_GENERATION_KEY,
                this.applicationProperties.getProperty(SCHEMA_GENERATION_KEY));
        return ret;
    }

    public String getProperty(final String prop) {
        return this.applicationProperties.getProperty(prop);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.infrastructure.application\src\main\java\eapli\base\AppSettings.java

[File Begins] sem4pi-22-23-61-master\base.infrastructure.application\src\main\java\eapli\base\Application.java

```
/*
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 *
```

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HOLDERS BE LIABLE FOR ANY CLAIM,
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TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
 */
package eapli.base;

/**
 * A "global" static class with the application registry of well known objects
 *
 * @author Paulo Gandra Sousa
 *
 */
public class Application {

    public static final String VERSION = "1.4.0";
    public static final String COPYRIGHT = "(C) 2016 - 2021, ISEP's Professors of
EAPLI";

    private static final AppSettings SETTINGS = new AppSettings();

    public static AppSettings settings() {
        return SETTINGS;
    }

    private Application() {
        // private visibility to ensure singleton & utility
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.infrastructure.application\src\main\java\eapli\base\Application.java

[File Begins] sem4pi-22-23-61-master\base.infrastructure.application\src\main\java\eapli\base\infrastructure\authz\AuthenticationCredentialHandler.java

```
/*
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 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.infrastructure.authz;

import eapli.framework.infrastructure.authz.application.Authenticator;
import eapli.framework.infrastructure.authz.application.AuthzRegistry;
import eapli.framework.infrastructure.authz.domain.model.Role;

/**
 *
 * @author Paulo Gandra de Sousa 2022.11.24
```

```
 *
 */
public class AuthenticationCredentialHandler implements CredentialHandler {

	private final Authenticator authenticationService =
AuthzRegistry.authenticationService();

	@Override
	public boolean authenticated(String username, String password, Role
onlyWithThis) {
		return authenticationService.authenticate(username, password,
onlyWithThis).isPresent();
	}

}
```

[File Ends] sem4pi-22-23-61-master\base.infrastructure.application\src\main\java\eapli\base\infrastructure\authz\AuthenticationCredentialHandler.java

[File Begins] sem4pi-22-23-61-master\base.infrastructure.application\src\main\java\eapli\base\infrastructure\authz\CredentialHandler.java

```
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DEALINGS IN THE
 * SOFTWARE.
 */
package eapli.base.infrastructure.authz;

import eapli.framework.infrastructure.authz.domain.model.Role;

/**
 *
 * @author Paulo Gandra de Sousa 2022.11.24
 *
 */
public interface CredentialHandler {
	boolean authenticated(String username, String password, Role onlyWithThis);
}
```

[File Ends] sem4pi-22-23-61-master\base.infrastructure.application\src\main\java\eapli\base\infrastructure\authz\CredentialHandler.java

[File Begins] sem4pi-22-23-61-master\base.infrastructure.application\src\main\resources\application.properties.sample

```
############################################################
##
## eCafeteria
##
############################################################

persistence.persistenceUnit=eapli.eCafeteriaPU

#persistence.repositoryFactory=eapli.ecafeteria.persistence.jpa.JpaRepositoryFactory
persistence.repositoryFactory=eapli.ecafeteria.persistence.inmemory.InMemoryRepositoryFactory

ui.menu.layout=horizontal

HighCaloriesDishLimit=300
```

UseEventfulControllers=true

[File Ends] sem4pi-22-23-61-master\base.infrastructure.application\src\main\resources\application.properties.sample

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\pom.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/xsd/maven-4.0.0.xsd">
    <modelVersion>4.0.0</modelVersion>

    <parent>
        <groupId>eapli</groupId>
        <artifactId>base</artifactId>
        <relativePath>../</relativePath>
        <version>1.4.0-SNAPSHOT</version>
    </parent>

    <artifactId>base.persistence.impl</artifactId>
    <packaging>jar</packaging>

    <name>base.persistence.impl</name>

    <properties>
        <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
        <project.reporting.outputEncoding>UTF-8</project.reporting.outputEncoding>
    </properties>

    <dependencies>
        <dependency>
            <groupId>eapli</groupId>
            <artifactId>base.core</artifactId>
            <version>${project.parent.version}</version>
        </dependency>
        <dependency>
            <groupId>eapli</groupId>
            <artifactId>base.bootstrappers</artifactId>
            <version>${project.parent.version}</version>
            <type>jar</type>
        </dependency>
```

```
    </dependencies>
</project>
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\pom.xml

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\inmemory\InMemoryClientUserRepository.java

```
/*
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 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
 */
package eapli.base.persistence.impl.inmemory;

import eapli.base.Student_Teacher.Student.domain.MechanographicNumber;
import eapli.base.clientusermanagement.domain.ClientUser;
import eapli.base.clientusermanagement.repositories.ClientUserRepository;
import eapli.framework.infrastructure.authz.domain.model.Username;
import
eapli.framework.infrastructure.repositories.impl.inmemory.InMemoryDomainRepository;
```

```
import java.util.Optional;

/**
 *
 * @author Jorge Santos ajs@isep.ipp.pt 02/04/2016
 */
public class InMemoryClientUserRepository
        extends InMemoryDomainRepository<ClientUser, MechanographicNumber>
        implements ClientUserRepository {

    static {
        InMemoryInitializer.init();
    }

    @Override
    public Optional<ClientUser> findByUsername(final Username name) {
        return matchOne(e -> e.user().username().equals(name));
    }

    @Override
    public Optional<ClientUser> findByMechanographicNumber(final
MechanographicNumber number) {
        return Optional.of(data().get(number));
    }

    @Override
    public Iterable<ClientUser> findAllActive() {
        return match(e -> e.user().isActive());
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\inmemory\InMemoryClientUserRepository.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\inmemory\InMemoryExamRepository.java

```
package eapli.base.persistence.impl.inmemory;

import eapli.base.Course.Domain.Course;
import eapli.base.Student_Teacher.Student.domain.Student;
import eapli.base.exammanagement.domain.Exam;
```

```
import eapli.base.exammanagement.repository.ExamRepository;
import
eapli.framework.infrastructure.repositories.impl.inmemory.InMemoryDomainRepository;

import java.util.ArrayList;
import java.util.List;

public class InMemoryExamRepository extends InMemoryDomainRepository<Exam,
Long> implements ExamRepository {
    @Override
    public boolean contains(Exam exam) {
        return super.contains(exam);
    }

    @Override
    public Exam save(Exam entity) {
        return super.save(entity);
    }


    @Override
    public Iterable<Exam> findAll() {
        return super.findAll();
    }

    public List<Exam> findByTitle(String title) {
        List<Exam> exams = new ArrayList<>();
        for (Exam exam : findAll()) {
            if (exam.getExamTitle().toString().equalsIgnoreCase(title)) {
                exams.add(exam);
            }
        }
        return exams;
    }

    @Override
    public List<Exam> findStudentFutureExams(Student student) {
        return null;
    }

    @Override
    public Iterable<Exam> findByCourse(Course course) {
        return null;
    }
```

}

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\inmemory\InMemoryExamRepository.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\inmemory\InMemoryInitializer.java

```
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 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
 */
package eapli.base.persistence.impl.inmemory;

import eapli.base.infrastructure.bootstrapers.BaseBootstrapper;

final class InMemoryInitializer {
```

```
    private static class LazyHolder {
        private static final InMemoryInitializer INSTANCE = new InMemoryInitializer();

        private LazyHolder() {
        }
    }

    private InMemoryInitializer() {
        // to ensure some default test data is available, specially when using
        // in memory persistence
        new BaseBootstrapper().execute();
    }

    private void initialize() {
        // nothing to do; data has already been initialized in the singleton
        // constructor.
    }

    public static void init() {
        LazyHolder.INSTANCE.initialize();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\inmemory\InMemoryInitializer.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\inmemory\InMemoryInviteRepository.java

```
package eapli.base.persistence.impl.inmemory;

import eapli.base.meetingmanagement.domain.Invite;
import eapli.base.meetingmanagement.domain.Meeting;
import eapli.base.meetingmanagement.repository.InviteRepository;
import eapli.framework.infrastructure.authz.domain.model.Username;
import
eapli.framework.infrastructure.repositories.impl.inmemory.InMemoryDomainRepository;

public class InMemoryInviteRepository extends InMemoryDomainRepository<Invite,
Long>
        implements InviteRepository {
```

```
    static {
        InMemoryInitializer.init();
    }
//    @Override
//    public Iterable<Invite> findInvitesByReceiverUsername(Username username) {
//        return match(e -> e.getReceiver().username().equals(username));
//    }

    @Override
    public Iterable<Invite> findInvitesByMeeting(Meeting meeting) {
        return match(e ->
e.getMeeting().getMeetingTitle().getTitle().equals(meeting.getMeetingTitle().getTitle()));
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\inmemory\InMemoryInviteRepository.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\inmemory\InMemoryRepositoryFactory.java

```
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TORT OR OTHERWISE, ARISING FROM,
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DEALINGS IN THE SOFTWARE.
 */
package eapli.base.persistence.impl.inmemory;

import eapli.base.SharedBoard.repository.SharedBoardRepository;
import eapli.base.clientusermanagement.repositories.ClientUserRepository;
import eapli.base.clientusermanagement.repositories.SignupRequestRepository;
import eapli.base.exammanagement.repository.ExamRepository;
import eapli.base.infrastructure.bootstrapers.BaseBootstrapper;
import eapli.base.infrastructure.persistence.RepositoryFactory;
import eapli.base.meetingmanagement.repository.InviteRepository;
import eapli.framework.domain.repositories.TransactionalContext;
import eapli.framework.infrastructure.authz.domain.repositories.UserRepository;
import
eapli.framework.infrastructure.authz.repositories.impl.inmemory.InMemoryUserRepositor
y;

/**
 *
 * Created by nuno on 20/03/16.
 */
public abstract class InMemoryRepositoryFactory implements RepositoryFactory {

    static {
        // only needed because of the in memory persistence
        new BaseBootstrapper().execute();
    }

    @Override
    public UserRepository users(final TransactionalContext tx) {
        return new InMemoryUserRepository();
    }

    @Override
    public UserRepository users() {
        return users(null);
    }

    @Override
```

```
    public ClientUserRepository clientUsers(final TransactionalContext tx) {

        return new InMemoryClientUserRepository();
    }

    @Override
    public ClientUserRepository clientUsers() {
        return clientUsers(null);
    }

    @Override
    public SignupRequestRepository signupRequests() {
        return signupRequests(null);
    }

    @Override
    public ExamRepository examRepository() {
        return null;
    }

    @Override
    public InviteRepository inviteRepository() {
        return new InMemoryInviteRepository();
    }

    @Override
    public SignupRequestRepository signupRequests(final TransactionalContext tx) {
        return new InMemorySignupRequestRepository();
    }

    @Override
    public SharedBoardRepository sharedBoardRepository(){
        return new InMemorySharedBoardRepository();
    }

    @Override
    public TransactionalContext newTransactionalContext() {
        // in memory does not support transactions...
        return null;
    }

}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\inmemory\InMemoryRepositoryFactory.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\inmemory\InMemorySharedBoardRepository.java

```
package eapli.base.persistence.impl.inmemory;

import eapli.base.SharedBoard.domain.SharedBoard;
import eapli.base.SharedBoard.domain.Shared_Board_Title;
import eapli.base.SharedBoard.repository.SharedBoardRepository;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import
eapli.framework.infrastructure.repositories.impl.inmemory.InMemoryDomainRepository;

public class InMemorySharedBoardRepository extends
InMemoryDomainRepository<SharedBoard, Shared_Board_Title> implements
SharedBoardRepository {

    static {
        InMemoryInitializer.init();
    }


    @Override
    public Iterable<SharedBoard> findSharedBoardsByOwner(SystemUser owner) {
        return match(e ->
e.getOwner().username().toString().equals(owner.username().toString()));
    }

    @Override
    public Iterable<SharedBoard> findByBoardId(Shared_Board_Title title) {
        return match(e -> e.getTitle().getTitle().equals(title.getTitle()));
    }

    @Override
    public Iterable<SharedBoard> findBoardsBySystemUser(SystemUser systemUser) {
        return match(e -> e.getSharedUsers().containsKey(systemUser));
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\inmemory\InMemorySharedBoardRepository.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\inmemory\InMemorySignupRequestRepository.java

```
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DEALINGS IN THE SOFTWARE.
 */
package eapli.base.persistence.impl.inmemory;

import eapli.base.clientusermanagement.domain.SignupRequest;
import eapli.base.clientusermanagement.repositories.SignupRequestRepository;
import eapli.framework.infrastructure.authz.domain.model.Username;
import
eapli.framework.infrastructure.repositories.impl.inmemory.InMemoryDomainRepository;

/**
```

```
 *
 * @author Jorge Santos ajs@isep.ipp.pt 02/04/2016
 */
public class InMemorySignupRequestRepository extends
        InMemoryDomainRepository<SignupRequest, Username> implements
SignupRequestRepository {

    static {
        InMemoryInitializer.init();
    }

    @Override
    public Iterable<SignupRequest> pendingSignupRequests() {
        throw new UnsupportedOperationException("Not supported yet.");
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\inmemory\InMemorySignupRequestRepository.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\BaseJpaReportingRepositoryBase.java

```
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DEALINGS IN THE SOFTWARE.
 */
package eapli.base.persistence.impl.jpa;

import eapli.base.Application;
import eapli.framework.infrastructure.repositories.impl.jpa.JpaTransactionalContext;

/**
 * a base class for all reporting repositories to use the same persistence unit
 *
 * @param <T>
 * @param <K>
 *
 * @author Paulo Gandra de Sousa
 */
/* package */ class BaseJpaReportingRepositoryBase extends JpaTransactionalContext
{

    BaseJpaReportingRepositoryBase() {
        super(Application.settings().getPersistenceUnitName(),
                Application.settings().getExtendedPersistenceProperties());
    }

    BaseJpaReportingRepositoryBase(final String persistenceUnitName) {
        super(persistenceUnitName,
Application.settings().getExtendedPersistenceProperties());
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\BaseJpaReportingRepositoryBase.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\BasepaRepositoryBase.java

```
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 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
 */
package eapli.base.persistence.impl.jpa;

import eapli.base.Application;
import eapli.framework.infrastructure.repositories.impl.jpa.JpaTransactionalRepository;

/**
 * a base class for all transactional repositories to use the same persistence
 * unit
 *
```

```
 * @param <T>
 * @param <K>
 *
 * @author Paulo Gandra de Sousa
 */
/* package */ class BasepaRepositoryBase<T, K, I>
        extends JpaTransactionalRepository<T, K, I> {

    BasepaRepositoryBase(final String persistenceUnitName, final String
identityFieldName) {
        super(persistenceUnitName,
Application.settings().getExtendedPersistenceProperties(),
                identityFieldName);
    }

    BasepaRepositoryBase(final String identityFieldName) {
        super(Application.settings().getPersistenceUnitName(),
                Application.settings().getExtendedPersistenceProperties(), identityFieldName);
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\BasepaRepositoryBase.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaClassRepository.java

```
package eapli.base.persistence.impl.jpa;
import eapli.base.Application;
import eapli.base.Classe.domain.Classe;
import eapli.base.Classe.domain.Classe_Title;
import eapli.base.Classe.repository.ClassRepository;
import eapli.framework.domain.repositories.TransactionalContext;
import eapli.framework.infrastructure.repositories.impl.jpa.JpaAutoTxRepository;

import javax.persistence.TypedQuery;
import java.util.List;
import java.util.Spliterator;
import java.util.function.Consumer;

public class JpaClassRepository extends JpaAutoTxRepository<Classe, Classe_Title,
Classe_Title> implements ClassRepository {
```

```
    public JpaClassRepository(final TransactionalContext autoTx) {
        super(autoTx, "title");
    }

    public JpaClassRepository(final String puname) {
        super(puname, Application.settings().getExtendedPersistenceProperties(), "title");
    }

    @Override
    public List<Classe> findClassesByTeacher(String teacherAcronym) {
        final TypedQuery<Classe> query = createQuery("SELECT c FROM Class c
WHERE c.teacherAcronym = :acronym", Classe.class);
        query.setParameter("acronym", teacherAcronym);
        return query.getResultList();
    }
    @Override
    public Iterable<Classe> findAll() {
        return this.createQuery("SELECT c FROM Classe c", Classe.class).getResultList();
    }

}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaClassRepository.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaClientUserRepository.java

```
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HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
 */
package eapli.base.persistence.impl.jpa;

import eapli.base.Application;
import eapli.base.Student_Teacher.Student.domain.MechanographicNumber;
import eapli.base.clientusermanagement.domain.ClientUser;
import eapli.base.clientusermanagement.repositories.ClientUserRepository;
import eapli.framework.domain.repositories.TransactionalContext;
import eapli.framework.infrastructure.authz.domain.model.Username;
import eapli.framework.infrastructure.repositories.impl.jpa.JpaAutoTxRepository;

import java.util.HashMap;
import java.util.Map;
import java.util.Optional;

/**
 *
 * @author Jorge Santos ajs@isep.ipp.pt 02/04/2016
 */
class JpaClientUserRepository
        extends JpaAutoTxRepository<ClientUser, MechanographicNumber,
MechanographicNumber>
        implements ClientUserRepository {

    public JpaClientUserRepository(final TransactionalContext autoTx) {
        super(autoTx, "mecanographicNumber");
    }

    public JpaClientUserRepository(final String puname) {
        super(puname, Application.settings().getExtendedPersistenceProperties(),
```

```
                "mecanographicNumber");
    }

    @Override
    public Optional<ClientUser> findByUsername(final Username name) {
        final Map<String, Object> params = new HashMap<>();
        params.put("name", name);
        return matchOne("e.systemUser.username=:name", params);
    }

    @Override
    public Optional<ClientUser> findByMechanographicNumber(final
MechanographicNumber number) {
        final Map<String, Object> params = new HashMap<>();
        params.put("number", number);
        return matchOne("e.mecanographicNumber=:number", params);
    }

    @Override
    public Iterable<ClientUser> findAllActive() {
        return match("e.systemUser.active = true");
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaClientUserRepository.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaCourseRepository.java

```
package eapli.base.persistence.impl.jpa;

import eapli.base.Application;
import eapli.base.Course.Domain.Course;
import eapli.base.Course.Domain.Course_ID;
import eapli.base.Course.Domain.Course_Name;
import eapli.base.Course.Repository.CourseRepository;
import eapli.framework.domain.repositories.TransactionalContext;
import eapli.framework.infrastructure.repositories.impl.jpa.JpaAutoTxRepository;

import javax.persistence.TypedQuery;
```

```
public class JpaCourseRepository extends JpaAutoTxRepository<Course, Long,
Course_Name> implements CourseRepository {

    public JpaCourseRepository(final TransactionalContext autoTx) {
        super(autoTx, "id");
    }

    public JpaCourseRepository(final String puname) {
        super(puname, Application.settings().getExtendedPersistenceProperties(),
                "id");
    }

    @Override
    public Iterable<Course> findCourseByName(String courseName) {
        final TypedQuery<Course> q = createQuery(
                "SELECT e FROM Course e WHERE e.courseName.value = :courseName",
Course.class);
        q.setParameter("courseName", courseName);
        return q.getResultList();
    }

}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaCourseRepository.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaExamRepository.java

```
package eapli.base.persistence.impl.jpa;

import eapli.base.Application;
import eapli.base.Course.Domain.Course;
import eapli.base.SharedBoard.domain.SharedBoard;
import eapli.base.Student_Teacher.Student.domain.MechanographicNumber;
import eapli.base.Student_Teacher.Student.domain.Student;
import eapli.base.exammanagement.domain.Exam;
import eapli.base.exammanagement.repository.ExamRepository;
import eapli.framework.domain.repositories.TransactionalContext;
import eapli.framework.infrastructure.repositories.impl.jpa.JpaAutoTxRepository;
import eapli.framework.infrastructure.repositories.impl.jpa.JpaBaseRepository;
```

```
import javax.persistence.*;
import java.util.List;

class JpaExamRepository extends JpaBaseRepository<Exam, Long, Long> implements
ExamRepository {

    public JpaExamRepository() {
        super("id");
    }

    @Override
    public Iterable<Exam> findByCourse(final Course course) {
        final TypedQuery<Exam> q = entityManager().createQuery(
                "SELECT e FROM Exam e WHERE e.examCourse.courseName.value =
:course", Exam.class);
        q.setParameter("course", course.getCourseName().getValue());
        return q.getResultList();
    }

    @Override
    public Iterable<Exam> findStudentFutureExams(final Student student) {
        final TypedQuery<Exam> q = entityManager().createQuery(
                "SELECT e FROM Exam e WHERE :student MEMBER OF
e.examCourse.students AND e.examDate.examDate > CURRENT_DATE",
Exam.class);
        q.setParameter("student", student);
        return q.getResultList();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaExamRepository.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaExtraClassRepository.java

```
package eapli.base.persistence.impl.jpa;
import eapli.base.Application;
import eapli.base.Classe.domain.Classe;
import eapli.base.Classe.domain.Classe_Title;
import eapli.base.Classe.repository.ClassRepository;
import eapli.base.ExtraClasse.domain.ExtraClasse;
```

```
import eapli.base.ExtraClasse.domain.ExtraClasse_Title;
import eapli.base.ExtraClasse.repository.ExtraClasseRepository;
import eapli.framework.domain.repositories.TransactionalContext;
import eapli.framework.infrastructure.repositories.impl.jpa.JpaAutoTxRepository;

import javax.persistence.TypedQuery;
import java.util.List;
import java.util.Spliterator;
import java.util.function.Consumer;

public class JpaExtraClassRepository extends JpaAutoTxRepository<ExtraClasse,
ExtraClasse_Title, ExtraClasse_Title> implements ExtraClasseRepository {

    public JpaExtraClassRepository(final TransactionalContext autoTx) {
        super(autoTx, "title");
    }

    public JpaExtraClassRepository(final String puname) {
        super(puname, Application.settings().getExtendedPersistenceProperties(), "title");
    }

    @Override
    public List<ExtraClasse> findExtraClassesByTeacher(String teacherAcronym) {
        final TypedQuery<ExtraClasse> query = createQuery("SELECT c FROM
ExtraClass c WHERE c.teacherAcronym = :acronym", ExtraClasse.class);
        query.setParameter("acronym", teacherAcronym);
        return query.getResultList();
    }
    @Override
    public Iterable<ExtraClasse> findAll() {
        return this.createQuery("SELECT c FROM ExtraClasse c",
ExtraClasse.class).getResultList();
    }


}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaExtraClassRepository.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaInviteRepository.java

```
package eapli.base.persistence.impl.jpa;

import eapli.base.Application;
import eapli.base.meetingmanagement.domain.Invite;
import eapli.base.meetingmanagement.domain.InviteState;
import eapli.base.meetingmanagement.domain.Meeting;
import eapli.base.meetingmanagement.repository.InviteRepository;
import eapli.framework.domain.repositories.TransactionalContext;
import eapli.framework.infrastructure.authz.domain.model.Username;
import eapli.framework.infrastructure.repositories.impl.jpa.JpaAutoTxRepository;

import javax.persistence.*;
import java.util.Optional;

public class JpaInviteRepository extends JpaAutoTxRepository<Invite, Long, Long>
implements InviteRepository {

    public JpaInviteRepository(final TransactionalContext autoTx) {
        super(autoTx, "id");
    }

    public JpaInviteRepository(final String puname) {
        super(puname, Application.settings().getExtendedPersistenceProperties(),
                "id");
    }

//    @Override
//    public Iterable<Invite> findInvitesByReceiverUsername(Username username) {
//        final TypedQuery<Invite> q = entityManager().createQuery(
//                "SELECT e FROM Invite e WHERE e.receiver.username.value = :username
AND e.state= :state", Invite.class);
//        q.setParameter("username", username.toString());
//        q.setParameter("state", InviteState.PENDING);
//        return q.getResultList();
//    }

    @Override
```

```
    public Iterable<Invite> findInvitesByMeeting(Meeting meeting) {
        final TypedQuery<Invite> q = entityManager().createQuery(
                "SELECT e FROM Invite e WHERE e.meeting.meetingTitle.title = :meeting",
Invite.class);
        q.setParameter("meeting", meeting.getMeetingTitle().getTitle());
        return q.getResultList();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaInviteRepository.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaMeetingRepository.java

```
package eapli.base.persistence.impl.jpa;

import eapli.base.Application;
import eapli.base.Classe.domain.Classe;
import eapli.base.meetingmanagement.domain.Meeting;
import eapli.base.meetingmanagement.domain.MeetingTitle;
import eapli.base.meetingmanagement.repository.MeetingRepository;
import eapli.framework.domain.repositories.TransactionalContext;
import eapli.framework.infrastructure.repositories.impl.jpa.JpaAutoTxRepository;

import javax.persistence.TypedQuery;

class JpaMeetingRepository extends JpaAutoTxRepository<Meeting, Long, Long>
implements MeetingRepository {

    public JpaMeetingRepository(final TransactionalContext autoTx) {
        super(autoTx, "id");
    }

    public JpaMeetingRepository(final String puname) {
        super(puname, Application.settings().getExtendedPersistenceProperties(),
                "id");
    }

    @Override
    public Meeting findByMeetingById(MeetingTitle meetingTitle) {
        final TypedQuery<Meeting> query = entityManager().createQuery("SELECT c
```

```
FROM Meeting c WHERE c.meetingTitle.title = :title", Meeting.class);
        query.setParameter("title", meetingTitle.getTitle());
        return query.getSingleResult();
    }

    @Override
    public Iterable<Meeting> findAll() {
        return this.createQuery("SELECT m FROM Meeting m",
Meeting.class).getResultList();
    }



}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaMeetingRepository.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaRepositoryFactory.java

```
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 */
package eapli.base.persistence.impl.jpa;

import eapli.base.Application;
import eapli.base.Classe.repository.ClassRepository;
import eapli.base.Course.Repository.CourseRepository;
import eapli.base.Enrollment.Repository.EnrollmentRepository;
import eapli.base.ExtraClasse.aplication.ExtraClassController;
import eapli.base.ExtraClasse.repository.ExtraClasseRepository;
import eapli.base.SharedBoard.repository.SharedBoardRepository;
import eapli.base.Student_Teacher.Student.Repository.StudentRepository;
import eapli.base.Student_Teacher.Teacher.Repository.TeacherRepository;
import eapli.base.clientusermanagement.repositories.ClientUserRepository;
import eapli.base.clientusermanagement.repositories.SignupRequestRepository;
import eapli.base.exammanagement.repository.ExamRepository;
import eapli.base.infrastructure.persistence.PersistenceContext;
import eapli.base.infrastructure.persistence.RepositoryFactory;
import eapli.base.meetingmanagement.repository.InviteRepository;
import eapli.base.meetingmanagement.repository.MeetingRepository;
import eapli.base.systemUserManagement.SystemUserRepository;
import eapli.framework.domain.repositories.TransactionalContext;
import eapli.framework.infrastructure.authz.domain.repositories.UserRepository;
import
eapli.framework.infrastructure.authz.repositories.impl.jpa.JpaAutoTxUserRepository;
import eapli.framework.infrastructure.repositories.impl.jpa.JpaAutoTxRepository;

/**
 *
 * Created by nuno on 21/03/16.
 */
public class JpaRepositoryFactory implements RepositoryFactory {


    @Override
    public UserRepository users(final TransactionalContext autoTx) {
        return new JpaAutoTxUserRepository(autoTx);
    }
```

```
    @Override
    public UserRepository users() {
        return new
JpaAutoTxUserRepository(Application.settings().getPersistenceUnitName(),
                Application.settings().getExtendedPersistenceProperties());
    }

    @Override
    public JpaClientUserRepository clientUsers(final TransactionalContext autoTx) {
        return new JpaClientUserRepository(autoTx);
    }

    @Override
    public JpaClientUserRepository clientUsers() {
        return new
JpaClientUserRepository(Application.settings().getPersistenceUnitName());
    }

    @Override
    public SignupRequestRepository signupRequests(final TransactionalContext autoTx) {
        return new JpaSignupRequestRepository(autoTx);
    }

    @Override
    public SignupRequestRepository signupRequests() {
        return new
JpaSignupRequestRepository(Application.settings().getPersistenceUnitName());
    }

    @Override
    public ExamRepository examRepository() {
        return new JpaExamRepository();
    }

    @Override
    public CourseRepository courseRepository() {
        return new JpaCourseRepository(Application.settings().getPersistenceUnitName());
    }

    @Override
    public MeetingRepository meetingRepository() {
        return new
JpaMeetingRepository(Application.settings().getPersistenceUnitName());
    }
```

```
    @Override
    public InviteRepository inviteRepository() {
        return new JpaInviteRepository(PersistenceContext.repositories()
                .newTransactionalContext());
    }

    @Override
    public ClassRepository classRepository() {
        return new JpaClassRepository(PersistenceContext.repositories()
                .newTransactionalContext());
    }

    @Override
    public ExtraClasseRepository extraClassRepostory() {
        return new JpaExtraClassRepository(PersistenceContext.repositories()
                .newTransactionalContext());
    }

    @Override
    public TeacherRepository teacherRepository() {
        return new
JpaTeacherRepository(PersistenceContext.repositories().newTransactionalContext());
    }

    @Override
    public StudentRepository studentRepository() {
        return new
JpaStudentRepository(PersistenceContext.repositories().newTransactionalContext());
    }

    @Override
    public ClientUserRepository clientUserRepository() {
        return null;
    }

    @Override
    public SharedBoardRepository sharedBoardRepository() {
        return new
JpaSharedBoardRepository(PersistenceContext.repositories().newTransactionalContext
());
    }

    @Override
```

```
    public EnrollmentRepository enrollmentRepository() {
        return null;
    }

    @Override
    public SystemUserRepository systemUserRepository() {
        return new
JpaSystemUserRepository(PersistenceContext.repositories().newTransactionalContext()
);
    }

    @Override
    public TransactionalContext newTransactionalContext() {
        return
JpaAutoTxRepository.buildTransactionalContext(Application.settings().getPersistenceUn
itName(),
                Application.settings().getExtendedPersistenceProperties());
    }


}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaRepositoryFactory.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaSharedBoardRepository.java

```
package eapli.base.persistence.impl.jpa;

import eapli.base.Application;
import eapli.base.SharedBoard.aplication.SharedBoardArchiveController;
import eapli.base.SharedBoard.domain.SharedBoard;
import eapli.base.SharedBoard.domain.Shared_Board_Title;
import eapli.base.SharedBoard.repository.SharedBoardRepository;
import eapli.framework.domain.repositories.TransactionalContext;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.repositories.impl.jpa.JpaAutoTxRepository;

import javax.persistence.*;

class JpaSharedBoardRepository extends JpaAutoTxRepository<SharedBoard,
```

```
Shared_Board_Title, Shared_Board_Title> implements SharedBoardRepository {

   EntityManagerFactory emf =
Persistence.createEntityManagerFactory(Application.settings().getPersistenceUnitName
());
   EntityManager em = emf.createEntityManager();

   public JpaSharedBoardRepository(final TransactionalContext autoTx) {
      super(autoTx, "id");
   }

   public JpaSharedBoardRepository(final String puname) {
      super(puname, Application.settings().getExtendedPersistenceProperties(), "id");
   }

   public Iterable<SharedBoard> findSharedBoardsByOwner(SystemUser owner) {
      final TypedQuery<SharedBoard> q = entityManager().createQuery(
            "SELECT sb FROM SharedBoard sb WHERE sb.owner = :owner",
SharedBoard.class);
      q.setParameter("owner", owner);
      return q.getResultList();
   }
   public Iterable<SharedBoard> findByBoardId(Shared_Board_Title title){
      final TypedQuery<SharedBoard> q = entityManager().createQuery(
            "SELECT sb FROM SharedBoard sb WHERE sb.title = :title",
SharedBoard.class);
      q.setParameter("title", title);
      return q.getResultList();
   }

   public Iterable<SharedBoard> findBoardsBySystemUser(SystemUser systemUser){
      final TypedQuery<SharedBoard> q = entityManager().createQuery(
            "SELECT e FROM SharedBoard e WHERE KEY(e.sharedUsers) =
:systemUser", SharedBoard.class);
      q.setParameter("systemUser", systemUser);
      return q.getResultList();
   }

   @Override
   public Iterable<SharedBoard> findAll() {
      return this.createQuery("SELECT s FROM SharedBoard s",
SharedBoard.class).getResultList();
   }
```

}

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaSharedBoardRepository.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaSignupRequestRepository.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
 * MIT License
 *
 * Permission is hereby granted, free of charge, to any person obtaining a copy of this software and
 * associated documentation files (the "Software"), to deal in the Software without restriction,
 * including without limitation the rights to use, copy, modify, merge, publish, distribute,
 * sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
 *
 * The above copyright notice and this permission notice shall be included in all copies or
 * substantial portions of the Software.
 *
 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT
 * NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
 * NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
 */
package eapli.base.persistence.impl.jpa;

import eapli.base.Application;
import eapli.base.clientusermanagement.domain.SignupRequest;
import eapli.base.clientusermanagement.repositories.SignupRequestRepository;
```

```
import eapli.framework.domain.repositories.TransactionalContext;
import eapli.framework.infrastructure.authz.domain.model.Username;
import eapli.framework.infrastructure.repositories.impl.jpa.JpaAutoTxRepository;

/**
 *
 * @author Jorge Santos ajs@isep.ipp.pt 02/04/2016
 */
class JpaSignupRequestRepository extends JpaAutoTxRepository<SignupRequest,
Username, Username>
        implements SignupRequestRepository {

    public JpaSignupRequestRepository(final TransactionalContext autoTx) {
        super(autoTx, "username");
    }

    public JpaSignupRequestRepository(final String puname) {
        super(puname, Application.settings().getExtendedPersistenceProperties(),
"username");
    }

    @Override
    public Iterable<SignupRequest> pendingSignupRequests() {
        return match(
                "e.approvalStatus=eapli.base.clientusermanagement.domain"
                        + ".ApprovalStatus.PENDING");
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaSignupRequestRepository.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaStudentRepository.java

```
package eapli.base.persistence.impl.jpa;

import eapli.base.Application;
import eapli.base.Student_Teacher.Student.Repository.StudentRepository;
import eapli.base.Student_Teacher.Student.domain.MechanographicNumber;
import eapli.base.Student_Teacher.Student.domain.Student;
import eapli.framework.domain.repositories.TransactionalContext;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
```

```
import eapli.framework.infrastructure.authz.domain.model.Username;
import eapli.framework.infrastructure.repositories.impl.jpa.JpaAutoTxRepository;
import eapli.framework.infrastructure.repositories.impl.jpa.JpaBaseRepository;
import org.hibernate.jpa.internal.util.PersistenceUtilHelper;

import javax.persistence.TypedQuery;
import java.util.HashMap;
import java.util.Map;
import java.util.Optional;

public class JpaStudentRepository extends
JpaAutoTxRepository<Student,MechanographicNumber, MechanographicNumber>
        implements StudentRepository {

    public JpaStudentRepository(final TransactionalContext autoTx) {
        super(autoTx, "mechanographic number");
    }

    public JpaStudentRepository(final String puname) {
        super(puname, Application.settings().getExtendedPersistenceProperties(),
                "mechanographic number");
    }

    @Override
    public Iterable<Student> findStudentByMechanographicNumberReturnList(String
mechanographicNumber) {
        return null;
    }

    @Override
    public Student findStudentByMechanographicNumber(String
mechanographicNumber) {
        final TypedQuery<Student> q = createQuery(
                "SELECT e FROM Student e WHERE e.mechanographicNumber =
:mechanographicNumber", Student.class);
        q.setParameter("mechanographicNumber", mechanographicNumber);
        return q.getSingleResult();
    }

    @Override
    public Student findStudentBySystemUser(SystemUser systemUser) {
        final TypedQuery<Student> q = createQuery(
                "SELECT e FROM Student e WHERE e.systemUser.username.value =
:systemUser", Student.class);
```

```
        q.setParameter("systemUser", systemUser.username().toString());
        return q.getSingleResult();
    }

    @Override
        public Optional<Student> findByUsername(final Username name) {
            final Map<String, Object> params = new HashMap<>();
            params.put("name", name);
            return matchOne("e.systemUser.username=:name", params);
        }

        @Override
        public Optional<Student> findByMechanographicNumber(final
MechanographicNumber number) {
            final Map<String, Object> params = new HashMap<>();
            params.put("number", number);
            return matchOne("e.mechanographicNumber=:number", params);
        }
    }
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaStudentRepository.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaSystemUserRepository.java

```
package eapli.base.persistence.impl.jpa;

import eapli.base.Application;
import eapli.base.systemUserManagement.SystemUserRepository;
import eapli.framework.domain.repositories.TransactionalContext;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.model.Username;
import eapli.framework.infrastructure.repositories.impl.jpa.JpaAutoTxRepository;

import javax.persistence.*;
import java.util.List;

public class JpaSystemUserRepository extends JpaAutoTxRepository<SystemUser,
Username, Username> implements SystemUserRepository {

    public JpaSystemUserRepository(final TransactionalContext autoTx) {
```

```
        super(autoTx, "username");
    }

    public JpaSystemUserRepository(final String puname) {
        super(puname, Application.settings().getExtendedPersistenceProperties(),
                "username");
    }

    @Override
    public Iterable<SystemUser> findByUsername(Username name) {
        final TypedQuery<SystemUser> q = entityManager().createQuery(
                "SELECT e FROM SystemUser e WHERE e.username.value = :username",
SystemUser.class);
        q.setParameter("username", name.toString());
        return q.getResultList();
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaSystemUserRepository.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaTeacherRepository.java

```
package eapli.base.persistence.impl.jpa;

import eapli.base.Application;
import eapli.base.Student_Teacher.Teacher.Domain.Acronym;
import eapli.base.Student_Teacher.Teacher.Domain.Teacher;
import eapli.base.Student_Teacher.Teacher.Repository.TeacherRepository;
import eapli.framework.domain.repositories.TransactionalContext;
import eapli.framework.infrastructure.authz.domain.model.SystemUser;
import eapli.framework.infrastructure.authz.domain.model.Username;
import eapli.framework.infrastructure.repositories.impl.jpa.JpaAutoTxRepository;

import javax.persistence.TypedQuery;
import java.util.List;
import java.util.Optional;

public class JpaTeacherRepository
        extends JpaAutoTxRepository<Teacher, Long, Long>
        implements TeacherRepository {
```

```
    public JpaTeacherRepository(final TransactionalContext autoTx) {
        super(autoTx, "id");
    }

    public JpaTeacherRepository(final String puname) {
        super(puname, Application.settings().getExtendedPersistenceProperties(), "id");
    }

    @Override
    public List<Teacher> findTeacherByAcronym(Acronym acronym) {
        final TypedQuery<Teacher> query = entityManager().createQuery(
                "SELECT c FROM Teacher c WHERE c.acronym = :acronym",
                Teacher.class);
        query.setParameter("acronym", acronym);
        return query.getResultList();
    }

    @Override
    public Optional<Teacher> ofIdentity(Username id) {
        return Optional.empty();
    }

    @Override
    public Teacher findTeacherBySystemUser(SystemUser systemUser) {
        final TypedQuery<Teacher> q = entityManager().createQuery(
                "SELECT e FROM Teacher e WHERE e.systemUser.username.value =
:systemUser",
                Teacher.class);
        q.setParameter("systemUser", systemUser.username().toString());
        return q.getSingleResult();
    }

    @Override
    public void deleteOfIdentity(Username entityId) {

    }
}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\JpaTeacherRepository.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\PersistenceSettings.java

```
/*
 * Copyright (c) 2013-2023 the original author or authors.
 *
 * MIT License
 *
 * Permission is hereby granted, free of charge, to any person obtaining a copy of this software and
 * associated documentation files (the "Software"), to deal in the Software without restriction,
 * including without limitation the rights to use, copy, modify, merge, publish, distribute,
 * sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is
 * furnished to do so, subject to the following conditions:
 *
 * The above copyright notice and this permission notice shall be included in all copies or
 * substantial portions of the Software.
 *
 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT
 * NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
 * NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
 * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
 * OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
 */
package eapli.base.persistence.impl.jpa;

/**
 *
 * Created by nuno on 21/03/16.
 */
class PersistenceSettings {

    public static final String PERSISTENCE_UNIT_NAME = "eapli.base";
```

```
    private PersistenceSettings() {
    }
}
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\java\eapli\base\persistence\impl\jpa\PersistenceSettings.java

[File Begins] sem4pi-22-23-61-master\base.persistence.impl\src\main\resources\META-INF\persistence.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<persistence version="2.1" xmlns="http://xmlns.jcp.org/xml/ns/persistence">
  <persistence-unit name="eapli.base">
    <!--
    <provider>org.eclipse.persistence.jpa.PersistenceProvider</provider>
    -->
    <provider>org.hibernate.jpa.HibernatePersistenceProvider</provider>

    <class>eapli.framework.infrastructure.authz.domain.model.SystemUser</class>
    <class>eapli.framework.infrastructure.authz.domain.model.Role</class>
    <class>eapli.framework.infrastructure.authz.domain.model.RoleSet</class>
    <class>eapli.framework.infrastructure.authz.domain.model.RoleAssignment</class>
    <class>eapli.base.clientusermanagement.domain.ClientUser</class>
    <class>eapli.base.clientusermanagement.domain.SignupRequest</class>
    <class>eapli.base.Application</class>

<class>eapli.framework.infrastructure.authz.domain.repositories.UserRepository</class>
    <class>eapli.base.core.systemUserManagement.SystemUserRepository</class>
    <class>eapli.base.AppSettings</class>
    <class>eapli.base.infrastructure.authz.AuthenticationCredentialHandler</class>
    <class>eapli.base.infrastructure.authz.CredentialHandler</class>
    <class>eapli.base.Classe.domain.Classe</class>
    <class>eapli.base.Course.Domain.Course</class>
    <class>eapli.base.Enrollment.Domain.Enrollment</class>
    <class>eapli.base.ExtraClasse.domain.ExtraClasse</class>
    <class>eapli.base.exammanagement.domain.Exam</class>
    <class>eapli.base.Manager.Manager</class>
    <class>eapli.base.meetingmanagement.domain.Invite</class>
    <class>eapli.base.meetingmanagement.domain.Meeting</class>
    <class>eapli.base.SharedBoard.domain.SharedBoard</class>
    <class>eapli.base.SharedBoard.repository.SharedBoardRepository</class>
    <class>eapli.base.Student_Teacher.Student.domain.Student</class>
```

```
    <class>eapli.base.Student_Teacher.Teacher.Domain.Teacher</class>
    <class>eapli.base.Student_Teacher.Teacher.Repository.TeacherRepository</class>
    <class>eapli.base.usermanagement.domain.BaseRoles</class>



    <properties>
      <!--<property name="javax.persistence.jdbc.url"
value="jdbc:h2:tcp://localhost/~/base"/>-->
      <property name="javax.persistence.jdbc.url" value="jdbc:h2:tcp://vsgate-
s2.dei.isep.ipp.pt:10751/base;MV_STORE=FALSE;AUTO_SERVER=true;"/>

      <property name="javax.persistence.jdbc.user" value="sa"/>
      <property name="javax.persistence.jdbc.password" value="eapli"/>
      <property name="javax.persistence.jdbc.driver" value="org.h2.Driver"/>
      <!-- <property name="javax.persistence.schema-generation.database.action"
value="drop-and-create"/> -->
      <!-- <property name="eclipselink.logging.level" value="FINE"/> -->
      <!-- <property name = "hibernate.show_sql" value = "true" /> -->
      <property name="hibernate.dialect" value="org.hibernate.dialect.H2Dialect"/>

    </properties>
  </persistence-unit>
</persistence>
```

[File Ends] sem4pi-22-23-61-master\base.persistence.impl\src\main\resources\META-INF\persistence.xml

[File Begins] sem4pi-22-23-61-master\base.rcomp\Makefile

```
APPS_FOLDERS=tcp-chat tcp-cli-srv udp-chat udp-cli-srv http-server-form-file-upload
http-server-ajax-voting http-server-chat SSL

all:
        $(foreach AF,$(APPS_FOLDERS),(cd $(AF); make );)

clean:
        $(foreach AF,$(APPS_FOLDERS),(cd $(AF); make clean);)
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\Makefile

[File Begins] sem4pi-22-23-61-master\base.rcomp\SSL\Makefile

```
APPS_FOLDERS=check-TLS https-server-ajax-voting tcp-cli-srv

all:
	$(foreach AF,$(APPS_FOLDERS),(cd $(AF); make );)

clean:
	$(foreach AF,$(APPS_FOLDERS),(cd $(AF); make clean);)
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\SSL\Makefile

[File Begins] sem4pi-22-23-61-master\base.rcomp\SSL\check-TLS\CheckServerTLS.java

```
import java.io.*;
import java.net.*;

import javax.net.ssl.*;
import javax.security.cert.X509Certificate;

/**
 *
 * @author asc@isep.ipp.pt
 */
public class CheckServerTLS {
	static private SSLSocket sock;
	static private InetAddress serverIP;
	static private int serverPort;
	static private DataOutputStream sOut;
	static private DataInputStream sIn;

	// THE NUMBER OF VOTES TO CAST ON THE FIRST CANDIDATE
	static private final int VOTES_TO_CAST = 200;

	public static void main(String args[]) throws Exception {

		if(args.length<1||args.length>2) {
			System.out.println("Usage: java CheckServerTLS {SERVER-
ADDRESS} [{SERVER-PORT-NUMBER}]");
			System.out.println("		The default {SERVER-PORT-
NUMBER} is 443 (HHTPS)." );
			System.exit(1);
```

```
                }

        try { serverIP = InetAddress.getByName(args[0]); }
        catch(UnknownHostException ex) {
                System.out.println("Invalid SERVER-ADDRESS.");
                System.exit(1);
                }

        if(args.length==2) {
                try { serverPort = Integer.parseInt(args[1]); }
                catch(NumberFormatException ex) {
                        System.out.println("Invalid SERVER-PORT.");
                        System.exit(1);
                }
        } else {
                serverPort=443;
        }

        // Don't set the trust store, use the default:
{JREHOME}/lib/security/cacerts
        // In Linux, it's also: /etc/ssl/certs/java/cacerts
        // System.setProperty("javax.net.ssl.trustStore", "cacerts.jks");
        // System.setProperty("javax.net.ssl.trustStorePassword","public");

        SSLSocketFactory sf = (SSLSocketFactory)
SSLSocketFactory.getDefault();

        try {
                sock = (SSLSocket) sf.createSocket(serverIP,serverPort);
        }
        catch(IOException ex) {
                System.out.println("Failed to connect to: " + args[0] + ":" +
serverPort);
                System.out.println("Application aborted.");
                System.exit(1);
        }

        System.out.println("Connected to server: " + args[0] + ":" + serverPort);

        try {
                sock.startHandshake();
                SSLSession ssl = sock.getSession();
                System.out.println("-----------------------------------------------------");
        System.out.println("SSL/TLS version: " + ssl.getProtocol() +
```

```
                                        "       Cypher suite: " + ssl.getCipherSuite());

                        X509Certificate[] chain=ssl.getPeerCertificateChain();
                        System.out.println("-----------------------------------------------------");
                        System.out.println("Certificate subject: " +
chain[0].getSubjectDN());
                        System.out.println("-----------------------------------------------------");
                        System.out.println("Certificate issuer: " + chain[0].getIssuerDN());
                        System.out.println("-----------------------------------------------------");
                        System.out.println("Not before: " + chain[0].getNotBefore());
                        System.out.println("-----------------------------------------------------");
                        System.out.println("Not after:  " + chain[0].getNotAfter());
                        System.out.println("-----------------------------------------------------");


                }
                catch (SSLException tlsE) {
                 System.out.println("SSL/TLS handshake has failed:\r\n" + tlsE.getCause()
);
                        try { sock.close(); } catch(IOException ex2) {
System.out.println("Error closing socket."); }
                        System.exit(1);
            }
                try { sock.close(); } catch(IOException ex2) { System.out.println("Error
closing socket."); }

        } // MAIN METHOD
        } // CLASS
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\SSL\check-TLS\CheckServerTLS.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\SSL\check-TLS\Makefile

```
P1=CheckServerTLS

all: $(P1).class

$(P1).class: $(P1).java
        javac $(P1).java

clean:
        rm -f *.class *.jks
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\SSL\check-TLS\Makefile

[File Begins] sem4pi-22-23-61-master\base.rcomp\SSL\https-server-ajax-voting\HTTPmessage.java

```
import java.io.*;


/**
 *
 * @author ANDRE MOREIRA (asc@isep.ipp.pt)
 */

public class HTTPmessage {

    private static final int CR=13;
    private static final int LF=10;

    private static final String VERSION="HTTP/1.1";

    private static final String CONTENT_TYPE="Content-type:";
    private static final String CONTENT_LENGTH="Content-length:";
    private static final String CONNECTION="Connection:";

    private static final String[][] knownFileExt = {
        { ".pdf" , "application/pdf" } ,
        { ".js" , "application/javascript" } ,
        { ".txt" , "text/plain" } ,
        { ".gif" , "image/gif" } ,
        { ".png" , "image/png" }
        };


    static private String readHeaderLine(DataInputStream in) throws IOException {
        String ret="";
        int val;
        do {
            val=in.read();
            if(val==-1) throw new IOException();
            if(val!=CR) ret=ret+(char)val;
            }
        while(val!=CR);
```

```
        val=in.read(); // read LF
        if(val==-1) throw new IOException();
        return ret;
        }

    static private void writeHeaderLine(DataOutputStream out, String line) throws
IOException {
        out.write(line.getBytes(), 0, line.length());
        out.write(CR); out.write(LF);
        }


    //// NON-STATIC (INSTANCE) ELEMENTS

    private boolean isRequest;
    private String method;
    private String uri;
    private String status;

    private String contentType;
    private byte[] content;

    /**
     * Creates a new HTTPmessage by receiving it from an DataInputStream
     * @param in
     * @throws IOException
     */
    public HTTPmessage(DataInputStream in) throws IOException {
        String firstLine=readHeaderLine(in);
        isRequest= !firstLine.startsWith("HTTP/");
        method=null;
        uri=null;
        content=null;
        status=null;
        contentType=null;

        String[] firstLineComp=firstLine.split(" ");
        if(isRequest) {
            method=firstLineComp[0];
            uri=firstLineComp[1];
            }
        else {  // response
            status=firstLineComp[1] + " " + firstLineComp[2];
            }
```

```
    String headerLine;

    do {
       headerLine=readHeaderLine(in);
       if(headerLine.toUpperCase().startsWith(CONTENT_TYPE.toUpperCase())) {
          contentType=headerLine.substring(CONTENT_TYPE.length()).trim();
          }
       else
       if(headerLine.toUpperCase().startsWith(CONTENT_LENGTH.toUpperCase())) {
          String cLen=headerLine.substring(CONTENT_LENGTH.length()).trim();
          int len;
          try { len=Integer.parseInt(cLen); }
          catch(NumberFormatException ne) { throw new IOException(); }
          content = new byte[len];
          }
       }
    while(!headerLine.isEmpty());

    // READ CONTENT
    if(content!=null) in.readFully(content,0,content.length);
    }

public HTTPmessage() {
    isRequest=true;
    method=null;
    uri=null;
    content=null;
    status=null;
    contentType=null;
    }


       public void setResponseStatus(String sT) {
                isRequest=false;
                status=sT;
                }

       public void setContent(String cnt, String cType) {
                content=cnt.getBytes();
                contentType=cType;
                }

       public void setRequestMethod(String m) {
```

```
                isRequest=true;
                method=m;
                }


        public boolean send(DataOutputStream out) throws IOException {
                if(isRequest) {
                        if(method==null||uri==null) return false;
                        writeHeaderLine(out, method + " " + uri + " " + VERSION);
                        }
                else {
                        if(status==null) return false;
                        writeHeaderLine(out,VERSION + " " + status);
                        }

      if(content!=null) {
         if(contentType!=null) writeHeaderLine(out,CONTENT_TYPE + " " +
contentType);
         writeHeaderLine(out,CONTENT_LENGTH + " " + content.length);
         }
      writeHeaderLine(out,CONNECTION + " close");
      writeHeaderLine(out,"");
      if(content!=null) {
         out.write(content,0,content.length);
         }
      return true;
      }


   public String getMethod() { return method; }
   public String getURI() { return uri; }
   public String getStatus() { return status; }
   public void setURI(String u) { uri=u; }



   public boolean hasContent() { return (content!=null); }
   public String getContentAsString() { return(new String(content)); }
   public byte[] getContent() { return(content); }
   public void setContentFromString(String c, String ct) {
      content=c.getBytes(); contentType=ct;
      }

   public boolean setContentFromFile(String fname) {
```

```
        File f=new File(fname);
    contentType=null;
        if(!f.exists()) {
        content=null;
        return false;
        }
    for (String[] k : knownFileExt) {
        if (fname.endsWith(k[0]))
            contentType = k[1];
        }
    if(contentType==null) contentType="text/html";

        int cLen = (int) f.length();
    if(cLen==0) {
        content=null;
        contentType=null;
        return false;
        }

    content = new byte[cLen];

        DataInputStream fr;
        try {
        fr = new DataInputStream(new FileInputStream(f));
        try { fr.readFully(content,0,cLen); fr.close(); }
        catch(IOException ex) {
            System.out.println("Error reading file");
            content=null;
            contentType=null;
            return false;
            }
        }
        catch(FileNotFoundException ex)  {
        System.out.println("File Not Found");
        content=null;
        contentType=null;
        return false;
        }
    return true;
    }

} // CLASS END
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\SSL\https-server-ajax-voting\HTTPmessage.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\SSL\https-server-ajax-voting\HttpsServerAjaxVoting.java

```
import java.io.IOException;

import javax.net.ssl.SSLServerSocket;
import javax.net.ssl.SSLServerSocketFactory;
import javax.net.ssl.SSLSocket;


/**
 *
 * @author ANDRE MOREIRA (asc@isep.ipp.pt)
 */
public class HttpsServerAjaxVoting {
    static private final String BASE_FOLDER="www";
    static private SSLServerSocket sock;

    public static void main(String args[]) throws Exception {
          SSLSocket cliSock;

          if(args.length!=1) {
          System.out.println("Local port number required at the command line.");
          System.exit(1);
          }

          System.setProperty("javax.net.ssl.keyStore", "server.jks");
        System.setProperty("javax.net.ssl.keyStorePassword", "forgotten");

        accessesCounter=0;
        for(int i=0;i<candidatesNumber; i++) {
              candidateName[i] = "Candidate " + i;
              candidateVotes[i] = 0;
          }

          try {
                    SSLServerSocketFactory sslF = (SSLServerSocketFactory)
SSLServerSocketFactory.getDefault();
                    sock = (SSLServerSocket)
sslF.createServerSocket(Integer.parseInt(args[0]));
          }
```

```
            catch(IOException ex) {
            System.out.println("Server failed to open local port " + args[0]);
            System.exit(1);
            }

            while(true) {
            cliSock= (SSLSocket) sock.accept();
            httpAjaxVotingRequest req=new httpAjaxVotingRequest(cliSock,
BASE_FOLDER);
            req.start();
            incAccessesCounter();
            }
        }


    // DATA ACCESSED BY THREADS - LOCKING REQUIRED

    private static final int candidatesNumber = 4;
    private static final String[] candidateName = new String[candidatesNumber];
    private static final int[] candidateVotes = new int[candidatesNumber];
    private static int accessesCounter;

    private static synchronized void incAccessesCounter() { accessesCounter++; }

    public static synchronized String getVotesStandingInHTML() {
        String textHtml = "<hr><ul>";
        for(int i=0; i<candidatesNumber; i++) {
            textHtml = textHtml + "<li><button type=button onclick=voteFor(" + (i+1) +
                    ")>Vote for " + candidateName[i] + "</button> " +
                    " - " + candidateVotes[i] + " votes </li>";
            }
        textHtml = textHtml + "</ul><hr><p>HTTP server accesses counter: " +
accessesCounter + "</p><hr>";
        return textHtml;
        }

    public static synchronized void castVote(String i) {
        int cN;
        try { cN=Integer.parseInt(i); }
        catch(NumberFormatException ne) { return; }
        cN--;
        if(cN >= 0 && cN < candidatesNumber) candidateVotes[cN]++;
    }
```

```
}
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\SSL\https-server-ajax-voting\HttpsServerAjaxVoting.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\SSL\https-server-ajax-voting\Makefile

```
P1=HttpsServerAjaxVoting
C2=HTTPmessage
C3=HttpAjaxVotingRequest

all: $(P1).class

$(P1).class: $(P1).java $(C2).class $(C3).class
	javac $(P1).java

$(C2).class: $(C2).java
	javac $(C2).java

$(C3).class: $(C3).java
	javac $(C3).java
cert:
	./make_cert

clean:
	rm -f *.class *.jks
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\SSL\https-server-ajax-voting\Makefile

[File Begins] sem4pi-22-23-61-master\base.rcomp\SSL\https-server-ajax-voting\httpAjaxVotingRequest.java

```
import java.io.*;

//import java.net.Socket;
import javax.net.ssl.SSLSocket;

/**
 *
 * @author ANDRE MOREIRA (asc@isep.ipp.pt)
```

```
 */
public class httpAjaxVotingRequest extends Thread {
	String baseFolder;
	SSLSocket sock;
	DataInputStream inS;
	DataOutputStream outS;

	public httpAjaxVotingRequest(SSLSocket s, String f) {
		baseFolder=f; sock=s;
		}

	public void run() {
		try {
			outS = new DataOutputStream(sock.getOutputStream());
			inS = new DataInputStream(sock.getInputStream());
			}
		catch(IOException ex) { System.out.println("Thread error on data streams
creation"); }
	try {
		HTTPmessage request = new HTTPmessage(inS);
		HTTPmessage response = new HTTPmessage();
		// System.out.println(request.getURI());

		if(request.getMethod().equals("GET")) {
			if(request.getURI().equals("/votes")) {
				response.setContentFromString(

	HttpsServerAjaxVoting.getVotesStandingInHTML(), "text/html");
				response.setResponseStatus("200 Ok");
				}
			else {
			String fullname=baseFolder + "/";
			if(request.getURI().equals("/"))
fullname=fullname+"index.html";
			else fullname=fullname+request.getURI();
			if(response.setContentFromFile(fullname)) {
			response.setResponseStatus("200 Ok");
			}
			else {
			response.setContentFromString(
					"<html><body><h1>404 File not
found</h1></body></html>",
					"text/html");
			response.setResponseStatus("404 Not Found");
```

```
                        }
                        }
                    response.send(outS);
                    }
                else { // NOT GET
                    if(request.getMethod().equals("PUT")
                    && request.getURI().startsWith("/votes/")) {

        HttpsServerAjaxVoting.castVote(request.getURI().substring(7));
                        response.setResponseStatus("200 Ok");
                        }
                    else {
                        response.setContentFromString(
                            "<html><body><h1>ERROR: 405 Method Not
Allowed</h1></body></html>",
                            "text/html");
                        response.setResponseStatus("405 Method Not Allowed");
                        }
                    response.send(outS);
                    }
                }
            catch(IOException ex) { }
                try { sock.close();}
                catch(IOException ex) { System.out.println("CLOSE IOException"); }
                }
        }
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\SSL\https-server-ajax-voting\httpAjaxVotingRequest.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\SSL\https-server-ajax-voting\make_cert

```
#!/bin/bash
rm -f server.jks
echo -e "$(hostname -f)\nDEI\nISEP\nPORTO\nPORTO\nPT\nyes" | keytool -genkey -v -
alias server -keyalg RSA -keysize 2048 \
        -validity 365 -keystore server.jks -storepass forgotten
####
#keytool -list -v -keystore server.jks -storepass forgotten
####
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\SSL\https-server-ajax-voting\make_cert

[File Begins] sem4pi-22-23-61-master\base.rcomp\SSL\https-server-ajax-voting\www\index.html

```
<html><head><title>HTTP demo</title>
<script src="rcomp-ajax.js"></script>
</head>
<body bgcolor=#C0C0C0 onload="refreshVotes()"><h1>HTTP server demo - Voting
with AJAX</h1>
<h3>Java version</h3>
<hr>
<center>
<table width=60% border=1 cellpadding=20 cellspacing=20><tr>
<td height="300" align=left width=50% valign="top">
<big>
<div id="votes">
Please wait, loading voting results ...
</div>
</big>
</td></tr></table>
</center>
<hr>
<center><table border=0><tr><td align=center>Image contents are
supported:<br><br><img src=http2.png><br>(http2.png)</td>
<td align=center><img src=http.gif><br>(http.gif)</td></tr></table></center>
</body></html>
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\SSL\https-server-ajax-voting\www\index.html

[File Begins] sem4pi-22-23-61-master\base.rcomp\SSL\https-server-ajax-voting\www\rcomp-ajax.js

```
// IMPORTANT: notice the next request is scheduled only after the
//            previous request is fully processed either successfully
//               or not.

function refreshVotes() {
          var request = new XMLHttpRequest();
       var vBoard=document.getElementById("votes");

       request.onload = function() {
          vBoard.innerHTML = this.responseText;
          vBoard.style.color="black";
```

```
        setTimeout(refreshVotes, 2000);
        };

    request.ontimeout = function() {
        vBoard.innerHTML = "Server timeout, still trying ...";
        vBoard.style.color="red";
        setTimeout(refreshVotes, 100);
    };

    request.onerror = function() {
        vBoard.innerHTML = "No server reply, still trying ...";
        vBoard.style.color="red";
        setTimeout(refreshVotes, 5000);
    };

        request.open("GET", "/votes", true);
        request.timeout = 5000;
        request.send();
        }

function voteFor(option) {
        var request = new XMLHttpRequest();
        request.open("PUT", "/votes/" + option , true);
        request.send();
    var vBoard=document.getElementById("votes");
    vBoard.innerHTML = vBoard.innerHTML + "<p>Casting your vote ... Please wait.";

        }
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\SSL\https-server-ajax-voting\www\rcomp-ajax.js

[File Begins] sem4pi-22-23-61-master\base.rcomp\SSL\tcp-cli-srv\Makefile

```
P1=TcpCliSumTLS
P2=TcpSrvSumTLS

all: $(P1).class $(P2).class

$(P1).class: $(P1).java
        javac $(P1).java
```

```
$(P2).class: $(P2).java
	javac $(P2).java

certs:
	./make_certs

clean:
	rm -f *.class *.crt *.key *.pem *.jks
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\SSL\tcp-cli-srv\Makefile

[File Begins] sem4pi-22-23-61-master\base.rcomp\SSL\tcp-cli-srv\TcpCliSumTLS.java

```
import java.io.*;
import java.net.*;
import java.security.KeyStore;
import javax.net.*;
import javax.net.ssl.*;
import javax.security.cert.X509Certificate;

/**
 *
 * @author asc@isep.ipp.pt
 */

class TcpCliSumTLS {

	static final int SERVER_PORT=9999;
	static final String KEYSTORE_PASS="forgotten";

	static InetAddress serverIP;
	static SSLSocket sock;

	public static void main(String args[]) throws Exception {
		if(args.length!=2) {
			System.out.println("Server IPv4/IPv6 address/DNS name is
required as first argument");
			System.out.println("Client name is required as second argument
(a matching keystore must exist)");
			System.exit(1); }

		// Trust these certificates provided by servers
```

```
                System.setProperty("javax.net.ssl.trustStore", args[1]+".jks");

        System.setProperty("javax.net.ssl.trustStorePassword",KEYSTORE_PASS);

                // Use this certificate and private key for client certificate when requested
by the server
                System.setProperty("javax.net.ssl.keyStore",args[1]+".jks");

        System.setProperty("javax.net.ssl.keyStorePassword",KEYSTORE_PASS);

                SSLSocketFactory sf = (SSLSocketFactory)
SSLSocketFactory.getDefault();

                try { serverIP = InetAddress.getByName(args[0]); }
                catch(UnknownHostException ex) {
                        System.out.println("Invalid server specified: " + args[0]);
                        System.exit(1); }


                try {
                        sock = (SSLSocket) sf.createSocket(serverIP,SERVER_PORT);
                }
                catch(IOException ex) {
                        System.out.println("Failed to connect to: " + args[0] + ":" +
SERVER_PORT);
                        System.out.println("Application aborted.");
                        System.exit(1);
                }

                System.out.println("Connected to: " + args[0] + ":" + SERVER_PORT);


                sock.startHandshake();

                BufferedReader in = new BufferedReader(new
InputStreamReader(System.in));
                DataOutputStream sOut = new
DataOutputStream(sock.getOutputStream());
                DataInputStream sIn = new DataInputStream(sock.getInputStream());


                String frase;
                long f,i,n,num;
                do {
```

```
                        do {
                                num=-1;
                                while(num<0) {
                                        System.out.print("Enter a positive integer to SUM
(zero to terminate): ");
                                        frase = in.readLine();
                                        try { num=Integer.parseInt(frase); }
                                        catch(NumberFormatException ex) {num=-1;}
                                        if(num<0) System.out.println("Invalid number");
                                        }
                                n=num; for(i=0;i<4;i++) {sOut.write((byte)(n%256));
n=n/256; }
                                }
                        while(num!=0);
                        num=0; f=1;
                        for(i=0;i<4;i++) {num=num+f*sIn.read(); f=f*256;}
                        System.out.println("SUM RESULT = " + num);
                        }
                while(num!=0);
                sock.close();
                }
        }
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\SSL\tcp-cli-srv\TcpCliSumTLS.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\SSL\tcp-cli-srv\TcpSrvSumTLS.java

```
import java.io.*;
import java.net.*;

import java.net.ServerSocket;
import java.net.Socket;

import javax.net.ssl.SSLServerSocket;
import javax.net.ssl.SSLServerSocketFactory;
import javax.net.ssl.SSLSocket;

class TcpSrvSumTLS {

        static final int SERVER_PORT=9999;
        static final String TRUSTED_STORE="server_J.jks";
        static final String KEYSTORE_PASS="forgotten";
```

```
	public static void main(String args[]) throws Exception {
		SSLServerSocket sock=null;
		Socket cliSock;


		// Trust these certificates provided by authorized clients
	    System.setProperty("javax.net.ssl.trustStore", TRUSTED_STORE);
	    System.setProperty("javax.net.ssl.trustStorePassword",KEYSTORE_PASS);

	    // Use this certificate and private key as server certificate
	    System.setProperty("javax.net.ssl.keyStore",TRUSTED_STORE);
	    System.setProperty("javax.net.ssl.keyStorePassword",KEYSTORE_PASS);

		SSLServerSocketFactory sslF = (SSLServerSocketFactory)
SSLServerSocketFactory.getDefault();
		try {
			sock = (SSLServerSocket)
sslF.createServerSocket(SERVER_PORT);
			sock.setNeedClientAuth(true);
			}
		catch(IOException ex) {
			System.out.println("Server failed to open local port " +
SERVER_PORT);
			System.exit(1);
		}


		while(true) {
			cliSock=sock.accept();
			new Thread(new TcpSrvSumTLSThread(cliSock)).start();
			}
		}
	}



class TcpSrvSumTLSThread implements Runnable {
	private Socket s;
	private DataOutputStream sOut;
	private DataInputStream sIn;

	public TcpSrvSumTLSThread(Socket cli_s) { s=cli_s;}

	public void run() {
```

```
                long f,i,num,sum;
                InetAddress clientIP;

                clientIP=s.getInetAddress();
                System.out.println("New client connection from " +
clientIP.getHostAddress() +
                        ", port number " + s.getPort());
                try {
                        sOut = new DataOutputStream(s.getOutputStream());
                        sIn = new DataInputStream(s.getInputStream());
                        do {
                                sum=0;
                                do {
                                        num=0; f=1; for(i=0;i<4;i++)
{num=num+f*sIn.read(); f=f*256;}
                                        sum=sum+num;
                                        }
                                while(num>0);
                                num=sum; for(i=0;i<4;i++) {sOut.write((byte)(num%256));
num=num/256; }
                                }
                        while(sum>0);

                        System.out.println("Client " + clientIP.getHostAddress() + ", port
number: " + s.getPort() +
                                " disconnected");
                        s.close();
                        }
                catch(IOException ex) { System.out.println("IOException"); }
                }
        }
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\SSL\tcp-cli-srv\TcpSrvSumTLS.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\SSL\tcp-cli-srv\make_certs

```
#!/bin/bash
STOREPASS="forgotten"
for ENT in server_J client1_J client2_J client3_J client4_J ; do
 rm -f ${ENT}.jks ${ENT}.pem
 echo -e "${ENT}\nDEI\nISEP\nPORTO\nPORTO\nPT\nyes" | keytool -genkey -v -alias
${ENT} -keyalg RSA -keysize 2048 \
```

```
        -validity 365 -keystore ${ENT}.jks -storepass ${STOREPASS}
 keytool -exportcert -alias ${ENT} -keystore ${ENT}.jks -storepass ${STOREPASS} -rfc -
file ${ENT}.pem
done
####
echo "Creating trust relations"
### IMPORTING TRUSTED CERTIFICATES
### (The server trusts all clients except for client4_J)
### (Every client trusts server_J)
for ENT in client1_J client2_J client3_J; do
 echo "yes"|keytool -import -alias ${ENT} -keystore server_J.jks -file ${ENT}.pem -
storepass ${STOREPASS}
 echo "yes"|keytool -import -alias server_J -keystore ${ENT}.jks -file server_J.pem -
storepass ${STOREPASS}
done
echo "yes"|keytool -import -alias server_J -keystore client4_J.jks -file server_J.pem -
storepass ${STOREPASS}
echo
"################################################################################
#######"
keytool -list -keystore server_J.jks -storepass ${STOREPASS}
echo
"################################################################################
#######"
echo "WARNING: For testing, client4_J is not added to the list of authorized clients"
echo
"################################################################################
#######"
#######
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\SSL\tcp-cli-srv\make_certs

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-ajax-voting\DemoConsumer.java

```
import java.io.*;
import java.net.*;

/**
 *
 * @author asc@isep.ipp.pt
 */
public class DemoConsumer {
        static private Socket sock;
```

```
	static private InetAddress serverIP;
	static private int serverPort;
	static private DataOutputStream sOut;
	static private DataInputStream sIn;

	// THE NUMBER OF VOTES TO CAST ON THE FIRST CANDIDATE
	static private final int VOTES_TO_CAST = 200;

	public static void main(String args[]) throws Exception {

		if(args.length!=2) {
			System.out.println("Server address and port number required at
command line.");
			System.out.println("Usage: java DemoConsumer {SERVER-
ADDRESS} {SERVER-PORT-NUMBER}");
			System.exit(1);
			}

		try { serverIP = InetAddress.getByName(args[0]); }
		catch(UnknownHostException ex) {
			System.out.println("Invalid SERVER-ADDRESS.");
			System.exit(1);
			}

		try { serverPort = Integer.parseInt(args[1]); }
		catch(NumberFormatException ex) {
			System.out.println("Invalid SERVER-PORT.");
			System.exit(1);
			}

		httpmessage request = new httpmessage();
		request.setRequestMethod("PUT");
		request.setURI("/votes/1");
		System.out.println("Casting " + VOTES_TO_CAST + " votes on the first
candidate ...");


		for(int i=0; i<VOTES_TO_CAST; i++) {
			System.out.println("Connecting to http://" + args[0] + ":" +
serverPort + "/");
			try { sock = new Socket(serverIP, serverPort); }
			catch(IOException ex) {
				System.out.println("Failed to connect to provided
SERVER-ADDRESS and SERVER-PORT.");
```

```
                        System.out.println("Application aborted.");
                        System.exit(1);
                        }

                try {
                        sOut = new DataOutputStream(sock.getOutputStream());
                        sIn = new DataInputStream(sock.getInputStream());
                        }
                catch(IOException ex) {
                        System.out.println("Error accessing socket's streams.
Aborted.");
                        try { sock.close(); } catch(IOException ex2) {
System.out.println("Error closing socket."); }
                        System.out.println("Application aborted.");
                        System.exit(1);
                        }
                System.out.println("Casting a vote");
                request.send(sOut);                             // send HTTP request
                httpmessage response = new httpmessage(sIn);    // receive
HTTP response
                System.out.println("HTTP server response status: " +
response.getStatus());
                try { sock.close(); } catch(IOException ex2) {
System.out.println("Error closing socket."); }
                }

        } // MAIN METHOD
        } // CLASS
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-ajax-voting\DemoConsumer.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-ajax-voting\HttpAjaxVotingRequest.java

```
import java.io.*;
import java.net.Socket;

/**
 *
 * @author ANDRE MOREIRA (asc@isep.ipp.pt)
 */
public class HttpAjaxVotingRequest extends Thread {
        String baseFolder;
```

```
	Socket sock;
	DataInputStream inS;
	DataOutputStream outS;

	public HttpAjaxVotingRequest(Socket s, String f) {
		baseFolder=f; sock=s;
		}

	public void run() {
		try {
			outS = new DataOutputStream(sock.getOutputStream());
			inS = new DataInputStream(sock.getInputStream());
			}
		catch(IOException ex) { System.out.println("Thread error on data streams
creation"); }
	try {
		httpmessage request = new httpmessage(inS);
		httpmessage response = new httpmessage();
		// System.out.println(request.getURI());

		if(request.getMethod().equals("GET")) {
			if(request.getURI().equals("/votes")) {
				response.setContentFromString(

	HttpServerAjaxVoting.getVotesStandingInHTML(), "text/html");
				response.setResponseStatus("200 Ok");
				}
			else {
			String fullname=baseFolder + "/";
			if(request.getURI().equals("/"))
fullname=fullname+"index.html";
			else fullname=fullname+request.getURI();
			if(response.setContentFromFile(fullname)) {
			response.setResponseStatus("200 Ok");
			}
			else {
			response.setContentFromString(
					"<html><body><h1>404 File not
found</h1></body></html>",
					"text/html");
			response.setResponseStatus("404 Not Found");
			}
			}
		response.send(outS);
```

```
                }
            else { // NOT GET
                if(request.getMethod().equals("PUT")
                && request.getURI().startsWith("/votes/")) {

        HttpServerAjaxVoting.castVote(request.getURI().substring(7));
                        response.setResponseStatus("200 Ok");
                        }
                else {
                        response.setContentFromString(
                                "<html><body><h1>ERROR: 405 Method Not
Allowed</h1></body></html>",
                                "text/html");
                        response.setResponseStatus("405 Method Not Allowed");
                        }
                response.send(outS);
                }
            }
          catch(IOException ex) { System.out.println("Thread error when reading
request"); }
            try { sock.close();}
            catch(IOException ex) { System.out.println("CLOSE IOException"); }
            }
        }
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-ajax-voting\HttpAjaxVotingRequest.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-ajax-voting\HttpServerAjaxVoting.java

```
import java.io.IOException;
import java.net.ServerSocket;
import java.net.Socket;

/**
 *
 * @author ANDRE MOREIRA (asc@isep.ipp.pt)
 */
public class HttpServerAjaxVoting {
   static private final String BASE_FOLDER="www";
   static private ServerSocket sock;
```

```
    public static void main(String args[]) throws Exception {
        Socket cliSock;

        if(args.length!=1) {
        System.out.println("Local port number required at the command line.");
        System.exit(1);
        }

      accessesCounter=0;
      for(int i=0;i<candidatesNumber; i++) {
            candidateName[i] = "Candidate " + i;
            candidateVotes[i] = 0;
        }

        try { sock = new ServerSocket(Integer.parseInt(args[0])); }
        catch(IOException ex) {
        System.out.println("Server failed to open local port " + args[0]);
        System.exit(1);
        }
        while(true) {
        cliSock=sock.accept();
        HttpAjaxVotingRequest req=new HttpAjaxVotingRequest(cliSock,
BASE_FOLDER);
        req.start();
        incAccessesCounter();
        }
      }


    // DATA ACCESSED BY THREADS - LOCKING REQUIRED

    private static final int candidatesNumber = 4;
    private static final String[] candidateName = new String[candidatesNumber];
    private static final int[] candidateVotes = new int[candidatesNumber];
    private static int accessesCounter;

    private static synchronized void incAccessesCounter() { accessesCounter++; }

    public static synchronized String getVotesStandingInHTML() {
      String textHtml = "<hr><ul>";
      for(int i=0; i<candidatesNumber; i++) {
        textHtml = textHtml + "<li><button type=button onclick=voteFor(" + (i+1) +
              ")>Vote for " + candidateName[i] + "</button> " +
              " - " + candidateVotes[i] + " votes </li>";
```

```
            }
        textHtml = textHtml + "</ul><hr><p>HTTP server accesses counter: " +
accessesCounter + "</p><hr>";
        return textHtml;
        }

    public static synchronized void castVote(String i) {
        int cN;
        try { cN=Integer.parseInt(i); }
        catch(NumberFormatException ne) { return; }
        cN--;
        if(cN >= 0 && cN < candidatesNumber) candidateVotes[cN]++;
    }



}
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-ajax-voting\HttpServerAjaxVoting.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-ajax-voting\Httpmessage.java

```
import java.io.*;


/**
 *
 * @author ANDRE MOREIRA (asc@isep.ipp.pt)
 */

public class Httpmessage {

    private static final int CR=13;
    private static final int LF=10;

    private static final String VERSION="HTTP/1.1";

    private static final String CONTENT_TYPE="Content-type:";
    private static final String CONTENT_LENGTH="Content-length:";
    private static final String CONNECTION="Connection:";

    private static final String[][] knownFileExt = {
        { ".pdf" , "application/pdf" } ,
```

```
        { ".js" , "application/javascript" } ,
        { ".txt" , "text/plain" } ,
        { ".gif" , "image/gif" } ,
        { ".png" , "image/png" }
        };


    static private String readHeaderLine(DataInputStream in) throws IOException {
        String ret="";
        int val;
        do {
            val=in.read();
            if(val==-1) throw new IOException();
            if(val!=CR) ret=ret+(char)val;
            }
        while(val!=CR);
        val=in.read(); // read LF
        if(val==-1) throw new IOException();
        return ret;
        }

    static private void writeHeaderLine(DataOutputStream out, String line) throws
IOException {
        out.write(line.getBytes(), 0, line.length());
        out.write(CR); out.write(LF);
        }


    //// NON-STATIC (INSTANCE) ELEMENTS

    private boolean isRequest;
    private String method;
    private String uri;
    private String status;

    private String contentType;
    private byte[] content;

    /**
     * Creates a new httpmessage by receiving it from an DataInputStream
     * @param in
     * @throws IOException
     */
    public Httpmessage(DataInputStream in) throws IOException {
```

```
    String firstLine=readHeaderLine(in);
    isRequest= !firstLine.startsWith("HTTP/");
    method=null;
    uri=null;
    content=null;
    status=null;
    contentType=null;

    String[] firstLineComp=firstLine.split(" ");
    if(isRequest) {
       method=firstLineComp[0];
       uri=firstLineComp[1];
       }
    else {  // response
       status=firstLineComp[1] + " " + firstLineComp[2];
       }

    String headerLine;

    do {
       headerLine=readHeaderLine(in);
       if(headerLine.toUpperCase().startsWith(CONTENT_TYPE.toUpperCase())) {
          contentType=headerLine.substring(CONTENT_TYPE.length()).trim();
          }
       else
       if(headerLine.toUpperCase().startsWith(CONTENT_LENGTH.toUpperCase())) {
          String cLen=headerLine.substring(CONTENT_LENGTH.length()).trim();
          int len;
          try { len=Integer.parseInt(cLen); }
          catch(NumberFormatException ne) { throw new IOException(); }
          content = new byte[len];
          }
       }
    while(!headerLine.isEmpty());

    // READ CONTENT
    if(content!=null) in.readFully(content,0,content.length);
    }

 public Httpmessage() {
    isRequest=true;
    method=null;
    uri=null;
    content=null;
```

```
        status=null;
        contentType=null;
        }


           public void setResponseStatus(String sT) {
                    isRequest=false;
                    status=sT;
                    }

           public void setContent(String cnt, String cType) {
                    content=cnt.getBytes();
                    contentType=cType;
                    }

           public void setRequestMethod(String m) {
                    isRequest=true;
                    method=m;
                    }


           public boolean send(DataOutputStream out) throws IOException {
                    if(isRequest) {
                             if(method==null||uri==null) return false;
                             writeHeaderLine(out, method + " " + uri + " " + VERSION);
                             }
                    else {
                             if(status==null) return false;
                             writeHeaderLine(out,VERSION + " " + status);
                             }

        if(content!=null) {
           if(contentType!=null) writeHeaderLine(out,CONTENT_TYPE + " " +
contentType);
           writeHeaderLine(out,CONTENT_LENGTH + " " + content.length);
           }
        writeHeaderLine(out,CONNECTION + " close");
        writeHeaderLine(out,"");
        if(content!=null) {
           out.write(content,0,content.length);
           }
        return true;
        }
```

```
public String getMethod() { return method; }
public String getURI() { return uri; }
public String getStatus() { return status; }
public void setURI(String u) { uri=u; }



public boolean hasContent() { return (content!=null); }
public String getContentAsString() { return(new String(content)); }
public byte[] getContent() { return(content); }
public void setContentFromString(String c, String ct) {
   content=c.getBytes(); contentType=ct;
   }

public boolean setContentFromFile(String fname) {
       File f=new File(fname);
   contentType=null;
       if(!f.exists()) {
       content=null;
       return false;
       }
   for (String[] k : knownFileExt) {
       if (fname.endsWith(k[0]))
           contentType = k[1];
       }
   if(contentType==null) contentType="text/html";

       int cLen = (int) f.length();
   if(cLen==0) {
       content=null;
       contentType=null;
       return false;
       }

   content = new byte[cLen];

       DataInputStream fr;
       try {
       fr = new DataInputStream(new FileInputStream(f));
       try { fr.readFully(content,0,cLen); fr.close(); }
       catch(IOException ex) {
           System.out.println("Error reading file");
           content=null;
```

```
            contentType=null;
            return false;
            }
          }
          catch(FileNotFoundException ex)  {
          System.out.println("File Not Found");
          content=null;
          contentType=null;
          return false;
          }
        return true;
        }

    } // CLASS END
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-ajax-voting\Httpmessage.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-ajax-voting\Makefile

```
P1=HttpServerAjaxVoting
C2=HTTPmessage
C3=HttpAjaxVotingRequest
P2=DemoConsumer

all: $(P1).class $(P2).class

$(P1).class: $(P1).java $(C2).class $(C3).class
        javac $(P1).java

$(P2).class: $(P2).java $(C2).class
        javac $(P2).java

$(C2).class: $(C2).java
        javac $(C2).java

$(C3).class: $(C3).java
        javac $(C3).java

clean:
        rm -f *.class
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-ajax-voting\Makefile

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-ajax-voting\www\index.html

```
<html><head><title>HTTP demo</title>
<script src="rcomp-ajax.js"></script>
</head>
<body bgcolor=#C0C0C0 onload="refreshVotes()"><h1>HTTP server demo - Voting
with AJAX</h1>
<h3>Java version</h3>
<hr>
<center>
<table width=60% border=1 cellpadding=20 cellspacing=20><tr>
<td height="300" align=left width=50% valign="top">
<big>
<div id="votes">
Please wait, loading voting results ...
</div>
</big>
</td></tr></table>
</center>
<hr>
<center><table border=0><tr><td align=center>Image contents are
supported:<br><br><img src=http2.png><br>(http2.png)</td>
<td align=center><img src=http.gif><br>(http.gif)</td></tr></table></center>
</body></html>
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-ajax-voting\www\index.html

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-ajax-voting\www\rcomp-ajax.js

```
// IMPORTANT: notice the next request is scheduled only after the
//            previous request is fully processed either successfully
//               or not.

function refreshVotes() {
          var request = new XMLHttpRequest();
       var vBoard=document.getElementById("votes");

       request.onload = function() {
          vBoard.innerHTML = this.responseText;
          vBoard.style.color="black";
          setTimeout(refreshVotes, 2000);
          };
```

```
        request.ontimeout = function() {
            vBoard.innerHTML = "Server timeout, still trying ...";
            vBoard.style.color="red";
            setTimeout(refreshVotes, 100);
        };

        request.onerror = function() {
            vBoard.innerHTML = "No server reply, still trying ...";
            vBoard.style.color="red";
            setTimeout(refreshVotes, 5000);
        };

            request.open("GET", "/votes", true);
            request.timeout = 5000;
            request.send();
            }

function voteFor(option) {
            var request = new XMLHttpRequest();
            request.open("PUT", "/votes/" + option , true);
            request.send();
        var vBoard=document.getElementById("votes");
        vBoard.innerHTML = vBoard.innerHTML + "<p>Casting your vote ... Please wait.";

            }
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-ajax-voting\www\rcomp-ajax.js

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-chat\HttpChatConsumer.java

```
import java.io.*;
import java.net.*;

class HttpChatConsumer {
            private static InetAddress serverIP;
            private static int serverPort;
            public static boolean userExit;

            public static void main(String args[]) throws Exception {
                        String nickName, textLine;

                        if(args.length!=2) {
```

```
                        System.out.println("Server address and port number required at
command line.");
                        System.out.println("Usage: java HttpChatConsumer {SERVER-
ADDRESS} {SERVER-PORT-NUMBER}");
                        System.exit(1);
                }

                try { serverIP = InetAddress.getByName(args[0]); }
                catch(UnknownHostException ex) {
                        System.out.println("Invalid SERVER-ADDRESS: " + args[0]);
                        System.exit(1); }

                try { serverPort = Integer.parseInt(args[1]); }
                catch(NumberFormatException ex) {
                        System.out.println("Invalid SERVER-PORT-NUMBER: " +
args[1]);
                        System.exit(1);
                        }

                BufferedReader in = new BufferedReader(new
InputStreamReader(System.in));

                System.out.print("Enter your nickname: ");
                nickName = in.readLine();

                userExit=false;

                System.out.println("Press ENTER to fetch all current messages from the
server and start chatting.");
                System.out.println("Once chatting, type exit to quit. NOW PRESS ENTER
PLEASE.");
                textLine = in.readLine();
                // start a thread to fetch messages from the HTTP server (GET)
                MessageFetcher msgF  = new MessageFetcher(serverIP, serverPort);
                msgF.start();

                while(!userExit) { // read messages from the console and send them to
the HTTP server (POST)
                        textLine=in.readLine();
                        if(textLine.equals("exit")) {
                                userExit=true;

                        }
                        else {
```

```
                                if(!postMessage("(" + nickName + ") " + textLine)) {
                                        System.out.println("Sorry, server not responding,
message not posted");
                                        // msgF.abort();
                                }
                        }
                }
                msgF.abort();
                msgF.join();
        }

        private static boolean postMessage(String msg) {
                Socket TCPconn;
                DataOutputStream sOut;
                DataInputStream sIn;
                try {
                        TCPconn = new Socket(serverIP, serverPort);
                }
                catch(IOException ex) {
                        return false;
                }

                try {
                        sOut = new DataOutputStream(TCPconn.getOutputStream());
                        sIn = new DataInputStream(TCPconn.getInputStream());
                        httpmessage request = new httpmessage();
                        request.setRequestMethod("POST");
                        request.setURI("/messages");
                        request.setContentFromString(msg, "text/plain");
                        request.send(sOut);
                        httpmessage response = new httpmessage(sIn);
                        if(!response.getStatus().startsWith("200")) {
                                throw new IOException();
                        }

                }
                catch(IOException ex) {
                        try { TCPconn.close(); } catch(IOException ex2) { }
                        return false;
                }
                try { TCPconn.close(); } catch(IOException ex2) { }
                return true;
        }
```

```
} // HttpChatConsumer CLASS



class MessageFetcher extends Thread {
        private Socket TCPconn;
        private InetAddress serverIP;
        private int serverPort;
        private int nextMessage;

        public MessageFetcher(InetAddress ip, int port) { serverIP=ip; serverPort=port; }

        public void run() {
                nextMessage=0;
                while(!HttpChatConsumer.userExit) {
                        String message = getNextMessage();
                        if(HttpChatConsumer.userExit) return;
                        if(message==null) {
                                System.out.println("Server not responding ...");
                                nextMessage=0;
                                try {Thread.sleep(5000); }
                                catch(InterruptedException ie) {
                                        System.out.println("Thread Interrupted ...");
                                }
                        }
                        else {
                                System.out.println(message);
                                nextMessage++;
                        }
                }
        }


        private String getNextMessage() {
                DataOutputStream sOut;
                DataInputStream sIn;
                try {
                        synchronized (serverIP) { TCPconn = new Socket(serverIP,
serverPort);}
                }
                catch(IOException ex) {
                        synchronized (serverIP) { TCPconn = null;}
                        return null;
```

```
                }

                httpmessage response;
                try {
                        sOut = new DataOutputStream(TCPconn.getOutputStream());
                        sIn = new DataInputStream(TCPconn.getInputStream());
                        httpmessage request = new httpmessage();
                        request.setRequestMethod("GET");
                        request.setURI("/messages/" + nextMessage);
                        request.send(sOut);
                        response = new httpmessage(sIn);    // the server may hold the
response
                        if(!response.getStatus().startsWith("200")) {
                                throw new IOException();
                        }

                }
                catch(IOException ex) {
                        synchronized (serverIP) {
                                try { TCPconn.close(); } catch(IOException ex2) { }
                                TCPconn = null;
                        }
                        return null;
                }
                synchronized (serverIP) {
                        try { TCPconn.close(); } catch(IOException ex2) { }
                        TCPconn = null;
                }
                return(new String(response.getContent()));
        }

        public void abort() { // close the socket to force the thread's exit
                synchronized (serverIP) {
                        if(TCPconn==null) return;
                        try { TCPconn.close(); } catch(IOException ex2) { }
                }
        }

} // MessageFetcher CLASS
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-chat\HttpChatConsumer.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-chat\HttpChatRequest.java

```
import java.io.*;
import java.net.*;

/**
 *
 * @author ANDRE MOREIRA (asc@isep.ipp.pt)
 */
public class HttpChatRequest extends Thread {
    String baseFolder;
    Socket sock;
    DataInputStream inS;
    DataOutputStream outS;

    public HttpChatRequest(Socket s, String f) {
        baseFolder=f; sock=s;
    }

    @Override
    public void run() {
        try {
            outS = new DataOutputStream(sock.getOutputStream());
            inS = new DataInputStream(sock.getInputStream());
        }
        catch(IOException ex) { System.out.println("Thread error on data streams
creation"); }
        try {
            httpmessage request = new httpmessage(inS);
            httpmessage response = new httpmessage();
            response.setResponseStatus("200 Ok");

            if(request.getMethod().equals("GET")) {
                if(request.getURI().startsWith("/messages/")) {
                    int msgNum;
                    try { msgNum=Integer.parseInt(request.getURI().substring(10)); }
                    catch(NumberFormatException ne) { msgNum=-1; }
                    if(msgNum<0) {
                        response.setContentFromString(
                            "<html><body><h1>ERROR: 405 Method Not
Allowed</h1></body></html>",
                            "text/html");
                        response.setResponseStatus("405 Method Not Allowed");
```

```
                }
                else {
                    String msg=HttpServerChat.getMsg(msgNum);
                    // if msgNum doesn't yet exist, the getMsg() method waits
                    // until it does. So the HTTP request was received, but the
                    // HTTP response is sent only when there's a message
                    response.setContentFromString(msg, "text/plain");
                }
            }
            else { // NOT GET /messages/ , THEN IT MUST BE A FILE
                String fullname=baseFolder + "/";
                if(request.getURI().equals("/")) fullname=fullname+"index.html";
                else fullname=fullname+request.getURI();
                if(!response.setContentFromFile(fullname)) {
                    response.setContentFromString(
                        "<html><body><h1>404 File not found</h1></body></html>",
                        "text/html");
                    response.setResponseStatus("404 Not Found");
                    }
            }
        }
        else { // NOT GET, must be POST
            if(request.getMethod().equals("POST")
                    && request.getURI().equals("/messages")) {
                HttpServerChat.addMsg(request.getContentAsString());
                response.setResponseStatus("200 Ok");
            }
            else {
                response.setContentFromString(
                     "<html><body><h1>ERROR: 405 Method Not
Allowed</h1></body></html>",
                    "text/html");
                response.setResponseStatus("405 Method Not Allowed");
            }
        }
        response.send(outS); // SEND THE HTTP RESPONSE
      }
      catch(IOException ex) { System.out.println("Thread I/O error on request/response");
}
      try { sock.close();} catch(IOException ex) { System.out.println("CLOSE
IOException"); }
   }
}
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-chat\HttpChatRequest.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-chat\HttpServerChat.java

```
import java.io.*;
import java.net.*;
import java.util.*;

/**
 *
 * @author ANDRE MOREIRA (asc@isep.ipp.pt)
 */
public class HttpServerChat {
    static private final String BASE_FOLDER="www";
    static private ServerSocket sock;

    public static void main(String args[]) throws Exception {
        Socket cliSock;

        if(args.length!=1) {
            System.out.println("Local port number required at the command line.");
            System.exit(1);
        }
        try { sock = new ServerSocket(Integer.parseInt(args[0])); }
        catch(IOException ex) {
            System.out.println("Server failed to open local port " + args[0]);
            System.exit(1);
        }
        System.out.println("Server ready, listening on port number " + args[0]);
           addMsg("HTTP Chat Server is ready ...");
        while(true) {
            cliSock=sock.accept();
            HttpChatRequest req=new HttpChatRequest(cliSock, BASE_FOLDER);
            req.start();
        }
    }

    // MESSAGES ARE ACCESSED BY THREADS - LOCKING REQUIRED
    private static int nextMsgNum = 0;
    private static final ArrayList<String> MSG_LIST = new ArrayList<>();

    public static String getMsg(int msgNumber) {
        synchronized(MSG_LIST) {
```

```
            while(msgNumber>=nextMsgNum) {
               try { MSG_LIST.wait(); }    // wait for a notification on MSG_LIST's monitor
                                           // while waiting MSG_LIST's intr lock is released
               catch(InterruptedException ex) {
                  System.out.println("Thread error: interrupted");
                  return null;
               }
            }
            return MSG_LIST.get(msgNumber);
         }
      }

      public static void addMsg(String msg) {
         synchronized(MSG_LIST) {
            MSG_LIST.add(nextMsgNum, msg);
            nextMsgNum++;
            MSG_LIST.notifyAll(); // notify all threads waiting on MSG_LIST's monitor
         }
      }


}
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-chat\HttpServerChat.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-chat\Makefile

```
P1=HttpServerChat
P2=HttpChatConsumer
C2=HTTPmessage
C3=HttpChatRequest

all: $(P1).class $(P2).class

$(P1).class: $(P1).java $(C2).class $(C3).class
	javac $(P1).java

$(P2).class: $(P2).java $(C2).class
	javac $(P2).java

$(C2).class: $(C2).java
	javac $(C2).java
```

```
$(C3).class: $(C3).java
	javac $(C3).java

clean:
	rm -f *.class
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-chat\Makefile

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-chat\README

JAVA/http-server-chat/HttpServerChat.java

*** HTTP Chat server ***

This implementation addresses one classical issue with web services:

How to notify a consumer something has happened on the server's side?

(in this implementation, the event is: there's a new message to be fetched)

The most basic approach is forcing consumers to periodically make a request to check if there's something new (polling). Though this is not very efficient, clients come to know about events with some delay and it's processing and networking intensive.

Here another approach is used, in fact, HTTP doesn't establish a maximum time for a server to reply a client's request. Based on this, the server can hold the response until the event occurs, when it does the response is sent.

This is ok as far as the client uses asynchronous HTTP requests (like with AJAX) and doesn't block waiting for the response.

One drawback of this solution is the server will have one pending response for each client, this may present a problem for the server if there are too many clients.

Regarding this specific implementation:

- Chat messages are nummbered by the server, starting from zero, as they come in.

- Clients send messages by requesting POST /messages

- Clients retrieve messages from the servers by requesting GET /messages/N, they start with GET /messages/0, once the response is received, they request GET

/messages/1,
and so on.

- If a client requests for a non existing message, the server holds the response until it exists.

- The client only requests the next message once the response to the previous message is obtained. No timeout is defined, so while the server is holding the response, the client is idle, waiting for it.

- On the server side, each request is processed by a thread, if the request is GET /messages/N and there's no message N yet, the thread is put into a wait state. Once a client posts a new message, all waiting threads are notified and awaked.

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-chat\README

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-chat\httpmessage.java

```
import java.io.*;


/**
 *
 * @author ANDRE MOREIRA (asc@isep.ipp.pt)
 */

public class httpmessage {

    private static final int CR=13;
    private static final int LF=10;

    private static final String VERSION="HTTP/1.1";

    private static final String CONTENT_TYPE="Content-type:";
    private static final String CONTENT_LENGTH="Content-length:";
    private static final String CONNECTION="Connection:";

    private static final String[][] knownFileExt = {
        { ".pdf" , "application/pdf" } ,
        { ".js" , "application/javascript" } ,
        { ".txt" , "text/plain" } ,
        { ".gif" , "image/gif" } ,
```

```
        { ".png" , "image/png" }
        };


    static private String readHeaderLine(DataInputStream in) throws IOException {
        String ret="";
        int val;
        do {
            val=in.read();
            if(val==-1) throw new IOException();
            if(val!=CR) ret=ret+(char)val;
            }
        while(val!=CR);
        val=in.read(); // read LF
        if(val==-1) throw new IOException();
        return ret;
        }

    static private void writeHeaderLine(DataOutputStream out, String line) throws
IOException {
        out.write(line.getBytes(), 0, line.length());
        out.write(CR); out.write(LF);
        }


    //// NON-STATIC (INSTANCE) ELEMENTS

    private boolean isRequest;
    private String method;
    private String uri;
    private String status;

    private String contentType;
    private byte[] content;

    /**
     * Creates a new httpmessage by receiving it from an DataInputStream
     * @param in
     * @throws IOException
     */
    public httpmessage(DataInputStream in) throws IOException {
        String firstLine=readHeaderLine(in);
        isRequest= !firstLine.startsWith("HTTP/");
        method=null;
```

```
    uri=null;
    content=null;
    status=null;
    contentType=null;

    String[] firstLineComp=firstLine.split(" ");
    if(isRequest) {
       method=firstLineComp[0];
       uri=firstLineComp[1];
       }
    else {  // response
       status=firstLineComp[1] + " " + firstLineComp[2];
       }

    String headerLine;

    do {
       headerLine=readHeaderLine(in);
       if(headerLine.toUpperCase().startsWith(CONTENT_TYPE.toUpperCase())) {
          contentType=headerLine.substring(CONTENT_TYPE.length()).trim();
          }
       else
       if(headerLine.toUpperCase().startsWith(CONTENT_LENGTH.toUpperCase())) {
          String cLen=headerLine.substring(CONTENT_LENGTH.length()).trim();
          int len;
          try { len=Integer.parseInt(cLen); }
          catch(NumberFormatException ne) { throw new IOException(); }
          content = new byte[len];
          }
       }
    while(!headerLine.isEmpty());

    // READ CONTENT
    if(content!=null) in.readFully(content,0,content.length);
    }

 public httpmessage() {
    isRequest=true;
    method=null;
    uri=null;
    content=null;
    status=null;
    contentType=null;
    }
```

```
        public void setResponseStatus(String sT) {
                isRequest=false;
                status=sT;
                }

        public void setContent(String cnt, String cType) {
                content=cnt.getBytes();
                contentType=cType;
                }

        public void setRequestMethod(String m) {
                isRequest=true;
                method=m;
                }


        public boolean send(DataOutputStream out) throws IOException {
                if(isRequest) {
                        if(method==null||uri==null) return false;
                        writeHeaderLine(out, method + " " + uri + " " + VERSION);
                        }
                else {
                        if(status==null) return false;
                        writeHeaderLine(out,VERSION + " " + status);
                        }

      if(content!=null) {
         if(contentType!=null) writeHeaderLine(out,CONTENT_TYPE + " " +
contentType);
         writeHeaderLine(out,CONTENT_LENGTH + " " + content.length);
         }
      writeHeaderLine(out,CONNECTION + " close");
      writeHeaderLine(out,"");
      if(content!=null) {
         out.write(content,0,content.length);
         }
      return true;
      }


   public String getMethod() { return method; }
   public String getURI() { return uri; }
```

```
public String getStatus() { return status; }
public void setURI(String u) { uri=u; }



public boolean hasContent() { return (content!=null); }
public String getContentAsString() { return(new String(content)); }
public byte[] getContent() { return(content); }
public void setContentFromString(String c, String ct) {
   content=c.getBytes(); contentType=ct;
   }

public boolean setContentFromFile(String fname) {
      File f=new File(fname);
   contentType=null;
      if(!f.exists()) {
      content=null;
      return false;
      }
   for (String[] k : knownFileExt) {
      if (fname.endsWith(k[0]))
         contentType = k[1];
      }
   if(contentType==null) contentType="text/html";

      int cLen = (int) f.length();
   if(cLen==0) {
      content=null;
      contentType=null;
      return false;
      }

   content = new byte[cLen];

      DataInputStream fr;
      try {
      fr = new DataInputStream(new FileInputStream(f));
      try { fr.readFully(content,0,cLen); fr.close(); }
      catch(IOException ex) {
         System.out.println("Error reading file");
         content=null;
         contentType=null;
         return false;
         }
```

```
        }
        catch(FileNotFoundException ex)  {
        System.out.println("File Not Found");
        content=null;
        contentType=null;
        return false;
        }
      return true;
      }

  } // CLASS END
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-chat\httpmessage.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-chat\www\index.html

```
<html><head><title>HTTP server demo - CHAT</title>
<script src="rcomp-chat.js"></script>
</head>
<body bgcolor="#C0C0C0" onload="loadAndStart()">
<table border="0" cellspacing="0" width="1100">
<tr><td valign=top bgcolor="#ffffff">
<h1>HTTP server demo - CHAT</h1>
<h3>Java version</h3>
</td><td align="center" bgcolor="#ffffff"><img src="chat.png" height="100"
width="200"></td></tr>
<tr><td colspan="2">
<hr>
<textarea id="messages" rows="20" cols="160" readonly>
Please wait, loading messages ...
</textarea>
</td></tr>
<tr><td>Nickname: <input type="text" id="nickname"></td><td><div
id="hints"></div></td></tr>
<tr><td colspan="2">Text message:
<input type="text" id="message" size="100"><input type="button" value="SEND"
onclick="postMessage()">
<hr>
</td></tr></table>
</body></html>
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-chat\www\index.html

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-chat\www\rcomp-chat.js

```
// global variables
var nextMsg;
var mArea,nicknameBox, messageBox, hints; // defined only after the document is
loaded

function loadAndStart() {
   mArea=document.getElementById("messages");
   nicknameBox=document.getElementById("nickname");
   messageBox=document.getElementById("message");
   hints=document.getElementById("hints");
   nextMsg=0;
   setTimeout(getNextMessage, 1000);
   }

function getNextMessage() {
   var request = new XMLHttpRequest();

   request.onload = function() {
      if(nextMsg===0) {
                  mArea.value = "";
         mArea.style.color="blue";
         }
      mArea.value = mArea.value + this.responseText + "\r\n";
      mArea.scrollTop = mArea.scrollHeight; // scroll the textarea to make last lines
visible
      nextMsg=nextMsg+1;
      setTimeout(getNextMessage, 100);
      };

   request.onerror = function() {
      nextMsg=0;
      mArea.value = "Server not responding.";
      mArea.style.color="red";
      setTimeout(getNextMessage, 1000);
   };

   request.ontimeout = function() {
      nextMsg=0;
      mArea.value = "Server not responding.";
      mArea.style.color="red";
```

```
        setTimeout(getNextMessage, 100);
    };


    request.open("GET", "/messages/" + nextMsg, true);
    if(nextMsg===0) request.timeout = 1000;
    // Message 0 is a server's greeting, it should always exist
    // no timeout, for following messages, the server responds only when the requested
    // message number exists
    request.send();
}

function postMessage() {
    hints.innerHTML="";
    if(nicknameBox.value === "") {
        hints.innerHTML="Settle a nickname before sending.";
        return;
        }
    if(messageBox.value === "") {
        hints.innerHTML="Not sending empty message.";
        return;
        }
    var POSTrequest = new XMLHttpRequest();
    nicknameBox.disabled=true;
    POSTrequest.open("POST", "/messages", true);
    POSTrequest.timeout = 5000;
    POSTrequest.send("(" + nicknameBox.value + ") " + messageBox.value);
    }
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-chat\www\rcomp-chat.js

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-form-file-upload\HTTP.java

```
import java.io.*;
import java.net.*;

class HTTP {
        static private final String HTTP_VERSION ="HTTP/1.0";
        static private final String HTTP_CONNECTION_CLOSE ="Connection: close";
        static private final String HTTP_CRLF ="\r\n";

        static String readLineCRLF(DataInputStream sIn) {
```

```
		byte[] line = new byte[300];
		int p=0;
		try {
			for(;;) {
				sIn.read(line,p,1);
			if(line[p]=='\n') return(new String( line, 0, p));
			else
				if(line[p]!='\r') p++;
			}
			}
		catch(IOException ex) { System.out.println("READ IOException"); }
		return(null);
		}

	static void writeLineCRLF(DataOutputStream sOut, String line) {
		try {
			sOut.write(line.getBytes(),0,(byte)line.length());
			sOut.write(HTTP_CRLF.getBytes(),0,2);
			}
		catch(IOException ex) { System.out.println("WRITE IOException"); }
		}


	static void sendHttpResponseHeader(DataOutputStream sOut, String status,
String contentType, int contentLength) {
		writeLineCRLF(sOut, HTTP_VERSION + " " + status);
		writeLineCRLF(sOut, "Content-Type: " + contentType);
		writeLineCRLF(sOut, "Content-Length: " + contentLength);
		writeLineCRLF(sOut, HTTP_CONNECTION_CLOSE);
		writeLineCRLF(sOut, "");
		}

	static void sendHttpResponse(DataOutputStream sOut, String status, String
contentType,
			byte[] content, int contentLength) {
		sendHttpResponseHeader(sOut,status,contentType,contentLength);
		try {
			sOut.write(content,0,contentLength);
			}
		catch(IOException ex) { System.out.println("IOException"); }
		}


	static void sendHttpStringResponse(DataOutputStream sOut, String status,
```

```
String contentType, String content) {

        sendHttpResponse(sOut,status,contentType,content.getBytes(),content.length());
                }


        static void sendHttpFileResponse(DataOutputStream sOut, String status, String
filePath) {
                String responseStatus="200 Ok";
                String contentType="text/html";
                File f;

                f=new File(filePath);
                if(!f.exists()) {
                        sendHttpStringResponse(sOut, "404 Not Found", contentType,
                                "<html><body><h1>404 File not
found</h1></body></html>");
                        return;
                        }
        if(filePath.endsWith(".pdf")) contentType="application/pdf";
        else
        if(filePath.endsWith(".js")) contentType="application/javascript";
        else
        if(filePath.endsWith(".txt")) contentType="text/plain";
        else
        if(filePath.endsWith(".gif")) contentType="image/gif";
        else
        if(filePath.endsWith(".png")) contentType="image/png";

                if(status!=null) responseStatus=status;

                int len= (int) f.length();
                sendHttpResponseHeader(sOut,responseStatus,contentType,len);
                byte[] data = new byte[300];
                int done, readNow;
                InputStream fReader;
                try {
                        fReader = new BufferedInputStream(new FileInputStream(f));
                        do {
                                if(len>300) readNow=300; else readNow=(int)len;
                                try {
                                        done=fReader.read(data,0,readNow);
                                        len=len-done;
                                        sOut.write(data,0,done);
```

```
                                        }
                                catch(IOException ex) { System.out.println("IOException");
}
                                }
                        while(len>0);

                        }
                catch(FileNotFoundException ex)  { System.out.println("FILE OPEN
FileNotFoundException"); }
                }


        }
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-form-file-upload\HTTP.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-form-file-upload\HttpRequest.java

```
import java.io.*;
import java.net.*;

class HttpRequest implements Runnable {
        private Socket s;
        private DataOutputStream sOut;
        private DataInputStream sIn;
        private String baseFolder;

        public HttpRequest(Socket cli_s, String folder) { s=cli_s; baseFolder=folder;}

        public void run() {
                try {
                        sOut = new DataOutputStream(s.getOutputStream());
                        sIn = new DataInputStream(s.getInputStream());
                        }
                catch(IOException ex) { System.out.println("Data Stream IOException"); }
                String request=HTTP.readLineCRLF(sIn);
                // System.out.println("Request: " + request);
                if(request.startsWith("POST /upload")) processPostUpload();
                else
                if(request.startsWith("POST /list")) processPostList();
                else processGet(request);
```

```
                try { s.close();}
                catch(IOException ex) { System.out.println("CLOSE IOException"); }
                }


        void processGet(String req) {
                String line, fileName, filePath;

                do { // READ AND IGNORE THE HEADER LINES
                        line=HTTP.readLineCRLF(sIn);
                        }
                while(line.length()>0);

                fileName=req.split(" ")[1];
                if(fileName.compareTo("/")==0) fileName="/index.html";
                filePath=baseFolder+fileName;
                HTTP.sendHttpFileResponse(sOut, null, filePath);
                }


        void processPostUpload() {
                String line, boundary, filename, filePath;
                int done,readNow,len;
                String cDisp="Content-Disposition: form-data; name=\"filename\";
filename=\"";
                File f;
                FileOutputStream fOut;
                byte[] data = new byte[300];

                len=0;
                boundary=null;
                do {    // FIRSH HEADER
                        line=HTTP.readLineCRLF(sIn);
                        if(line.startsWith("Content-Length: ")) {
                                len=Integer.parseInt(line.split(" ")[1]);
                                }
                        else
                                if(line.startsWith("Content-Type: multipart/form-data;
boundary=")) {
                                        boundary=line.split("=")[1];
                                        }
                        }
                while(line.length()>0);
```

```
		if(len==0) {replyPostError("Content-Length: expected and not found");
return;}
		if(boundary==null) {replyPostError("Content-Type: multipart/form-data;
expected and not found"); return;}

		line=HTTP.readLineCRLF(sIn);
		if(!line.endsWith(boundary)) {replyPostError("Multipart separator expected
and not found"); return;}
		len=len-line.length()-2;
		filename="";
		do {	// SECOND HEADER
			line=HTTP.readLineCRLF(sIn);
			len=len-line.length()-2;
			if(line.startsWith(cDisp)) {
				filename=line.split("=")[2];
				filename=filename.substring(1,filename.length()-1);
				}
			}
		while(line.length()>0);

		try {
			if(filename.length()==0) {
				do { done=sIn.read(data,0,300);len=len-done;}
while(len>0);
				replyPostError("Content-Disposition: form-data; expected
and not found (NO FILENAME)");
				return;
				}
			filePath=baseFolder+"/"+filename;
			f = new File(filePath);
			fOut = new FileOutputStream(f);

			len=len-boundary.length()-6;

			do {
				if(len>300) readNow=300; else readNow=len;
				done=sIn.read(data,0,readNow);
				fOut.write(data,0,done);
				len=len-done;
				}
			while(len>0);
			fOut.close();
			line=HTTP.readLineCRLF(sIn);
```

```
                }
            catch(IOException ex) { System.out.println("IOException"); }
            replyPostList();
            }


        void processPostList()          {
            String line;
            do { // READ AND IGNORE THE HEADER LINES
                line=HTTP.readLineCRLF(sIn);
                }
            while(line.length()>0);
            replyPostList();
            }


        void replyPostList() {
            String s1="<html><head><title>File List</title></head><body><h1>File
List:</h1><big><ul>";
            String s2="</ul></big><hr><p><a href=/>BACK</a></body></html>";
            String list;
            File d;

            d= new File("www/");
            list=s1;
            File[] filesList = d.listFiles();
            for(File f : filesList)
            if(f.isFile())
                        list=list + "<li><a href=/" + f.getName() + ">" + f.getName()
+ "</a>";
            list=list+s2;
            HTTP.sendHttpStringResponse(sOut, "200 Ok", "text/html", list);
            }


        void replyPostError(String error) {
            HTTP.sendHttpStringResponse(sOut, "500 Internal Server Error",
"text/html",
                        "<html><head><title>Server
Error</title></head><body><center><img src=500.png><br>(500.png)</center>"
                        + "<h1>Server error on POST</h1><p>ERROR: " + error +
                        "<hr><p><a href=/>BACK</a></body></html>");
            }
```

```
} // END OF CLASS
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-form-file-upload\HttpRequest.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-form-file-upload\HttpServerFormFileUpload.java

```
import java.io.*;
import java.net.*;

class HttpServerFormFileUpload {
	static private final String BASE_FOLDER="www";
	static private ServerSocket sock;

	public static void main(String args[]) throws Exception {
		Socket cliSock;

		if(args.length!=1) {
		System.out.println("Local port number required at the command line.");
		System.exit(1);
			}

		try { sock = new ServerSocket(Integer.parseInt(args[0])); }
		catch(IOException ex) {
			System.out.println("Failed to open local port " + args[0]);
			System.exit(1);
			}
		while(true) {
			cliSock=sock.accept();
			new Thread(new HttpRequest(cliSock, BASE_FOLDER)).start();
			}
		}
	}
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-form-file-upload\HttpServerFormFileUpload.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-form-file-upload\Makefile

```
P1=HttpServerFormFileUpload
C2=HTTP
C3=HttpRequest

all: $(P1).class

$(P1).class: $(P1).java $(C2).class $(C3).class
	javac $(P1).java

$(C2).class: $(C2).java
	javac $(C2).java

$(C3).class: $(C3).java
	javac $(C3).java

clean:
	rm -f *.class
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-form-file-upload\Makefile

[File Begins] sem4pi-22-23-61-master\base.rcomp\http-server-form-file-upload\www\index.html

```
<html><head><title>Sample HTTP server</title></head>
<body bgcolor=#C0C0C0><h1>Sample HTTP server - File upload with multipart/form-data</h1>
<h3>Java version</h3>
<hr>
<center><img src=http.gif><br>(http.gif)</center>
<hr>
<center>
<table width=60% border=1 cellpadding=20 cellspacing=20><tr><td>
<form name=upload enctype="multipart/form-data" method=POST action=upload>
1st: <input type=file name=filename><br><br>
2th: <input type=submit value=UPLOAD>
</form>
</td><td align=center>
<form name=list enctype="text/plain" method=POST action=list>
<button type=submit>LIST UPLOADED FILES</button>
```

```
</form>
</td></tr></table>
</center>
<hr>
<center><img src=http2.png><br>http2.png</center>
</body></html>
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\http-server-form-file-upload\www\index.html

[File Begins] sem4pi-22-23-61-master\base.rcomp\tcp-chat\Makefile

```
P1=TcpChatCli
P2=TcpChatCliGui
P3=TcpChatSrv
P4=TcpChatSrvSingleThread

all: $(P1).class $(P2).class $(P3).class $(P4).class

$(P1).class: $(P1).java
	javac $(P1).java

$(P2).class: $(P2).java
	javac $(P2).java

$(P3).class: $(P3).java
	javac $(P3).java

$(P4).class: $(P4).java
	javac $(P4).java


clean:
	rm -f *.class
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\tcp-chat\Makefile

[File Begins] sem4pi-22-23-61-master\base.rcomp\tcp-chat\TcpChatCli.java

```
import java.io.*;
import java.net.*;

class TcpChatCli {
```

```
	static InetAddress serverIP;
	static Socket sock;


	public static void main(String args[]) throws Exception {
		String nick, frase;
		byte[] data = new byte[300];

		if(args.length!=1) {
			System.out.println(
				"Server IPv4/IPv6 address or DNS name is required as
argument");
			System.exit(1); }

		try { serverIP = InetAddress.getByName(args[0]); }
		catch(UnknownHostException ex) {
			System.out.println("Invalid server: " + args[0]);
			System.exit(1); }

		try { sock = new Socket(serverIP, 9999); }
		catch(IOException ex) {
			System.out.println("Failed to connect.");
			System.exit(1); }

		BufferedReader in = new BufferedReader(new
InputStreamReader(System.in));
		DataOutputStream sOut = new
DataOutputStream(sock.getOutputStream());

		System.out.println("Connected to server");
		System.out.print("Enter your nickname: "); nick = in.readLine();

		// start a thread to read incoming messages from the server
		Thread serverConn = new Thread(new TcpChatCliConn(sock));
		serverConn.start();


		while(true) { // read messages from the console and send them to the
server
			frase=in.readLine();
			if(frase.compareTo("exit")==0)
				{ sOut.write(0); break;}
			frase="(" + nick + ") " + frase;
			data = frase.getBytes();
```

```
                    sOut.write((byte)frase.length());
                    sOut.write(data,0,(byte)frase.length());
                    }

                serverConn.join();
                sock.close();
                }
        }



class TcpChatCliConn implements Runnable {
        private Socket s;
        private DataInputStream sIn;

        public TcpChatCliConn(Socket tcp_s) { s=tcp_s;}

        public void run() {
                int nChars;
                byte[] data = new byte[300];
                String frase;

                try {
                        sIn = new DataInputStream(s.getInputStream());
                        while(true) {
                                nChars=sIn.read();
                                if(nChars==0) break;
                                sIn.read(data,0,nChars);
                                frase = new String(data, 0, nChars);
                                System.out.println(frase);
                                }
                        }
                catch(IOException ex) { System.out.println("Client disconnected."); }
                }
        }
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\tcp-chat\TcpChatCli.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\tcp-chat\TcpChatCliGui.java

```
import java.awt.GridBagConstraints;
import java.awt.GridBagLayout;
import java.awt.Insets;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.io.*;
import java.net.*;
import javax.swing.*;


class TcpChatCliGui extends JFrame implements ActionListener {

        static private JTextField textToSend;
        static private JTextArea textRec;
        static private Socket sock;
        static private InetAddress serverIP;
        static String server, nick;
        static private DataOutputStream sOut;

        public TcpChatCliGui()  { startGUI();    }



        private void startGUI() {

        JButton sendB = new JButton("SEND");
        JButton exitB = new JButton("EXIT");
        this.setTitle("TcpChatCliGui - " + nick + "@" + server);

        GridBagLayout layout  = new GridBagLayout();
        GridBagConstraints c = new GridBagConstraints();
        getContentPane().setLayout(layout);

        textToSend = new JTextField(40);
        textRec = new JTextArea(10,40);
        textRec.setEditable(false);


        c.gridy = 0; // top line
        c.gridx = 0; // left column
```

```
c.gridwidth=4; c.insets=new Insets(5,5,5,5); c.fill=GridBagConstraints.BOTH;
layout.setConstraints(textRec, c);  getContentPane().add(textRec);

c.gridy=1;
layout.setConstraints(textToSend, c);  getContentPane().add(textToSend);

      c.gridy=2;c.gridx=1;c.gridwidth=1;
layout.setConstraints(sendB, c);  getContentPane().add(sendB);

      c.gridx=3;
layout.setConstraints(exitB, c);  getContentPane().add(exitB);

      sendB.addActionListener(this);
exitB.addActionListener(this);
      textToSend.addActionListener(this);

//setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
      setDefaultCloseOperation(JFrame.DO_NOTHING_ON_CLOSE);
pack();
      textToSend.requestFocusInWindow();
setVisible(true);
         }


@Override
public void actionPerformed(ActionEvent event) {
         byte[] data;
         String label, frase;
         try {
                  label=event.getActionCommand();
                  if(label.contentEquals("EXIT")) {sOut.write((byte)0);return;}
                  frase=textToSend.getText();
                  if(frase.isEmpty()) return;
                  textToSend.setText("");
                  frase="(" + nick + ") " + frase;
                  data = frase.getBytes();
                  sOut.write((byte)frase.length());
                  sOut.write(data,0,(byte)frase.length());
                  }
         catch(IOException ex) {
                  System.out.println("NETWORK I/O ERROR");
                  }

         }
```

```
        public static void main(String[] args) throws Exception {
                String frase;

                DataInputStream sIn;
                byte[] data = new byte[300];
                int nChars;

                server=(String)JOptionPane.showInputDialog(null,
                        "Enter the server's IP address or DNS name",
                        "127.0.0.1");
                if(server==null) {System.exit(0);}

                if(server.length()<1) {
                        JOptionPane.showMessageDialog(null,
                        "Empty server's IP address or DNS name", "ERROR",
JOptionPane.WARNING_MESSAGE);
                        System.exit(0);}

                try { serverIP = InetAddress.getByName(server); }
                catch(UnknownHostException ex) {
                        JOptionPane.showMessageDialog(null,
                                "The provided server (" + server + ") is invalid", "ERROR",
                                JOptionPane.WARNING_MESSAGE);System.exit(0); }


                try {
                        sock = new Socket(serverIP, 9999);
                        }
                catch(IOException ex) {
                        JOptionPane.showMessageDialog(null,
                                "TCP connection with server " + server + " failed",
"ERROR",
                                JOptionPane.WARNING_MESSAGE);System.exit(0); }


                do {
                        nick=(String)JOptionPane.showInputDialog(null,
                                "Enter your nickname to be used in server " + server,
                                "ENTER YOUR NICKNAME",
JOptionPane.PLAIN_MESSAGE);
                        }
```

```
            while(nick==null || nick.length()<2);

            sOut = new DataOutputStream(sock.getOutputStream());
            sIn=new DataInputStream(sock.getInputStream());

            TcpChatCliGui appWin = new TcpChatCliGui();

            while(true) {
                  nChars=sIn.read();
                  if(nChars==0) break;
                  sIn.read(data,0,nChars);
                  frase = new String( data, 0, nChars);
                  textRec.append("\n" + frase);
                  }

            System.out.println("DONE");
            sock.close();
            System.exit(0);
            }
      }
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\tcp-chat\TcpChatCliGui.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\tcp-chat\TcpChatSrv.java

```
import java.io.*;
import java.net.*;
import java.util.concurrent.*;
import java.util.HashMap;

class TcpChatSrv {

      private static HashMap<Socket,DataOutputStream> cliList = new HashMap<>();

      public static synchronized void sendToAll(int len, byte[] data) throws Exception {
            for(DataOutputStream cOut: cliList.values()) {
                  cOut.write(len);
                  cOut.write(data,0,len);
                  }

            }

      public static synchronized void addCli(Socket s) throws Exception {
```

```
            cliList.put(s,new DataOutputStream(s.getOutputStream()));
            }

        public static synchronized void remCli(Socket s) throws Exception {
            cliList.get(s).write(0);
            cliList.remove(s);
            s.close();
            }



        private static ServerSocket sock;

        public static void main(String args[]) throws Exception {
            int i;

            try { sock = new ServerSocket(9999); }
            catch(IOException ex) {
                System.out.println("Local port number not available.");
                System.exit(1); }

            while(true) {
                Socket s=sock.accept(); // wait for a new client connection request
                addCli(s);
                Thread cli = new TcpChatSrvClient(s);
                cli.start();
                }
            }
        }



class TcpChatSrvClient extends Thread {
        private Socket myS;
        private DataInputStream sIn;

        public TcpChatSrvClient(Socket s) { myS=s;}

        public void run() {
            int nChars;
            byte[] data = new byte[300];

            try {
                sIn = new DataInputStream(myS.getInputStream());
```

```
                        while(true) {
                                nChars=sIn.read();
                                if(nChars==0) break; // empty line means client wants to
exit
                                sIn.read(data,0,nChars);
                                TcpChatSrv.sendToAll(nChars,data);
                                }
                        // the client wants to exit
                        TcpChatSrv.remCli(myS);
                        }
                catch(Exception ex) { System.out.println("Error"); }
                }
        }
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\tcp-chat\TcpChatSrv.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\tcp-chat\TcpChatSrvSingleThread.java

```
import java.io.*;
import java.net.*;
import java.util.HashMap;

class TcpChatSrvSingleThread {

        private static final int SO_TIMEOUT = 100;

        private static HashMap<Socket,DataOutputStream> cliListOut = new
HashMap<>();
        private static HashMap<Socket,DataInputStream> cliListIn = new HashMap<>();


        private static ServerSocket sock;

        public static void main(String args[]) throws Exception {
                int nChars;
                byte[] data = new byte[300];
                Socket cliS;

                try { sock = new ServerSocket(9999); }
                catch(IOException ex) {
                        System.out.println("Local port number not available.");
                        System.exit(1); }
```

```
        sock.setSoTimeout(SO_TIMEOUT); // set the socket timeout

        while(true) {
            try {    // check for new client connection requests
                cliS=sock.accept();
                cliS.setSoTimeout(SO_TIMEOUT); // set the connected
socket timeout
                cliListOut.put(cliS,new
DataOutputStream(cliS.getOutputStream()));
                cliListIn.put(cliS,new
DataInputStream(cliS.getInputStream()));
                }
            catch(SocketTimeoutException to) {} // no new connections


            for(Socket s: cliListIn.keySet()) {   // all connected clients
                DataInputStream sIn = cliListIn.get(s);
                try {                        // try reading the line size
                nChars=sIn.read();
                    if(nChars==0) {         // empty line - client wants to
exit
                        DataOutputStream sOut = cliListOut.get(s);
                        sOut.write(nChars);  // send back an empty
line
                        cliListIn.remove(s);
                        cliListOut.remove(s);
                        s.close();
                        }
                    else {
                        sIn.read(data,0,nChars);  // read the line
                        for(DataOutputStream sOut:
cliListOut.values()) {
                            sOut.write(nChars);
                        sOut.write(data,0,nChars);
                            }
                        }
                    }
                catch(SocketTimeoutException to) {} // no text line from
client
                }

            }
        }
```

```
}
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\tcp-chat\TcpChatSrvSingleThread.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\tcp-cli-srv\Makefile

```
P1=TcpCliSum
P2=TcpSrvSum

all: $(P1).class $(P2).class

$(P1).class: $(P1).java
	javac $(P1).java

$(P2).class: $(P2).java
	javac $(P2).java

clean:
	rm -f *.class
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\tcp-cli-srv\Makefile

[File Begins] sem4pi-22-23-61-master\base.rcomp\tcp-cli-srv\TcpCliSum.java

```
import java.io.*;
import java.net.*;

class TcpCliSum {
	static InetAddress serverIP;
	static Socket sock;

	public static void main(String args[]) throws Exception {
		if(args.length!=1) {
			System.out.println("Server IPv4/IPv6 address or DNS name is
required as argument");
			System.exit(1); }

		try { serverIP = InetAddress.getByName(args[0]); }
		catch(UnknownHostException ex) {
			System.out.println("Invalid server specified: " + args[0]);
```

```
                System.exit(1); }

        try { sock = new Socket(serverIP, 9999); }
        catch(IOException ex) {
                System.out.println("Failed to establish TCP connection");
                System.exit(1); }

        BufferedReader in = new BufferedReader(new
InputStreamReader(System.in));
        DataOutputStream sOut = new
DataOutputStream(sock.getOutputStream());
        DataInputStream sIn = new DataInputStream(sock.getInputStream());


        String frase;
        long f,i,n,num;
        do {
                do {
                        num=-1;
                        while(num<0) {
                                System.out.print("Enter a positive integer to SUM
(zero to terminate): ");
                                frase = in.readLine();
                                try { num=Integer.parseInt(frase); }
                                catch(NumberFormatException ex) {num=-1;}
                                if(num<0) System.out.println("Invalid number");
                                }
                        n=num; for(i=0;i<4;i++) {sOut.write((byte)(n%256));
n=n/256; }
                        }
                while(num!=0);
                num=0; f=1;
                for(i=0;i<4;i++) {num=num+f*sIn.read(); f=f*256;}
                System.out.println("SUM RESULT = " + num);
                }
        while(num!=0);
        sock.close();
        }
    }
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\tcp-cli-srv\TcpCliSum.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\tcp-cli-srv\TcpSrvSum.java

```
import java.io.*;
import java.net.*;

class TcpSrvSum {
	static ServerSocket sock;

	public static void main(String args[]) throws Exception {
		Socket cliSock;

		try { sock = new ServerSocket(9999); }
		catch(IOException ex) {
			System.out.println("Failed to open server socket");
			System.exit(1);
			}

		while(true) {
			cliSock=sock.accept();
			new Thread(new TcpSrvSumThread(cliSock)).start();
			}
		}
	}



class TcpSrvSumThread implements Runnable {
	private Socket s;
	private DataOutputStream sOut;
	private DataInputStream sIn;

	public TcpSrvSumThread(Socket cli_s) { s=cli_s;}

	public void run() {
		long f,i,num,sum;
		InetAddress clientIP;

		clientIP=s.getInetAddress();
		System.out.println("New client connection from " +
clientIP.getHostAddress() +
			", port number " + s.getPort());
		try {
			sOut = new DataOutputStream(s.getOutputStream());
```

```
                        sIn = new DataInputStream(s.getInputStream());
                        do {
                                sum=0;
                                do {
                                        num=0; f=1; for(i=0;i<4;i++)
{num=num+f*sIn.read(); f=f*256;}
                                        sum=sum+num;
                                        }
                                while(num>0);
                                num=sum; for(i=0;i<4;i++) {sOut.write((byte)(num%256));
num=num/256; }
                                }
                        while(sum>0);

                        System.out.println("Client " + clientIP.getHostAddress() + ", port
number: " + s.getPort() +
                                " disconnected");
                        s.close();
                        }
                catch(IOException ex) { System.out.println("IOException"); }
                }
        }
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\tcp-cli-srv\TcpSrvSum.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\udp-chat\Makefile

```
P1=UdpChat

all: $(P1).class

$(P1).class: $(P1).java
        javac $(P1).java

clean:
        rm -f *.class
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\udp-chat\Makefile

[File Begins] sem4pi-22-23-61-master\base.rcomp\udp-chat\UdpChat.java

```
import java.io.*;
import java.net.*;
import java.util.HashSet;

class UdpChat {

	private static final String BCAST_ADDR = "255.255.255.255";
	private static final int SERVICE_PORT = 9999;

	private static HashSet<InetAddress> peersList = new HashSet<>();

	public static synchronized void addIP(InetAddress ip) { peersList.add(ip);}

	public static synchronized void remIP(InetAddress ip) { peersList.remove(ip);}

	public static synchronized void printIPs() {
		for(InetAddress ip: peersList) {
			System.out.print(" " + ip.getHostAddress());
			}
		}

	public static synchronized void sendToAll(DatagramSocket s, DatagramPacket p)
throws Exception {
		for(InetAddress ip: peersList) {
			p.setAddress(ip);
			s.send(p);
			}
		}

	static InetAddress bcastAddress;
	static DatagramSocket sock;

	public static void main(String args[]) throws Exception {
		String nick, frase;
		byte[] data = new byte[300];
		byte[] fraseData;
		int i;
		DatagramPacket udpPacket;

		try { sock = new DatagramSocket(SERVICE_PORT); }
		catch(IOException ex) {
```

```
                    System.out.println("Failed to open local port");
                    System.exit(1); }

            BufferedReader in = new BufferedReader(new
InputStreamReader(System.in));

            System.out.print("Nickname: "); nick = in.readLine();

            bcastAddress=InetAddress.getByName(BCAST_ADDR);
            sock.setBroadcast(true);
            data[0]=1;
            udpPacket = new DatagramPacket(data, 1, bcastAddress,
SERVICE_PORT);
            sock.send(udpPacket);

            Thread udpReceiver = new Thread(new UdpChatReceive(sock));
            udpReceiver.start();

            while(true) { // handle user inputs
                    frase=in.readLine();
                    if(frase.compareTo("EXIT")==0) break;
                    if(frase.compareTo("LIST")==0) {
                            System.out.print("Active peers:");
                            printIPs();
                            System.out.println("");
                            }
                    else {
                            frase="(" + nick + ") " + frase;
                            fraseData = frase.getBytes();
                            udpPacket.setData(fraseData);
                            udpPacket.setLength(frase.length());
                            sendToAll(sock,udpPacket);
                            }
                    }
            data[0]=0; // announce I'm leaving
            udpPacket.setData(data);
            udpPacket.setLength(1);
            sendToAll(sock,udpPacket);
            sock.close();
            udpReceiver.join(); // wait for the thread to end
            }
    }
```

```
class UdpChatReceive implements Runnable {
	private DatagramSocket s;

	public UdpChatReceive(DatagramSocket udp_s) { s=udp_s;}

	public void run() {
		int i;
		byte[] data = new byte[300];
		String frase;
		DatagramPacket p;
		InetAddress currPeerAddress;

		p=new DatagramPacket(data, data.length);

		while(true) {
			p.setLength(data.length);
			try { s.receive(p); }
			catch(IOException ex) { return; }
			currPeerAddress=p.getAddress();

			if(data[0]==1) { // peer start
				UdpChat.addIP(p.getAddress());
				try { s.send(p); }
				catch(IOException ex) { return; }
				}
			else
			if(data[0]==0) { // peer exit
				UdpChat.remIP(p.getAddress());
				}
			else {		// chat message
			frase = new String( p.getData(), 0, p.getLength());
				System.out.println(frase);
				}
			}
		}
	}
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\udp-chat\UdpChat.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\udp-cli-srv\Makefile

```
CC=javac
```

```
P1=UdpCliBcast
P2=UdpCli
P3=UdpCliTo
P4=UdpSrv
P5=UdpSrvMport

all: $(P1).class $(P2).class $(P3).class $(P3).class $(P4).class $(P5).class

$(P1).class: $(P1).java
	$(CC) $(P1).java

$(P2).class: $(P2).java
	$(CC) $(P2).java

$(P3).class: $(P3).java
	$(CC) $(P3).java

$(P4).class: $(P4).java
	$(CC) $(P4).java

$(P5).class: $(P5).java
	$(CC) $(P5).java

clean:
	rm -f *.class
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\udp-cli-srv\Makefile

[File Begins] sem4pi-22-23-61-master\base.rcomp\udp-cli-srv\UdpCli.java

```
import java.io.*;
import java.net.*;

class UdpCli {
	static InetAddress serverIP;

	public static void main(String args[]) throws Exception {
		byte[] data = new byte[300];
		String frase;

		if(args.length!=1) {
			System.out.println("Server IPv4/IPv6 address or DNS name is
required as argument");
			System.exit(1);
```

```
                }

            try { serverIP = InetAddress.getByName(args[0]); }
            catch(UnknownHostException ex) {
                System.out.println("Invalid server address supplied: "  + args[0]);
                System.exit(1);
                }

            DatagramSocket sock = new DatagramSocket();
            DatagramPacket udpPacket = new DatagramPacket(data, data.length,
serverIP, 9999);

            BufferedReader in = new BufferedReader(new
InputStreamReader(System.in));

            while(true) {
                System.out.print("Sentence to send (\"exit\" to quit): ");
                frase = in.readLine();
                if(frase.compareTo("exit")==0) break;
                udpPacket.setData(frase.getBytes());
                udpPacket.setLength(frase.length());
                sock.send(udpPacket);
                udpPacket.setData(data);
                udpPacket.setLength(data.length);
               sock.receive(udpPacket);
                frase = new String( udpPacket.getData(), 0,
udpPacket.getLength());
                System.out.println("Received reply: " + frase);
                }
            sock.close();
            }
        }
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\udp-cli-srv\UdpCli.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\udp-cli-srv\UdpCliBcast.java

```
import java.io.*;
import java.net.*;

class UdpCliBcast {
        static InetAddress targetIP;
```

```
	public static void main(String args[]) throws Exception {
		byte[] data = new byte[300];
		String frase;
		targetIP=InetAddress.getByName("255.255.255.255");

		DatagramSocket sock = new DatagramSocket();
		sock.setBroadcast(true);
		DatagramPacket udpPacket = new DatagramPacket(data, data.length,
targetIP, 9999);

		BufferedReader in = new BufferedReader(new
InputStreamReader(System.in));

		while(true) {
		System.out.print("Request sentence to send (\"exit\" to quit): ");
			frase = in.readLine();
		if(frase.compareTo("exit")==0) break;
		udpPacket.setData(frase.getBytes());
		udpPacket.setLength(frase.length());
			sock.send(udpPacket);
		udpPacket.setData(data);
		udpPacket.setLength(data.length);
			sock.receive(udpPacket);
		frase = new String( udpPacket.getData(), 0, udpPacket.getLength());
			  System.out.println("Received reply: " + frase);
		}
		sock.close();
		}
	}
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\udp-cli-srv\UdpCliBcast.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\udp-cli-srv\UdpCliTo.java

```
import java.io.*;
import java.net.*;

class UdpCliTo {
	static InetAddress serverIP;

	private static final int TIMEOUT=3; // seconds
```

```
	public static void main(String args[]) throws Exception {
		byte[] data = new byte[300];
		String frase;

		if(args.length!=1) {
			System.out.println("Server IPv4/IPv6 address or DNS name is
required as argument");
			System.exit(1);
			}

		try { serverIP = InetAddress.getByName(args[0]); }
		catch(UnknownHostException ex) {
			System.out.println("Invalid server address supplied: "  + args[0]);
			System.exit(1);
			}

		BufferedReader in = new BufferedReader(new
InputStreamReader(System.in));
		DatagramSocket sock = new DatagramSocket();
		sock.setSoTimeout(1000*TIMEOUT); // set the socket timeout

		DatagramPacket udpPacket = new DatagramPacket(data, data.length,
serverIP, 9999);

		while(true) {
			System.out.print("Request sentence to send (\"exit\" to quit): ");
			frase = in.readLine();
			if(frase.compareTo("exit")==0) break;
			udpPacket.setData(frase.getBytes());
		    udpPacket.setLength(frase.length());
		    sock.send(udpPacket);
		    udpPacket.setData(data);
		    udpPacket.setLength(data.length);
			try {
			sock.receive(udpPacket);
			frase = new String( udpPacket.getData(), 0,
udpPacket.getLength());
			System.out.println("Received reply: " + frase);
				}
			catch(SocketTimeoutException ex) {
			System.out.println("No reply from server");}
			}
		sock.close();
		}
```

```
}
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\udp-cli-srv\UdpCliTo.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\udp-cli-srv\UdpSrv.java

```
import java.io.*;
import java.net.*;

class UdpSrv {
	static DatagramSocket sock;
	public static void main(String args[]) throws Exception {
		byte[] data = new byte[300];
		byte[] data1 = new byte[300];
		int i, len;

		try { sock = new DatagramSocket(9999); }
		catch(BindException ex) {
		System.out.println("Bind to local port failed");
		System.exit(1);
		}

		DatagramPacket udpPacket= new DatagramPacket(data, data.length);

		System.out.println("Listening for UDP requests (IPv6/IPv4). Use CTRL+C
to terminate the server");
		while(true) {
		udpPacket.setData(data);
			udpPacket.setLength(data.length);
			sock.receive(udpPacket);
			len=udpPacket.getLength();
			System.out.println("Request from: " +
udpPacket.getAddress().getHostAddress() +
			" port: " + udpPacket.getPort());
			for(i=0;i<len;i++) data1[len-1-i]=data[i];
			udpPacket.setData(data1);
			udpPacket.setLength(len);
			sock.send(udpPacket);
		}
		}
```

```
	}
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\udp-cli-srv\UdpSrv.java

[File Begins] sem4pi-22-23-61-master\base.rcomp\udp-cli-srv\UdpSrvMport.java

```
import java.io.*;
import java.net.*;

class UdpSrvMport {
	private static final int SERVER_PORT_BASE=9009;
	static DatagramSocket sock[];
	public static void main(String args[]) throws Exception {
		int i;
		sock = new DatagramSocket[6];

		for(i=0;i<6;i++) {
			try { sock[i] = new
DatagramSocket(SERVER_PORT_BASE+100*i); }
			catch(BindException ex) {
			System.out.println("Failed to bind to port number " +
SERVER_PORT_BASE+100*i);
				do { sock[i].close(); i--; } while(i>-1);
			System.exit(1);
			}
			}


		System.out.println("Listening for UDP requests (IPv6/IPv4). Use CTRL+C
to terminate the server");

		for(i=0;i<6;i++)  // start one thread for each socket
			new Thread(new UdpSrvMportThread(sock[i])).start();

		}
	}


class UdpSrvMportThread implements Runnable {
	private DatagramSocket sock;


	public UdpSrvMportThread(DatagramSocket s) { sock=s;}
```

```
	public void run() {
		byte[] data = new byte[300];
		byte[] data1 = new byte[300];
		String frase;
		int len, i;

		DatagramPacket udpPacket = new DatagramPacket(data, data.length);

		try {
			while(true) {
				udpPacket.setData(data);
			udpPacket.setLength(data.length);
			sock.receive(udpPacket);
			len=udpPacket.getLength();
			System.out.println("Request from: " +
udpPacket.getAddress().getHostAddress() +
				" port: " + udpPacket.getPort());
			for(i=0;i<len;i++) data1[len-1-i]=data[i];
			udpPacket.setData(data1);
			udpPacket.setLength(len);
			sock.send(udpPacket);
				}
			}
		catch(IOException ex) { System.out.println("IOException"); }
		}
	}
```

[File Ends] sem4pi-22-23-61-master\base.rcomp\udp-cli-srv\UdpSrvMport.java

[File Begins] sem4pi-22-23-61-master\bitbucket-pipelines.yml

```
#  Template maven-build

#  This template allows you to test and build your Java project with Maven.
#  The workflow allows running tests, code checkstyle and security scans on the default
branch.

# Prerequisites: pom.xml and appropriate project structure should exist in the repository.

image: maven:3.6.3

pipelines:
  default:
```

```
    - step:
        runs-on:
          - 'self.hosted'
          - 'linux'
        name: Build and Test
#         caches:
#           - maven
        clone:
          depth: full    # SonarCloud scanner needs the full history to assign issues
properly
        script:
          - mvn -B verify org.sonarsource.scanner.maven:sonar-maven-plugin:sonar
    - step:
        runs-on:
          - 'self.hosted'
          - 'linux'
        name: Chekstyle
#         caches:
#           - maven
        clone:
          depth: full    # SonarCloud scanner needs the full history to assign issues
properly
        script:
          - mvn checkstyle:checkstyle
        after-script:  # Collect checkstyle results, if any, and convert to Bitbucket Code
Insights.
          - pipe: atlassian/checkstyle-report:0.3.0
    - step:
        runs-on:
          - 'self.hosted'
          - 'linux'
        name: Gitinspector
#         caches:
#           - maven
        clone:
          depth: full
        services:
          - docker
        script:
          - docker version
          - pwd
          - ls -al
          - docker run --rm -v /opt/atlassian/pipelines/agent/build:/repo
felix/gitinspector:0.4.4 --format=html --grading > gitinspector.html
```

```
    artifacts:
      - gitinspector.html
```

[File Ends] sem4pi-22-23-61-master\bitbucket-pipelines.yml

[File Begins] sem4pi-22-23-61-master\docs\Divisao_Tarefas\Divisao_Tarefas

Divisão das US Sprint C

LAPR4 - Daniel, João Cruz, João Maria, Miguel, José
EAPLI - Daniel, João Cruz, João Maria, Miguel, José
SCOMP - Daniel, Miguel, João Maria
RCOMP - João Cruz, José
LPROG - João Cruz, João Maria, Miguel, José

US3004 - Miguel
US3005 - Todos de SCOMP + Todos de RCOMP
US3006 - Daniel
US3007 - Daniel
US3008 - João Maria
US3009 - João Maria
US3010 - Miguel

US2004 - João Cruz, João Maria
US2009 - Miguel, José

US2005 - João Cruz
US2006 - José

US4003 - Miguel
US4003 - Daniel
US4004 - João Maria

US5002 - Todos de LAPR4

[File Ends] sem4pi-22-23-61-master\docs\Divisao_Tarefas\Divisao_Tarefas

[File Begins] sem4pi-22-23-61-master\docs\Domain Model\US-G002\domain-model.puml

```
@startuml
hide methods
top to bottom direction
skinparam linetype ortho


package Exam{
```

```
 class Exam << (E,#FF7700) Entity >> {
 }
 class Open_Date<< (V,#008B8B) Value_Object >>{
 }
 class Close_Date<< (V,#008B8B) Value_Object >>{
 }
 class Exam_Result << (E,#FF7700) Entity >>{
 }
 class DashBoard << (E,#FF7700) Entity >>{
 }
 class Grammar << (V,#008B8B) Value_Object >>{
 }
 Exam "1" --> "1" Grammar : has
 Exam "1" --> "1" Open_Date : has
 Exam "1" --> "1" Close_Date : has
 Exam "1" --> "1" Exam_Result : has
 Exam_Result "*" --> "1" DashBoard : constitutes
}

package Post_It{
 class Post_It << (E,#FF7700) Entity >>{
 }
 class Column << (V,#008B8B) Value_Object >> {
 }
 class Row<< (V,#008B8B) Value_Object >> {
 }
 class Content<< (V,#008B8B) Value_Object >> {
 }
 Post_It "1" --> "1" Content : has
 Post_It "1" --> "1" Row : has
 Post_It "1" --> "1" Column : has
}

package Class{
 class Class << (E,#FF7700) Entity >>{
 }
 class Class_Title << (V,#008B8B) Unique_Value_Object >> {
 }
 class Class_Start_Date << (V,#008B8B) Value_Object >> {
 }
 class Class_Finish_Date << (V,#008B8B) Value_Object >> {
 }
 class Class_Start_Time << (V,#008B8B) Value_Object >> {
 }
```

```
 class Class_Finish_Time << (V,#008B8B) Value_Object >> {
 }
 class Class_Day_Of_Week << (V,#008B8B) Value_Object >> {
 }
 Class "1" --> "1" Class_Title : has
 Class "1" --> "1" Class_Day_Of_Week : has
 Class "1" --> "1" Class_Start_Date : has
 Class "1" --> "1" Class_Finish_Date : has
 Class "1" --> "1" Class_Start_Time : has
 Class "1" --> "1" Class_Finish_Time : has
}

package Course {
 class Course << (E,#FF7700) Entity >> {
 }
 class Minimum_Number_Of_Students<< (V,#008B8B) Value_Object >>{
 }
 class Maximum_Number_Of_Students<< (V,#008B8B) Value_Object >>{
 }
 class Small_Textual_Description<< (V,#008B8B) Value_Object >>{
 }
 class Course_ID<< (V,#008B8B) Unique_Value_Object >>{
 }
 class Course_Name<< (V,#008B8B) Value_Object >>{
 }
 Course "1" --> "1" Minimum_Number_Of_Students : has
 Course "1" --> "1" Maximum_Number_Of_Students : has
 Course "1" --> "1" Small_Textual_Description : has
 Course "1" --> "1" Course_Name : has
 Course "1" --> "1" Course_ID : has
}

package Invite{
class Invite << (E,#FF7700) Entity >> {
}
}

package Meeting{
 class Meeting << (E,#FF7700) Entity >> {
 }
 class Meeting_Duration << (V,#008B8B) Value_Object >> {
 }
 class Meeting_Date << (V,#008B8B) Value_Object >> {
 }
```

```
 class Meeting_Time << (V,#008B8B) Value_Object >> {
 }
 class Meeting_ID << (V,#008B8B) Unique_Value_Object >> {
 }
 Meeting "1" --> "*" Invite : sends
 Meeting "1" --> "1" Meeting_Duration : has
 Meeting "1" --> "1" Meeting_Date : has
 Meeting "1" --> "1" Meeting_Time : has
 Meeting "1" --> "1" Meeting_ID : has
}

package Shared_Board{
 class Shared_Board << (E,#FF7700) Entity >> {
 }
 class Number_of_Columns << (V,#008B8B) Value_Object >> {
 }
 class Number_of_Rows << (V,#008B8B) Value_Object >> {
 }
 class Shared_Board_Title << (V,#008B8B) Value_Object >> {
 }
 class Shared_Board_ID << (V,#008B8B) Value_Object >> {
 }
 class sharedBoardHistory<< (E,#FF7700) Entity >> {
 }
 Shared_Board "1" --> "1" Number_of_Columns : has
 Shared_Board "1" --> "1" Number_of_Rows : has
 Shared_Board "1" --> "1" Shared_Board_Title : has
 Shared_Board "1" --> "1" Shared_Board_ID : has
 Shared_Board "1" --> "1" sharedBoardHistory : has
 }

package Person {
 class Person << (E,#FF7700) Entity >> {
 }
 class Email << (V,#008B8B) Value_Object >> {
 }
 class Password << (V,#008B8B) Value_Object >> {
 }
 class Full_Name << (V,#008B8B) Value_Object >> {
 }
 class Short_Name << (V,#008B8B) Value_Object >> {
 }
 Person "1" --> "1" Email : has
 Person "1" --> "1" Password : has
```

```
 Person "1" --> "1" Full_Name : has
 Person "1" --> "1" Short_Name : has
}

package Enrollment{
 class Enrollment << (E,#FF7700) Entity >> {
 }
}

package Teacher_Students {
 class Date_of_Birth << (V,#FF7700) Value_Object >> {
 }
 class Tax_Payer_Number << (V,#FF7700) Value_Object >> {
 }

 package Student {
  class Student << (E,#FF7700) Entity >> {}
  class Mechanographic_Number << (V,#FF7700) Value_Object >> {}
  Student "1" --> "1" Mechanographic_Number : has
  Student "1" --> "1" Date_of_Birth : has
  Student "1" --> "1" Tax_Payer_Number : has
 }

 package Teacher {
  class Teacher << (E,#FF7700) Entity >> {}
  class Acronym << (V,#FF7700) Value_Object >> {}
  Teacher "1" --> "1" Acronym : has
  Teacher "1" --> "1" Date_of_Birth : has
  Teacher "1" --> "1" Tax_Payer_Number : has
  Teacher "1" --> "*" DashBoard : checks
  Teacher "1" --> "*" Exam : creates
  Course "1" --> "*" Teacher : has
  Teacher "1" --> "*" Class : Schedules
  Teacher "1" --> "*" Extra_Class : Schedules
 }
}

package Extra_Class{
 class Extra_Class << (E,#FF7700) Entity >> {
 }
 class Extra_Class_Day<< (V,#008B8B) Value_Object >>{
 }
 class Extra_Class_Title<< (V,#008B8B) Value_Object >>{
 }
```

```
    class Extra_Class_Start_Time<< (V,#008B8B) Value_Object >>{
    }
    class Extra_Class_Finish_Time<< (V,#008B8B) Value_Object >>{
    }
    Extra_Class "1" --> "1" Extra_Class_Title : has
    Extra_Class "1" --> "1" Extra_Class_Day : has
    Extra_Class "1" --> "1" Extra_Class_Start_Time : has
    Extra_Class "1" --> "1" Extra_Class_Finish_Time : has
   }

    Student "1" --> "*" DashBoard : checks
    Student "1" --> "*" Exam : takes
    Student "1" --> "*" Class : takes
    Student "1" --> "*" Extra_Class : takes
    Course "1" --> "*" Exam : has
    Person "1" --> "*" Enrollment : requests
    Person "1" --> "*" Meeting : schedules
    Person "1" --> "1" Invite : accepts
    Person "1" --> "*" Post_It : creates
    Person "1" --> "*" Shared_Board : creates
    Person "1" --> "*" Shared_Board : edits
    Person "1" --> "1" sharedBoardHistory : checks
    Person  <|-- Student
    Person  <|-- Teacher

   @enduml
```

[File Ends] sem4pi-22-23-61-master\docs\Domain Model\US-G002\domain-model.puml

[File Begins] sem4pi-22-23-61-master\docs\Domain Model\US-G002\readme.md

US 1001

This is an example template

1. Context

Explain the context for this task. It is the first time the task is assigned to be developed or this tasks was incomplete in a previous sprint and is to be completed in this sprint? Are we fixing some bug?

2. Requirements

In this section you should present the functionality that is being developed, how do you understand it, as well as possible correlations to other requirements (i.e., dependencies).

Example

US G002 As {Ator} I Want...

- G002.1. Blá Blá Blá ...

- G002.2. Blá Blá Blá ...

Regarding this requirement we understand that it relates to...

3. Analysis

In this section, the team should report the study/analysis/comparison that was done in order to take the best design decisions for the requirement. This section should also include supporting diagrams/artifacts (such as domain model; use case diagrams, etc.),

4. Design

In this sections, the team should present the solution design that was adopted to solve the requirement. This should include, at least, a diagram of the realization of the functionality (e.g., sequence diagram), a class diagram (presenting the classes that support the functionality), the identification and rational behind the applied design patterns and the specification of the main tests used to validade the functionality.

4.1. Realization

4.2. Class Diagram

![a class diagram](domain-model.svg "A Class Diagram")

4.3. Applied Patterns

4.4. Tests

Test 1: *Verifies that it is not possible to create an instance of the Example class with null values.*

```
@Test(expected = IllegalArgumentException.class)
public void ensureNullIsNotAllowed() {
	Example instance = new Example(null, null);
}
````

5. Implementation

In this section the team should present, if necessary, some evidencies that the implementation is according to the design. It should also describe and explain other important artifacts necessary to fully understand the implementation like, for instance, configuration files.

It is also a best practice to include a listing (with a brief summary) of the major commits regarding this requirement.

6. Integration/Demonstration

In this section the team should describe the efforts realized in order to integrate this functionality with the other parts/components of the system

It is also important to explain any scripts or instructions required to execute an demonstrate this functionality

7. Observations

This section should be used to include any content that does not fit any of the previous sections.

The team should present here, for instance, a critical prespective on the developed work including the analysis of alternative solutioons or related works

The team should include in this section statements/references regarding third party works that were used in the development this work.

[File Ends] sem4pi-22-23-61-master\docs\Domain Model\US-G002\readme.md

[File Begins] sem4pi-22-23-61-master\docs\Group_Elements\1200614\readme.md

[File Ends] sem4pi-22-23-61-master\docs\Group_Elements\1200614\readme.md

[File Begins] sem4pi-22-23-61-master\docs\Group_Elements\1200801\readme.md

[File Ends] sem4pi-22-23-61-master\docs\Group_Elements\1200801\readme.md

[File Begins] sem4pi-22-23-61-master\docs\Group_Elements\1200874\readme.md

[File Ends] sem4pi-22-23-61-master\docs\Group_Elements\1200874\readme.md

[File Begins] sem4pi-22-23-61-master\docs\Group_Elements\1201718\readme.md
Student: *Miguel Oliveira - 1200874*

Developed Tasks

Sprint	Task
B	[US1010]
B	[US1011]
B	[US1012]
B	[US2001]
B	[US2007]
B	[US2008]
C	[US3004]
C	[US3010]
C	[US4002](../../US4002/US4002-ANALYSIS.md)

[File Ends] sem4pi-22-23-61-master\docs\Group_Elements\1201718\readme.md

[File Begins] sem4pi-22-23-61-master\docs\Group_Elements\1210965\readme.md
Student: *José Teixeira - 1210965*

Developed Tasks

Sprint	Task
B	[US1007](../../US1007/readme.md)
B	[US1008](../../US1008/readme.md)
B	[US1009](../../US1009/readme.md)

[File Ends] sem4pi-22-23-61-master\docs\Group_Elements\1210965\readme.md

[File Begins] sem4pi-22-23-61-master\docs\US1007\US1007-ANALYSIS.md

US1007:
As Manager, I want to enroll students in bulk by importing their data using a csv file.

US1007 BUSINESS RULES:
1. Todas as regras de negócio da US1008, acerca de um enrollment, aplicam-se á

US1007.
2. O usuário tem de apresentar o caminho a um ficheiro csv com dados válidos.

[File Ends] sem4pi-22-23-61-master\docs\US1007\US1007-ANALYSIS.md

[File Begins] sem4pi-22-23-61-master\docs\US1007\US1007-CD.puml

```
@startuml

class EnrollStudentsBulkUI{
}

class EnrollStudentsBulkController{
}

class Enrollment{
}

class CSVReader{
}

class Student {

}

class EnrollmentRepository{
}

EnrollStudentsBulkUI ..> EnrollStudentsBulkController
EnrollStudentsBulkController ..>Enrollment
EnrollStudentsBulkController ..> CSVReader
EnrollStudentsBulkController ..> Student
EnrollStudentsBulkController ..> StudentRepository
Enrollment ..> EnrollmentRepository
@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US1007\US1007-CD.puml

[File Begins] sem4pi-22-23-61-master\docs\US1007\US1007-DM.puml

```
@startuml
   hide methods


   package Manager{
   class Manager << (E,#FF7700) Entity >> {
```

```
}
}


package Enrollment{
class Enrollment << (E,#FF7700) Entity >> {
}
}


Enrollment "*" -- "1" Manager : is accepted by

@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US1007\US1007-DM.puml

[File Begins] sem4pi-22-23-61-master\docs\US1007\US1007-SD.puml

```
@startuml US09-SD
autonumber
actor  "Manager" as MAN
participant "Controller" as CTRL
participant "Store" as STR
participant "Repository" as REP

activate MAN
MAN -> ":System" : Asks to enroll students in bulk
activate ":System"
":System" --> MAN : Requests the csv file containing the data
deactivate ":System"
MAN -> ":System" : Inserts csv file
activate ":System"
":System" --> MAN : Confirms/Declines operation
deactivate ":System"

@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US1007\US1007-SD.puml

[File Begins] sem4pi-22-23-61-master\docs\US1007\US1007-SSD.puml

```
@startuml US1007-SSD

autonumber
actor "Manager" as MAN
```

activate MAN
MAN -> ":System" : Asks to enroll students in bulk
activate ":System"
":System" --> MAN : Requests the csv file containing the data
deactivate ":System"
MAN -> ":System" : Inserts csv file
activate ":System"
":System" --> MAN : Confirms/Declines operation
deactivate ":System"

@enduml

[File Ends] sem4pi-22-23-61-master\docs\US1007\US1007-SSD.puml

[File Begins] sem4pi-22-23-61-master\docs\US1007\readme.md
US 1007

1. Context

This is the beginning of the US 1007

2. Requirements

In this section you should present the functionality that is being developed, how do you understand it, as well as possible correlations to other requirements (i.e., dependencies).

Example

US1007 As Manager, I want to enroll students in bulk by importing their data using a csv file

This US has no dependencies. It is only required a csv file with data to import

3. Analysis
Regras de negócio:
Testes unitários:
4. Design

4.1. System Sequence Diagram
[US1007-SSD](../US1007/US1007-SSD.puml)
4.2. Domain Model
[US1007-DM](../US1007/US1007-DM.puml)

4.3. Sequence Diagram
[US1007-SD](../US1007/US1007-SD.puml)
4.4. Class Diagram
[US1007-CD](../US1007/US1007-CD.puml)

4.4. Tests

Test 1: *Verifies that it is not possible to create an instance of the Example class with null values.*

```
@Test(expected = IllegalArgumentException.class)
public void ensureNullIsNotAllowed() {
        Example instance = new Example(null, null);
}
```

5. Implementation

In this section the team should present, if necessary, some evidencies that the implementation is according to the design. It should also describe and explain other important artifacts necessary to fully understand the implementation like, for instance, configuration files.

It is also a best practice to include a listing (with a brief summary) of the major commits regarding this requirement.

6. Integration/Demonstration

In this section the team should describe the efforts realized in order to integrate this functionality with the other parts/components of the system

It is also important to explain any scripts or instructions required to execute an demonstrate this functionality

7. Observations

This section should be used to include any content that does not fit any of the previous sections.

The team should present here, for instance, a critical prespective on the developed work including the analysis of alternative solutioons or related works

The team should include in this section statements/references regarding third party works that were used in the development this work.

[File Ends] sem4pi-22-23-61-master\docs\US1007\readme.md

[File Begins] sem4pi-22-23-61-master\docs\US1008\US-1008-ANALYSIS.md

US1008:
As Student, I want to request my enrollment in a course

US1008 BUSINESS RULES:
1. O usuário tem de fazer log-in como estudante.
2. Um enrollment tem um id.
3. Um enrollment é pedido por um estudante.
4. Um enrollment tem um Curso associado, escolhido pelo estudante.
5. Um enrollment tem uma descrição.
6. Um enrollment tem um estado(Pendente, aceite ou rejeitado).

US1008 PRE-REQUISITES:
1. Tem de existir pelo menos um curso no sistema.

[File Ends] sem4pi-22-23-61-master\docs\US1008\US-1008-ANALYSIS.md

[File Begins] sem4pi-22-23-61-master\docs\US1008\US1008-CD.puml
@startuml
'https://plantuml.com/sequence-diagram

autonumber

Alice -> Bob: Authentication Request
Bob --> Alice: Authentication Response

Alice -> Bob: Another authentication Request
Alice <-- Bob: another authentication Response
@enduml

[File Ends] sem4pi-22-23-61-master\docs\US1008\US1008-CD.puml

[File Begins] sem4pi-22-23-61-master\docs\US1008\US1008-DM.puml

```
@startuml
 hide methods

 package Enrollment{
 class Enrollment << (E,#FF7700) Entity >> {
 }
 }



 package Student {
 class Date_of_Birth << (V,#FF7700) Value_Object >> {}
      class Tax_Payer_Number << (V,#FF7700) Value_Object >> {}
  class Student << (E,#FF7700) Entity >> {}
  class Mechanographic_Number << (V,#FF7700) Value_Object >> {}
  Student "1" -- "1" Mechanographic_Number
  Student "1" -- "1" Date_of_Birth
  Student "1" -- "1" Tax_Payer_Number
 }



 Student "1" -- "*" Enrollment : requests


 @enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US1008\US1008-DM.puml

[File Begins] sem4pi-22-23-61-master\docs\US1008\US1008-SD.puml

```
@startuml US1007-SD
autonumber
actor  "Student" as STUD

participant ":StudentEnrollmentUI" as UI
participant ":StudentEnrollmentController" as CTRL
participant ":StudentEnrollmentFactory" as FACT
participant "StudentEnrollment" as ENRO
participant "TrasactionalContext" as CONT
participant "StudentEnrollmentRepository" as REPO


activate STUD
STUD -> UI : asks to enroll in a course
activate UI

UI --> STUD : show list of courses and asks to choose one
deactivate UI
STUD --> UI : chooses one course to enroll
activate UI
UI --> STUD : asks for the required data(x,y,z)
deactivate UI
STUD --> UI : inserts the required data(x,y,z)
create CTRL
activate UI
UI --> CTRL : initializes controller
UI --> CTRL : creates enrollment(x,y,z)
deactivate UI
activate CTRL
CTRL --> FACT : creates enrollment(x,y,z)
deactivate CTRL
activate FACT
create ENRO
FACT --> ENRO : creates
deactivate FACT
CTRL --> CONT : begin
activate CTRL
activate CONT
CTRL --> CONT : save
CTRL --> REPO : save
activate REPO
```

deactivate REPO
CTRL --> CONT : commit
deactivate CONT
deactivate CTRL

@enduml

[File Ends] sem4pi-22-23-61-master\docs\US1008\US1008-SD.puml

[File Begins] sem4pi-22-23-61-master\docs\US1008\US1008-SSD.puml
@startuml US1008-SSD

autonumber
actor "Student" as STU

activate STU
STU -> ":System" : Asks to enroll in a course
activate ":System"
":System" --> STU : Shows a list of courses and asks to choose one
deactivate ":System"
STU -> ":System" : Chooses one course to enroll
activate ":System"
":System" --> STU : Asks for the required data
deactivate ":System"
STU -> ":System" : Inserts the required data(x,y,z)
activate ":System"
":System" --> STU : Confirms/Declines operation(x,y,z)
deactivate ":System"

@enduml

[File Ends] sem4pi-22-23-61-master\docs\US1008\US1008-SSD.puml

[File Begins] sem4pi-22-23-61-master\docs\US1008\readme.md

[File Ends] sem4pi-22-23-61-master\docs\US1008\readme.md

[File Begins] sem4pi-22-23-61-master\docs\US1009\US1009-ANALYSIS.md
US1009:
As Manager, I want to approve or reject students applications to courses.

US1009 BUSINESS RULES:
1. O usuário tem de fazer log-in como manager

US1009 PRE-REQUISITES:
1. Tem de existir pelo menos um enrollment pendente no sistema.

[File Ends] sem4pi-22-23-61-master\docs\US1009\US1009-ANALYSIS.md

[File Begins] sem4pi-22-23-61-master\docs\US1009\US1009-CD.puml

```
@startuml

class ApproveRejectApplicationsUI{}

class ApproveRejectApplicationsController{
+createVaccinationCenter(name,address,phone number,e-mail address,\n fax number, website address,opening and closing hours,slot duration,\n coordinator, maximum number of vaccines per slot)
+saveVaccinationCenter()
}


class VaccinationCenterStore{
+craeteVaccinationCenter(name,address,phone number,e-mail address,\n fax number, website address,opening and closing hours,slot duration,\n coordinator, maximum number of vaccines per slot)
+validateVaccinationCenter()
+saveVaccinationCenter()
+addVaccinationCenter()
}

class Enrollment{
- name
- address
- phoneNumber
- e-mailAddress
- faxNumber
- websiteAddress
- openingHour
- closingHour
- slotDuration
- coordinator
- maximumNumberOfVaccinesPerSlot
```

```
}

ApproveRejectApplicationsUI ..> ApproveRejectApplicationsController

ApproveRejectApplicationsController ..> VaccinationCenterStore
ApproveRejectApplicationsController ..> Enrollment

VaccinationCenterStore "1" -> "*" Enrollment : knows >



@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US1009\US1009-CD.puml

[File Begins] sem4pi-22-23-61-master\docs\US1009\US1009-DM.puml

```
 @startuml

    hide methods


    package Manager{
    class Manager << (E,#FF7700) Entity >> {
    }
    }


    package Enrollment{
    class Enrollment << (E,#FF7700) Entity >> {
    }
    }


    Enrollment "*" -- "1" Manager : is accepted by

    @enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US1009\US1009-DM.puml

[File Begins] sem4pi-22-23-61-master\docs\US1009\US1009-SD.puml

```
@startuml
'https://plantuml.com/sequence-diagram

autonumber
```

Alice -> Bob: Authentication Request
Bob --> Alice: Authentication Response

Alice -> Bob: Another authentication Request
Alice <-- Bob: another authentication Response
@enduml

[File Ends] sem4pi-22-23-61-master\docs\US1009\US1009-SD.puml

[File Begins] sem4pi-22-23-61-master\docs\US1009\US1009-SSD.puml
@startuml US1009-SSD

autonumber
actor "Manager" as MAN

activate MAN
MAN -> ":System" : Asks to approve/reject students' applications to courses
activate ":System"
":System" --> MAN : Shows a list of students' applications and asks Manager to choose one
deactivate ":System"
MAN -> ":System" : chooses one application
activate ":System"
":System" --> MAN : Asks to accept/reject the application
deactivate ":System"
MAN -> ":System" : accepts/declines the chosen application
activate ":System"
":System" --> MAN : Confirms operation
deactivate ":System"

@enduml

[File Ends] sem4pi-22-23-61-master\docs\US1009\US1009-SSD.puml

[File Begins] sem4pi-22-23-61-master\docs\US1009\readme.md

[File Ends] sem4pi-22-23-61-master\docs\US1009\readme.md

[File Begins] sem4pi-22-23-61-master\docs\US1010\ANALYSIS.txt
---
BUSINESS RULES
---

1. A class schedule has a unique class ID.

2. A class schedule must have a class title.
3. A class schedule must have a start time and an end time.
4. A class schedule must have a start date and an end date.
5. A class schedule must have a day of the week assigned.
6. A class schedule must be assigned to a teacher.
7. The teacher assigned to a class schedule must exist in the system.
8. A class schedule cannot have overlapping time periods with existing scheduled classes.
9. A class schedule can optionally have a description.
10. The class ID of a class schedule must be unique among all scheduled classes.

[File Ends] sem4pi-22-23-61-master\docs\US1010\ANALYSIS.txt

[File Begins] sem4pi-22-23-61-master\docs\US1010\DESIGN.txt

DESIGN

To design the class scheduling feature, we can utilize the standard layered architecture of the base application. This use case shares similarities with the "RegisterDishType" use case.

Domain Class: ClassSchedule
Controller: ScheduleClassController
Repository: ClassScheduleRepository

The ClassSchedule class will represent the domain entity for a scheduled class, containing attributes such as class ID, title, start time, end time, start date, end date, day of the week, and the associated teacher.

The ScheduleClassController will handle the business logic for scheduling classes. It will interact with the ClassScheduleRepository to persist and retrieve class schedule data.

Following the layered architecture, the presentation layer (e.g., console or GUI) will interact with the ScheduleClassController to collect input from the user and display relevant information.

[File Ends] sem4pi-22-23-61-master\docs\US1010\DESIGN.txt

[File Begins] sem4pi-22-23-61-master\docs\US1010\US1010 - TEXT PLAN.txt

TEST PLAN #10 : SHEDULE NEW CLASS

1 Prompt the user to enter the class ID.
2 Prompt the user to enter the class title.
3 Prompt the user to enter the start time of the class in "HH:mm" format.
4 Prompt the user to enter the end time of the class in "HH:mm" format.
5 Prompt the user to enter the start date of the class in "YYYY-MM-DD" format.
6 Prompt the user to enter the end date of the class in "YYYY-MM-DD" format.
7 Prompt the user to enter the day of the week for the class (1-7).
8 Prompt the user to enter the acronym of the teacher responsible for the class.
9 Check if there is a teacher with the provided acronym. Otherwise, display an error message.
10 Check if there is any time conflict with another existing class. If so, display an error message. Otherwise, proceed to the next step.
11 Schedule the class by calling the scheduleClass method of ClassController.
12 Display a success message indicating that the class has been scheduled successfully.

[File Ends] sem4pi-22-23-61-master\docs\US1010\US1010 - TEXT PLAN.txt

[File Begins] sem4pi-22-23-61-master\docs\US1010\US1010-SD.puml

```
@startuml
'skinparam settings
skinparam handwritten true
skinparam monochrome true
skinparam packageStyle rect
skinparam defaultFontName FG Virgil
skinparam shadowing false

actor Teacher as Actor
participant UpdateClassUI as UI
participant ScheduleClassController as Controller
participant ClassRepository as Repo

UI -> Actor: Request data (e.g., ID, title, start time, finish time, start date, finish date, day of the week)
activate UI
Actor -> UI: Provide requested data

UI -> Controller: scheduleClass( id, title,startTime,  finishTime, start_date,  finishDate, day, teacherAcronym)
activate Controller
Controller -> Service: scheduleClass(Classe classe)
```

activate Service
Service -> Repo : findAll()
activate Repo
deactivate Repo
Service -> TeacherRepo : findTeacherByAcronym()
activate TeacherRepo
deactivate TeacherRepo
deactivate Service
alt Does not have conflict
Controller -> Controller : checkClassConflict()
Controller -> Controller : isTimeOverlapUserInput()
Controller -> Repo : save(Classe classe)
activate Repo
deactivate Repo
Controller -> UI :
deactivate Controller

UI -> Actor : System types : "Class has been scheduled"

else Has conflict

UI -> Actor : System types : "Conflict between Classes"

end

activate TeacherRepo

deactivate TeacherRepo

deactivate Service

deactivate Controller

deactivate UI
@enduml

[File Ends] sem4pi-22-23-61-master\docs\US1010\US1010-SD.puml

[File Begins] sem4pi-22-23-61-master\docs\US1011\ANALYSIS.txt
---
BUSINESS RULES

---

1. A Extraclass schedule has a unique class ID.
2. A Extraclass schedule must have a class title.
3. A Extraclass schedule must have a start time and an end time.
4. A Extraclass schedule must have a start date and an end date.
5. A Extraclass schedule must have a day of the week assigned.
6. A Extraclass schedule must be assigned to a teacher.
7. The teacher assigned to a class schedule must exist in the system.
8. A Extraclass schedule cannot have overlapping time periods with existing scheduled classes.
9. A Extraclass schedule can optionally have a description.
10. The Extraclass ID of a class schedule must be unique among all scheduled classes.

[File Ends] sem4pi-22-23-61-master\docs\US1011\ANALYSIS.txt

[File Begins] sem4pi-22-23-61-master\docs\US1011\DESIGN.txt

DESIGN

To design the class scheduling feature, we can utilize the standard layered architecture of the base application. This use case shares similarities with the "RegisterDishType" use case.

Domain Class: Classe
Controller: ScheduleClassController
Repository: ClassScheduleRepository

The ClassSchedule class will represent the domain entity for a scheduled class, containing attributes such as class ID, title, start time, end time, start date, end date, day of the week, and the associated teacher.

The ScheduleClassController will handle the business logic for scheduling classes. It will interact with the ClassScheduleRepository to persist and retrieve class schedule data.

Following the layered architecture, the presentation layer (e.g., console or GUI) will interact with the ScheduleClassController to collect input from the user and display relevant information.

[File Ends] sem4pi-22-23-61-master\docs\US1011\DESIGN.txt

[File Begins] sem4pi-22-23-61-master\docs\US1011\US1011- TEXT PLAN.txt

TEST PLAN #10: Update Class Schedule

1 Log in as teacher/teacherA1
2 Select the option Class > Update Class Schedule
3 List the available classes using the provided option
4 Input the ID of the class you want to update
5 Input the new class start time in the format HH:mm
6 Input the new class finish time in the format HH:mm
7 Input the new class start date in the format yyyy/mm/dd
8 Input the new class finish date in the format yyyy/mm/dd
9 Input the new class teacher

[File Ends] sem4pi-22-23-61-master\docs\US1011\US1011- TEXT PLAN.txt

[File Begins] sem4pi-22-23-61-master\docs\US1011\US1011-SD.puml

```
@startuml
'skinparam settings
skinparam handwritten true
skinparam monochrome true
skinparam packageStyle rect
skinparam defaultFontName FG Virgil
skinparam shadowing false

actor Teacher as Actor
participant UpdateScheduleClassUI as UI
participant UpdateScheduleClassController as Controller
participant UpdateScheduleClassService as Service
participant ClassRepository as Repo
participant TeacherRepository as TeacherRepo

UI -> Actor: Update the schedule of the class
activate UI
Actor -> UI: Provide requested data (id, newStartTime, newFinishTime)

UI -> Controller: updateClassSchedule(id, newStartTime, newFinishTime)
activate Controller
Controller -> Service: checkClassSchedule(id, newStartTime, newFinishTime)
activate Service
Service -> Repo : findClassById(id)
```

activate Repo
deactivate Repo
Service -> TeacherRepo : findTeacherByClassId(id)
activate TeacherRepo
deactivate TeacherRepo
deactivate Service
alt No schedule conflict
Controller -> Repo : updateClassSchedule(id, newStartTime, newFinishTime)
activate Repo
deactivate Repo
Controller -> UI : Show success message
UI -> Actor : System types : "Class schedule has been updated"

else Schedule conflict exists
Controller -> UI : Show error message
UI -> Actor : System types : "Conflict between class schedules"
end
deactivate Controller
deactivate UI
@enduml

[File Ends] sem4pi-22-23-61-master\docs\US1011\US1011-SD.puml

[File Begins] sem4pi-22-23-61-master\docs\US1012\ANALYSIS.txt

---

BUSINESS RULES

---

1. A class schedule has a unique class ID.
2. A class schedule must have a class title.
3. A class schedule must have a start time and an end time.
4. A class schedule must have a start date and an end date.
5. A class schedule must have a day of the week assigned.
6. A class schedule must be assigned to a teacher.
7. The teacher assigned to a class schedule must exist in the system.
8. A class schedule cannot have overlapping time periods with existing scheduled classes.
9. A class schedule can optionally have a description.
10. The class ID of a class schedule must be unique among all scheduled classes.

[File Ends] sem4pi-22-23-61-master\docs\US1012\ANALYSIS.txt

[File Begins] sem4pi-22-23-61-master\docs\US1012\DESIGN.txt

DESIGN

To design the class scheduling feature, we can utilize the standard layered architecture of the base application. This use case shares similarities with the "RegisterDishType" use case.

Domain Class: ClassSchedule
Controller: ScheduleClassController
Repository: ClassScheduleRepository

The ClassSchedule class will represent the domain entity for a scheduled class, containing attributes such as class ID, title, start time, end time, start date, end date, day of the week, and the associated teacher.

The ScheduleClassController will handle the business logic for scheduling classes. It will interact with the ClassScheduleRepository to persist and retrieve class schedule data.

Following the layered architecture, the presentation layer (e.g., console or GUI) will interact with the ScheduleClassController to collect input from the user and display relevant information.

[File Ends] sem4pi-22-23-61-master\docs\US1012\DESIGN.txt

[File Begins] sem4pi-22-23-61-master\docs\US1012\US1012 -TEXT PLAN.txt

TEST PLAN #12 : SHEDULE A NEW EXTRA CLASS

1 Prompt the user to enter the class ID.
2 Prompt the user to enter the class title.
3 Prompt the user to enter the start time of the class in "HH:mm" format.
4 Prompt the user to enter the end time of the class in "HH:mm" format.
5 Prompt the user to enter the day of the week for the class (1-7).
6 Prompt the user to enter the acronym of the teacher responsible for the class.
7 Check if there is a teacher with the provided acronym. Otherwise, display an error message.
8 Check if there is any time conflict with another existing class. If so, display an error message. Otherwise, proceed to the next step.
9 Schedule the extra class by calling the scheduleExtraClass method of

ExtraClassController.
10 Display a success message indicating that the class has been scheduled successfully.

[File Ends] sem4pi-22-23-61-master\docs\US1012\US1012 -TEXT PLAN.txt

[File Begins] sem4pi-22-23-61-master\docs\US2001\Analysis.txt
Title: Create / Update Exam

Description:
As Teacher, I want to create/update an exam

Acceptance Criteria:
1. The system should allow the teacher to provide the exam title.
2. The system should allow the teacher to specify the start and end date and time of the exam.
3. The system should allow the teacher to associate the exam with an existing course.
4. The system should save the created exam.
5. The system should display a confirmation message after successful creation of the exam.

Analysis:
The User Story US2001 describes the functionality to create exams in the system. Teachers have the ability to create and edit exams by providing information such as the exam title, start date, end date, and associating the exam with a specific course. This information is essential for scheduling and organizing exams.

The implementation of this User Story would involve creating a user interface (UI) that allows teachers to enter exam details such as title, date, and time. Additionally, it would be necessary to integrate the functionality to associate the exam with an existing course, possibly by presenting a list of available courses for selection.

Internally, the system would require a controller layer, such as the 'CreateExamController', which would be responsible for receiving the data provided by the UI and executing the necessary business logic. This would include creating an 'Exam' object based on the provided data and calling the appropriate repository, such as the 'ExamRepository', to save the exam.

The US2001 User Story enables teachers to efficiently create exams, properly schedule them, and associate them with the appropriate courses. This functionality is crucial for effective exam management and contributes to the organization and efficiency of the assessment process in educational institutions.

This analysis provides an overview of the US2001 User Story and can serve as a basis for planning and implementing this functionality within the system.

[File Ends] sem4pi-22-23-61-master\docs\US2001\Analysis.txt

[File Begins] sem4pi-22-23-61-master\docs\US2001\US2001-SD.puml

```
@startuml

actor Teacher #DeepSkyBlue

Teacher -> CreateExamUI : createExam()
CreateExamUI --> Teacher : Prompt for exam details
Teacher -> CreateExamUI : provide exam details
CreateExamUI -> Course : getCourses()
Course --> CreateExamUI : Return list of courses
CreateExamUI -> CreateExamController : createExam()
CreateExamController -> Exam : Exam(title, date, openTime, closeTime, course)
CreateExamController -> ExamRepository : save(exam)
ExamRepository --> CreateExamController : Exam saved
CreateExamController --> CreateExamUI : Exam created successfully
CreateExamUI --> Teacher : Display exam created successfully
@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US2001\US2001-SD.puml

[File Begins] sem4pi-22-23-61-master\docs\US2002\US2002-ANALYSIS.md

Análise User Story 2002 - Listar futuros exames do estudante registado

* **REGRAS DE NEGÓCIO**

  * O estudante tem de estar inscrito no Course que o exame está associado
  * A data do exame tem de ser posterior à data atual

* **TESTES UNITÁRIOS**

  * EnsurePastExamDoesntShow

[File Ends] sem4pi-22-23-61-master\docs\US2002\US2002-ANALYSIS.md

[File Begins] sem4pi-22-23-61-master\docs\US2002\US2002-SD.puml

```
@startuml
'http://plantuml.com/skinparam.html
skinparam handwritten true
```

```
skinparam monochrome true
skinparam packageStyle rect
skinparam defaultFontName FG Virgil
skinparam shadowing false

actor Student as Actor
participant ListFutureExamsUI as UI
participant ListFutureExamsController as Controller
participant AuthzRegistry as AuthzRes
participant AuthorizationService as AuthzSvc
participant UserSession as UserS
participant ListFutureExamsService as Service
participant Student as Student
participant ExamRepository as Repo

-> UI: Show future exams
activate UI
    UI -> AuthzRes : authz=authorizationService()
    activate AuthzRes
    deactivate AuthzRes
    UI -> AuthzSvc : s=session()
    activate AuthzSvc
    deactivate AuthzSvc
    UI -> UserS : myUser=authenticatedUser()
    activate UserS
    deactivate UserS

    UI -> Controller: create(authz, examRepository)
    activate Controller
        Controller -> Service : create(authz, examRepository)
        activate Service
        deactivate Service
    deactivate Controller
    UI -> Student : getMecanographicNumber()
    activate Student
    deactivate Student
    UI -> Controller: listFutureExams(mecanographicNumber)

    activate Controller
        Controller -> Service: futureExams(mecanographicNumber)

        activate Service
            Service -> Repo:
findFutureExamsBy\nMecanographicNumber(mecanographicNumber)
```

```
        activate Repo
        Repo --> Service : exams
        deactivate Repo
        Service --> Controller : exams
    deactivate Service

    Controller --> UI: exams
  deactivate Controller

    UI-->Actor: lists exams
deactivate UI
@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US2002\US2002-SD.puml

[File Begins] sem4pi-22-23-61-master\docs\US2003\US2003-ANALYSIS.md

Análise User Story 2003 - Listar exames de um curso

* **REGRAS DE NEGÓCIO**

  * O professor seleciona o curso desejado
  * São apenas apresentados os exames associados a esse curso

* **TESTES UNITÁRIOS**

  * EnsureOnlyCourseExamsShow

[File Ends] sem4pi-22-23-61-master\docs\US2003\US2003-ANALYSIS.md

[File Begins] sem4pi-22-23-61-master\docs\US2003\US2003-SD.puml

```
@startuml
'http://plantuml.com/skinparam.html
skinparam handwritten true
skinparam monochrome true
skinparam packageStyle rect
skinparam defaultFontName FG Virgil
skinparam shadowing false

actor Teacher as Actor
participant ListCourseExamsUI as UI
participant ListCourseExamsController as Controller
participant ListCourseExamsService as Service
participant CourseRepository as CourseRepo
```

```
participant ExamRepository as Repo

-> UI: Show course exams
activate UI
    UI -> Controller: create(authz, examRepository, courseRepository)
    activate Controller
        Controller -> Service : create(authz, examRepository, courseRepository)
        activate Service
        deactivate Service
    deactivate Controller
    UI -> Controller : listCourses()
    activate Controller
        Controller -> Service : courses()
        activate Service
            Service -> CourseRepo : findAll()
            activate CourseRepo
            CourseRepo --> Service : courses
            deactivate CourseRepo
            Service --> Controller : courses
        deactivate Service
        Controller --> UI : courses
    deactivate Controller

    UI --> Actor : show courses

    Actor -> UI : selects course

    UI -> Controller : listCourseExams(course)
    activate Controller
        Controller -> Service : courseExams(course)
        activate Service
            Service -> Repo : findByCourse(course)
            activate Repo
                Repo --> Service : exams
            deactivate Repo
            Service --> Controller : exams
        deactivate Service
        Controller --> UI : exams
    deactivate Controller

    UI-->Actor: lists exams
deactivate UI
@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US2003\US2003-SD.puml

[File Begins] sem4pi-22-23-61-master\docs\US3004\US3004-ANALYSIS.md
Análise User Story 3004 - Como usuário quero partilhar uma board

* **REGRAS DE NEGÓCIO**

Só o owner pode partilhar a board.
Ao compartilhar uma board, o usuário deve fornecer o nome dos destinatários.
O compartilhamento de uma board permite que os destinatários visualizem e editem o conteúdo da board.

* **Perguntas ao cliente**

* **TESTES UNITÁRIOS**

[File Ends] sem4pi-22-23-61-master\docs\US3004\US3004-ANALYSIS.md

[File Begins] sem4pi-22-23-61-master\docs\US3004\US3004-CD.puml
@startuml

```
class User {
  +username: String
  +findByUsername(username: String): User
}

class SharedBoard {
  +owner: User
  +usersWithAccess: Set<User>
  +accessType: AccessType
}

enum AccessType {
  READ
  WRITE
}

class ShareBoardUI {
```

```
  +shareBoard(ownerUsername: String, userToShareUsername: String, accessType:
String)
  +showSuccessMessage(message: String)
  +showErrorMessage(message: String)
}

class ShareBoardController {
  -shareBoard(ownerUsername: String, userToShareUsername: String, accessType:
String)
}

class ShareBoardService {
  -shareBoard(ownerUsername: String, userToShareUsername: String, accessType:
String)
}

class SharedBoardRepository {
  +findSharedBoardsByOwner(owner: User): Set<SharedBoard>
}

class SystemUserRepository {
  +findByUsername(username: String): User
}

User "1" *-- "1" SystemUserRepository: Uses
ShareBoardUI "1" *-- "1" ShareBoardController: Uses
ShareBoardController "1" *-- "1" ShareBoardService: Uses
ShareBoardService "1" *-- "1" SharedBoardRepository: Uses
ShareBoardService "1" *-- "1" SystemUserRepository: Uses
ShareBoardController "1" *-- "1" ShareBoardUI: Sends

User "1" *-- "*" SharedBoard: Owns
SharedBoard "1" *-- "*" User: Has access

@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US3004\US3004-CD.puml

[File Begins] sem4pi-22-23-61-master\docs\US3004\US3004-SD.puml

```
@startuml
'skinparam settings
skinparam handwritten true
skinparam monochrome true
skinparam packageStyle rect
```

```
skinparam defaultFontName FG Virgil
skinparam shadowing false

actor User as Actor
participant ShareBoardUI as UI
participant ShareBoardController as Controller
participant ShareBoardService as Service
participant SharedBoardRepository as Repo
participant SystemUserRepository as UserRepo

activate Actor
Actor -> UI: wants to share a board
activate UI
Actor -> UI: Provide requested data (ownerUsername, userToShareUsername,
accessType)

UI -> Controller: shareBoard(ownerUsername, userToShareUsername,
SharedBoard.AccessType.valueOf(accessType.toUpperCase()))
activate Controller
Controller -> Service: shareBoard(ownerUsername, userToShareUsername,
accessType)
activate Service
Service -> UserRepo : findByUsername(ownerUsername)
activate UserRepo
deactivate UserRepo
Service -> UserRepo : findByUsername(userToShareUsername)
activate UserRepo
deactivate UserRepo
Service -> Repo: findSharedBoardsByOwner(owner)
activate Repo
deactivate Repo
alt SharedBoard and users are found
   Service -> Controller : shareBoard
   Controller -> UI : Show success message
   UI -> Actor : System types : "Shared board with user: " + userToShareUsername + "
with " + accessType + " access."
else Board not found or User not found
   Controller -> UI : Show error message
   UI -> Actor : System types : "Failed to share board: " + e.getMessage()
end
deactivate Service
deactivate Controller
deactivate UI
deactivate Actor
```

@enduml

[File Ends] sem4pi-22-23-61-master\docs\US3004\US3004-SD.puml

[File Begins] sem4pi-22-23-61-master\docs\US3006\US3006(ONLY_READ_PERMISSION)-SD.puml

```
@startuml
'http://plantuml.com/skinparam.html
skinparam handwritten true
skinparam monochrome true
skinparam packageStyle rect
skinparam defaultFontName FG Virgil
skinparam shadowing false

actor SystemUser as Actor
participant CreateBoardPostItUI as UI
participant AuthzRegistry as AuthzRes
participant AuthorizationService as AuthzSvc
participant UserSession as UserS
participant CreateBoardPostItController as Controller
participant CreateBoardPostItService as Service
participant SharedBoardRepository as Repo
participant "theSharedBoard:SharedBoard" as SharedBoard
participant PostIt as PostIt
participant CreateBoardPostItThread as Thread
participant Board as Board

-> UI: Create Board post-it
activate UI
    UI -> AuthzRes : authz=authorizationService()
    activate AuthzRes
    deactivate AuthzRes
    UI -> AuthzSvc : s=session()
    activate AuthzSvc
    deactivate AuthzSvc
    UI -> UserS : myUser=authenticatedUser()
    activate UserS
    deactivate UserS

    UI -> Controller: create(sharedBoardRepository)
    activate Controller
        Controller -> Service : create(sharedBoardRepository)
        activate Service
        deactivate Service
```

```
    deactivate Controller
    UI -> Controller : findBoardsBySystemUser(myUser)
    activate Controller
        Controller -> Service : findBoardsBySystemUser(myUser)
        activate Service
            Service -> Repo : findBoardsBySystemUser(myUser)
            activate Repo
            deactivate Repo
        deactivate Service
    deactivate Controller
    UI --> Actor : ask user shared \nboard selection
    Actor --> UI : select shared board

    UI -> Controller : getBoardAccessType(theSharedBoard, myUser)
    activate Controller
        Controller -> Service : getBoardAccessType(sharedBoard, myUser)
        activate Service
            Service -> SharedBoard : getAccessType(systemUser)
            activate SharedBoard
            deactivate SharedBoard
        deactivate Service
    deactivate Controller

    UI --> Actor : informs the user doesn't \n have write permissions

deactivate UI
@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US3006\US3006(ONLY_READ_PERMISSION)-SD.puml

[File Begins] sem4pi-22-23-61-master\docs\US3006\US3006-ANALYSIS.md

Análise User Story 3006 - Criar um post-it na board

* **REGRAS DE NEGÓCIO**

    * O conteúdo do post-it pode ser texto ou uma imagem
    * Apenas utilizadores com permissão de write podem fazer alterações na board
    * Apenas um utilizador de cada vez pode fazer alterações na board

* **Perguntas ao cliente:**

* **Pergunta 1**: As a client, do you want us to persist post-its in the database or they can be available only while the server is running (deleted if the server stops)?
* **Resposta**: For me the information regarding the shared boards may be available only during the shared board server execution.

* **Pergunta 2**: Uma célula pode ter mais do que um post it?
* **Resposta**: Neste momento (no âmbito deste projeto) isso não será necessário. A ser possível (uma célula com mais do que 1 post-it) isso iria dificultar algumas funcionalidades, como a que permite mudar um post-it.

* **Pergunta 3**: Quando um User cria um post-it deve passar um link da imagem por exemplo:
"https://www.isep.ipp.pt/img/logo_20230106.png"
Ou devemos anexar uma imagem que está no nosso computador?
* **Resposta**: Para o cliente é um pouco indiferente o mecanismo que usam para fazer o "post" de imagens (assim como o(s) formato(s) suportado(s)).

* **TESTES UNITÁRIOS**

* EnsureUserWithReadPermissionCantWrite
* EnsurePostItIsNotAddedIfTheDesiredPositionIsOccupied
* EnsurePostItIsAddedIfTheDesiredPositionIsFree

[File Ends] sem4pi-22-23-61-master\docs\US3006\US3006-ANALYSIS.md

[File Begins] sem4pi-22-23-61-master\docs\US3006\US3006-SD(WRITE_PERMISSION).puml

```
@startuml
'http://plantuml.com/skinparam.html
skinparam handwritten true
skinparam monochrome true
skinparam packageStyle rect
skinparam defaultFontName FG Virgil
skinparam shadowing false

actor SystemUser as Actor
participant CreateBoardPostItUI as UI
participant AuthzRegistry as AuthzRes
participant AuthorizationService as AuthzSvc
participant UserSession as UserS
participant CreateBoardPostItController as Controller
participant CreateBoardPostItService as Service
participant SharedBoardRepository as Repo
participant "theSharedBoard:SharedBoard" as SharedBoard
```

```
participant PostIt as PostIt
participant CreateBoardPostItThread as Thread
participant Board as Board

-> UI: Create Board post-it
activate UI
    UI -> AuthzRes : authz=authorizationService()
    activate AuthzRes
    deactivate AuthzRes
    UI -> AuthzSvc : s=session()
    activate AuthzSvc
    deactivate AuthzSvc
    UI -> UserS : myUser=authenticatedUser()
    activate UserS
    deactivate UserS

    UI -> Controller: create(sharedBoardRepository)
    activate Controller
        Controller -> Service : create(sharedBoardRepository)
        activate Service
        deactivate Service
    deactivate Controller
    UI -> Controller : findBoardsBySystemUser(myUser)
    activate Controller
        Controller -> Service : findBoardsBySystemUser(myUser)
        activate Service
            Service -> Repo : findBoardsBySystemUser(myUser)
            activate Repo
            deactivate Repo
        deactivate Service
    deactivate Controller
    UI --> Actor : ask user shared \nboard selection
    Actor --> UI : select shared board

    UI -> Controller : getBoardAccessType(theSharedBoard, myUser)
    activate Controller
        Controller -> Service : getBoardAccessType(sharedBoard, myUser)
        activate Service
            Service -> SharedBoard : getAccessType(systemUser)
            activate SharedBoard
            deactivate SharedBoard
        deactivate Service
    deactivate Controller
    UI --> Actor : ask content of\nthe post-it
```

```
    Actor --> UI : content

    UI -> Controller : createPostIt(content, myUser)
    activate Controller
        Controller -> Service : createPostIt(content, myUser)
        activate Service
            Service -> PostIt : postIt = create(content, myUser)
        deactivate Service
    deactivate Controller

    UI --> Actor : ask user row and\ncolumn to add the post-it
    Actor --> UI : row and column

    UI -> Controller : addPostIt(theSharedBoard, row, column)
    activate Controller
        Controller -> Service : addPostIt(theSharedBoard, row, column)
        activate Service
            Service -> Thread : create(theSharedBoard.getBoard(), row, column, postIt)
            activate Thread
            deactivate Thread
            Service -> Thread : start()
            activate Thread
                Thread -> Board : insertCell(row, column, postIt)
            deactivate Thread
        deactivate Service
    deactivate Controller

deactivate UI
@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US3006\US3006-SD(WRITE_PERMISSION).puml

[File Begins] sem4pi-22-23-61-master\docs\US3007\US3007-ANALYSIS.md

Análise User Story 3007 - Alterar um post-it na board

* **REGRAS DE NEGÓCIO**

    * Apenas utilizadores com permissão de write podem fazer alterações na board
    * O utilizador pode apenas alterar os post-it que criou na board
    * O utilizador pode alterar o conteúdo do post-it ou mover para uma célula livre
    * Apenas um utilizador de cada vez pode fazer alterações na board

* **TESTES UNITÁRIOS**

* EnsureUserWithReadPermissionCantWrite
* EnsurePostItIsNotUpdatedIfTheOriginalPositionIsNull
* EnsurePostItIsNotUpdatedIfUserIsNotTheAuthorOfTheOriginalPostIt
* EnsurePostItIsUpdatedIfAllConditionsAreMet
* EnsurePostItIsNotMovedIfTheOriginalPositionIsNull
* EnsurePostItIsNotMovedIfTheNewPositionIsOccupied
* EnsurePostItIsNotMovedIfUserIsNotTheAuthorOfTheOriginalPostIt
* EnsurePostItIsMovedIfAllConditionsAreMet

[File Ends] sem4pi-22-23-61-master\docs\US3007\US3007-ANALYSIS.md

[File Begins] sem4pi-22-23-61-master\docs\US3007\US3007-SD(MOVE_POST-IT).puml

```
@startuml
'http://plantuml.com/skinparam.html
skinparam handwritten true
skinparam monochrome true
skinparam packageStyle rect
skinparam defaultFontName FG Virgil
skinparam shadowing false

actor SystemUser as Actor
participant UpdateBoardPostItUI as UI
participant AuthzRegistry as AuthzRes
participant AuthorizationService as AuthzSvc
participant UserSession as UserS
participant UpdateBoardPostItController as Controller
participant UpdateBoardPostItService as Service
participant SharedBoardRepository as Repo
participant "theSharedBoard:SharedBoard" as SharedBoard
participant PostIt as PostIt
participant MoveBoardPostItThread as Thread
participant Board as Board

-> UI: Move a post-it in a board
activate UI
    UI -> AuthzRes : authz=authorizationService()
    activate AuthzRes
    deactivate AuthzRes
    UI -> AuthzSvc : s=session()
    activate AuthzSvc
    deactivate AuthzSvc
    UI -> UserS : myUser=authenticatedUser()
    activate UserS
    deactivate UserS
```

```
    UI -> Controller: create(sharedBoardRepository)
    activate Controller
        Controller -> Service : create(sharedBoardRepository)
        activate Service
        deactivate Service
    deactivate Controller
    UI -> Controller : findBoardsBySystemUser(myUser)
    activate Controller
        Controller -> Service : findBoardsBySystemUser(myUser)
        activate Service
            Service -> Repo : findBoardsBySystemUser(myUser)
            activate Repo
            deactivate Repo
        deactivate Service
    deactivate Controller
    UI --> Actor : ask user shared \nboard selection
    Actor --> UI : select shared board

    UI -> Controller : getBoardAccessType(theSharedBoard, myUser)
    activate Controller
        Controller -> Service : getBoardAccessType(sharedBoard, myUser)
        activate Service
            Service -> SharedBoard : getAccessType(systemUser)
            activate SharedBoard
            deactivate SharedBoard
        deactivate Service
    deactivate Controller
    UI --> Actor : ask row, column, new row and\nnew column to move the post-it
    Actor --> UI : row, column, new row, new column

    UI -> Controller : movePostIt(theSharedBoard, row, column, newRow, newColumn,
myUser)
    activate Controller
        Controller -> Service : movePostIt(theSharedBoard, row, column, newRow,
newColumn, myUser)
        activate Service
            Service -> Thread : create(theSharedBoard.getBoard(), row, column, newRow,
newColumn, myUser)
            activate Thread
            deactivate Thread
            Service -> Thread : start()
            activate Thread
                Thread -> Board : moveCell(row, column, newRow, newColumn, myUser)
```

```
            activate Board
            deactivate Board
        deactivate Thread
    deactivate Service
deactivate Controller

deactivate UI
@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US3007\US3007-SD(MOVE_POST-IT).puml

[File Begins] sem4pi-22-23-61-master\docs\US3007\US3007-SD(UPDATE_CREATED_POST-IT).puml

```
@startuml
'http://plantuml.com/skinparam.html
skinparam handwritten true
skinparam monochrome true
skinparam packageStyle rect
skinparam defaultFontName FG Virgil
skinparam shadowing false

actor SystemUser as Actor
participant UpdateBoardPostItUI as UI
participant AuthzRegistry as AuthzRes
participant AuthorizationService as AuthzSvc
participant UserSession as UserS
participant UpdateBoardPostItController as Controller
participant UpdateBoardPostItService as Service
participant SharedBoardRepository as Repo
participant "theSharedBoard:SharedBoard" as SharedBoard
participant PostIt as PostIt
participant UpdateBoardPostItThread as Thread
participant Board as Board

-> UI: Update a post-it in a board
activate UI
    UI -> AuthzRes : authz=authorizationService()
    activate AuthzRes
    deactivate AuthzRes
    UI -> AuthzSvc : s=session()
    activate AuthzSvc
    deactivate AuthzSvc
    UI -> UserS : myUser=authenticatedUser()
    activate UserS
    deactivate UserS
```

```
UI -> Controller: create(sharedBoardRepository)
activate Controller
    Controller -> Service : create(sharedBoardRepository)
    activate Service
    deactivate Service
deactivate Controller
UI -> Controller : findBoardsBySystemUser(myUser)
activate Controller
    Controller -> Service : findBoardsBySystemUser(myUser)
    activate Service
        Service -> Repo : findBoardsBySystemUser(myUser)
        activate Repo
        deactivate Repo
    deactivate Service
deactivate Controller
UI --> Actor : ask user shared \nboard selection
Actor --> UI : select shared board

UI -> Controller : getBoardAccessType(theSharedBoard, myUser)
activate Controller
    Controller -> Service : getBoardAccessType(sharedBoard, myUser)
    activate Service
        Service -> SharedBoard : getAccessType(systemUser)
        activate SharedBoard
        deactivate SharedBoard
    deactivate Service
deactivate Controller
UI --> Actor : ask row, column, content\nof the post-it
Actor --> UI : row, column, content

UI -> Controller : createPostIt(content, myUser)
activate Controller
    Controller -> Service : createPostIt(content, myUser)
    activate Service
        Service -> PostIt : postIt = create(content, myUser)
        activate PostIt
        deactivate PostIt
    deactivate Service
deactivate Controller

UI -> Controller : updatePostIt(theSharedBoard, row, column)
activate Controller
    Controller -> Service : updatePostIt(theSharedBoard, row, column)
```

```
        activate Service
            Service -> Thread : create(theSharedBoard.getBoard(), row, column, postIt)
            activate Thread
            deactivate Thread
            Service -> Thread : start()
            activate Thread
                Thread -> Board : updateCell(row, column, postIt)
                activate Board
                deactivate Board
            deactivate Thread
        deactivate Service
    deactivate Controller

deactivate UI
@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US3007\US3007-SD(UPDATE_CREATED_POST-IT).puml

[File Begins] sem4pi-22-23-61-master\docs\US3010\US3010-ANALYSIS.md

REGRAS DE NEGÓCIO

Only the Admin of the board can archive it.
When a board is archived, all shared users' access types should be changed to "READ," except for the owner who retains "WRITE" access.
Archiving a board sets the isArchived flag to true.

Perguntas ao cliente

TESTES UNITÁRIOS

[File Ends] sem4pi-22-23-61-master\docs\US3010\US3010-ANALYSIS.md

[File Begins] sem4pi-22-23-61-master\docs\US3010\US3010-CD.puml

```
@startuml
skinparam handwritten true
class SystemUser {
}

class SharedBoardArchiveUI {
  +archiveBoard(title: string, currentUser: User)
  +displayMessage(message: string)
}

class AuthzRegistry {
  +authorizationService(): AuthorizationService
}

class AuthorizationService {
  +session(): UserSession
}

class UserSession {
  +authenticatedUser(): User
}

class SharedBoardArchiveController {
  +archiveBoard(title: string, currentUser: User)
}

class SharedBoardArchiveService {
  +archiveBoard(title: string, currentUser: User)
}

class SharedBoardRepository {
  +findByBoardId(title: string): SharedBoard
  +save(board: SharedBoard)
}

class SharedBoard {
  -isArchived: boolean
  +setIsArchived(isArchived: boolean)
  +updateAccessTypeForSharedUsers()
}
```

```
class User {
}

SystemUser --> SharedBoardArchiveUI
SharedBoardArchiveUI --> AuthzRegistry
SharedBoardArchiveUI --> AuthorizationService
SharedBoardArchiveUI --> UserSession
SharedBoardArchiveUI --> SharedBoardArchiveController
SharedBoardArchiveUI --> SystemUser

AuthzRegistry --> AuthorizationService

AuthorizationService --> UserSession

SharedBoardArchiveController --> SharedBoardArchiveService

SharedBoardArchiveService --> SharedBoardRepository

SharedBoardArchiveController --> SharedBoard
SharedBoardArchiveService --> SharedBoard
SharedBoard --> SharedBoardRepository

UserSession --> User

@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US3010\US3010-CD.puml

[File Begins] sem4pi-22-23-61-master\docs\US3010\US3010-SD.puml

```
@startuml
skinparam handwritten true
skinparam monochrome true
skinparam packageStyle rect
skinparam defaultFontName FG Virgil
skinparam shadowing false

actor SystemUser as Actor
participant SharedBoardArchiveUI as UI
participant AuthzRegistry as AuthzRes
participant AuthorizationService as AuthzSvc
participant UserSession as UserS
participant SharedBoardArchiveController as Controller
participant SharedBoardArchiveService as Service
participant SharedBoardRepository as Repo
```

```
participant "theSharedBoard:SharedBoard" as SharedBoard

activate Actor
Actor -> UI : wants to archive a board
activate UI
UI -> AuthzRes : authz=authorizationService()
activate AuthzRes
deactivate AuthzRes

UI -> AuthzSvc : s=session()
activate AuthzSvc
deactivate AuthzSvc

UI -> UserS : myUser=authenticatedUser()
activate UserS
deactivate UserS

UI -> Controller: archiveBoard(title, currentUser)
activate Controller
Controller -> Service : archiveBoard(title, currentUser)
activate Service
Service -> Repo : findByBoardId(title)
activate Repo
deactivate Repo
Service -> SharedBoard : archiveBoard()
activate SharedBoard
SharedBoard -> SharedBoard : set isArchived=true
SharedBoard -> SharedBoard : Update access type for shared users
SharedBoard -> Repo : save(board)
activate Repo
deactivate Repo
deactivate SharedBoard
deactivate Service
deactivate Controller
UI -> Actor : Display Message "Board has been Archived"
deactivate Actor
deactivate UI


@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US3010\US3010-SD.puml

[File Begins] sem4pi-22-23-61-master\docs\US4001\US4001-ANALYSIS.md
Análise User Story 4001 - Agendar um meeting

* **REGRAS DE NEGÓCIO**

    * Qualquer utilizador pode criar um meeting
    * Qualquer utilizador pode ser convidado para o meeting
    * Se algum utilizador não estiver disponível, o meeting não deve ser criado

* **Perguntas ao cliente:**

    * **Pergunta 1**: Can any user of the system invite any other user? For example, can a student invite another student who is in a different course, or can a manager can create a meeting with any group of teachers.
    * **Resposta**: When in the document specification the term "User" is used it usually means "any user" of the system. Therefore, any user of the system can schedule a meeting and be a participant in a meeting.

    * **Pergunta 2**: Can a meeting and class overlap? If so, should the system notify that there is an overlap and for which user(s)?
    * **Resposta**: In the case of Meetings they should not be created if the participants are not available (i.e., they may have classes or other meetings at the same time).

* **TESTES UNITÁRIOS**

    * CancelMeeting_MeetingStatusChangedToCanceled

[File Ends] sem4pi-22-23-61-master\docs\US4001\US4001-ANALYSIS.md

[File Begins] sem4pi-22-23-61-master\docs\US4001\US4001-SD.puml
```
@startuml
'http://plantuml.com/skinparam.html
skinparam handwritten true
skinparam monochrome true
skinparam packageStyle rect
skinparam defaultFontName FG Virgil
skinparam shadowing false
```

```
actor SystemUser as Actor
participant ScheduleMeetingUI as UI
participant AuthzRegistry as AuthzRes
participant AuthorizationService as AuthzSvc
participant UserSession as UserS
participant ListUsersController as UsersController
participant ScheduleMeetingController as Controller
participant UserManagementService as Usersvc
participant MeetingRepository as Repo
participant InviteRepository as InviteRepo

-> UI: Schedule meeting
activate UI
    UI -> AuthzRes : authz=authorizationService()
    activate AuthzRes
    deactivate AuthzRes
    UI -> AuthzSvc : s=session()
    activate AuthzSvc
    deactivate AuthzSvc
    UI -> UserS : myUser=authenticatedUser()
    activate UserS
    deactivate UserS

    UI -> UsersController: create()
    activate UsersController
    deactivate UsersController
    UI -> Controller: create(authz, meetingRepository, InviteRepository)
    activate Controller
    deactivate Controller
    UI -> Controller: saveMeeting(meetingDuration, meetingDate, meetingTime)
    activate Controller
        Controller -> Repo : save(meetingDuration, meetingDate, meetingTime)
        activate Repo
        deactivate Repo
    deactivate Controller
    UI -> UsersController: allUsers()
    activate UsersController
        UsersController -> Usersvc : allUsers()
        activate Usersvc
        Usersvc --> UsersController : system users
        deactivate Usersvc
        UsersController --> UI : system users
    deactivate UsersController
    loop for each selected user
```

```
    UI --> Actor : shows system users

    Actor -> UI : selects User

    UI -> Controller : saveInvite(myUser, systemUser, meeting)
    activate Controller
        Controller -> InviteRepo : save(myUser, systemUser, meeting)
        activate InviteRepo
        deactivate InviteRepo
    deactivate Controller

    UI --> Actor : invite sent
    end

deactivate UI
@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US4001\US4001-SD.puml

[File Begins] sem4pi-22-23-61-master\docs\US4002\US4002-ANALYSIS.md

Análise User Story 4002 - Como usuário, quero cancelar uma reunião

* **REGRAS DE NEGÓCIO**

Apenas um administrador têm permissão para cancelar uma reunião.
A reunião cancelada vai ter um status, SCHEDULED, COMPLETED, CANCELED, quando cancelada vai mudar o seu status para CANCELED

* **Perguntas ao cliente**

Há alguma ação adicional que precisa ser executada após o cancelamento de uma reunião?

* **TESTES UNITÁRIOS**

* Verificar se o criador da reunião ou um administrador pode cancelar a reunião com sucesso.
* Verificar se a reunião cancelada altera seu status para CANCELED.
* Verificar se uma reunião que já está concluída (status COMPLETED) ou já cancelada (status CANCELED) pode ser cancelada novamente - isso deve falhar.

[File Ends] sem4pi-22-23-61-master\docs\US4002\US4002-ANALYSIS.md

[File Begins] sem4pi-22-23-61-master\docs\US4002\US4002-CD.puml

```
@startuml

class CancelMeetingUI{}


class CancelMeetingController{
findById(meetingId)
updateStatus(meeting, "Canceled")
validateMeetingOwnership(meeting, myUser)
}

class AuthzRegistry{
authorizationService()
}

class AuthorizationService{
session()
}
class UserSession{
+authenticatedUser()
}

class Meeting {
  +invite
  +inviteState
  +meetingDate
  +meetingDuration
  +meetingStatus
  +meetingTime
  +cancelMeeting(): void
}

enum MeetingStatus(){
SCHEDULED
  COMPLETED
  CANCELED
}

class SystemUser {
  +username
  +username
```

```
  +email
  +password
  +name
}

class MeetingRepository {
  +save(meeting: Meeting): void
  +update(meeting: Meeting): void
  +delete(meeting: Meeting): void
  +findById(meetingId: int): Meeting
}


Meeting "1" --> "*" SystemUser : participants
Meeting "1" -- "1" SystemUser : createdBy
Meeting --> MeetingRepository
CancelMeetingUI --> CancelMeetingController
CancelMeetingUI --> AuthzRegistry
CancelMeetingUI --> UserSession
CancelMeetingUI --> AuthorizationService
CancelMeetingController --> Meeting
@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US4002\US4002-CD.puml

[File Begins] sem4pi-22-23-61-master\docs\US4002\US4002-DM.puml

```
@startuml

class Meeting{
meetingTime
title
meetingDuration
meetingDate
List<SystemUser>
MeetingStatus
}


class SystemUser{
version
Username
Password
Name
EmailAddress
```

```
}
class Administrator{}


Administrator "1" -->  "*" Meeting : Cancels
Administrator "1" --> "1" SystemUser : is a

@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US4002\US4002-DM.puml

[File Begins] sem4pi-22-23-61-master\docs\US4002\US4002-SD.puml

```
@startuml
'http://plantuml.com/skinparam.html
skinparam handwritten true
skinparam monochrome true
skinparam packageStyle rect
skinparam defaultFontName FG Virgil
skinparam shadowing false

actor SystemUser as Actor
participant CancelMeetingUI as UI
participant AuthzRegistry as AuthzRes
participant AuthorizationService as AuthzSvc
participant UserSession as UserS
participant MeetingRepository as Repo
participant CancelMeetingController as Controller

-> UI: Cancelar reunião
activate UI
    UI -> AuthzRes : authz=authorizationService()
    activate AuthzRes
    deactivate AuthzRes
    UI -> AuthzSvc : s=session()
    activate AuthzSvc
    deactivate AuthzSvc
    UI -> UserS : myUser=authenticatedUser()
    activate UserS
    deactivate UserS

    UI -> Controller: create(authz, meetingRepository)
    activate Controller
    deactivate Controller
    UI -> Controller: cancelMeeting(meetingId)
    activate Controller
```

```
        Controller -> Repo : findById(meetingId)
        activate Repo
        Repo --> Controller : meeting
        deactivate Repo
        Controller -> Controller : validateMeetingOwnership(meeting, myUser)
        Controller -> Repo : updateStatus(meeting, "Canceled")
        activate Repo
        deactivate Repo
    deactivate Controller

    UI --> Actor : Estado da reunião alterado para "Cancelada"
deactivate UI
@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US4002\US4002-SD.puml

[File Begins] sem4pi-22-23-61-master\docs\US4003\US4003-ANALYSIS.md

Análise User Story 4003 - Aceitar/Rejeitar convites para um meeting

* **REGRAS DE NEGÓCIO**

    * O utilizador tem a opção de aceitar ou rejeitar o convite
    * O convite tem 3 estados: pendente, aceite, rejeitado

* **Perguntas ao cliente:**

    * **Pergunta 1**: When mentioning "accept or reject meeting", I though to myself about an invite being sent to the user and 2 options for the response:
        * -The sent invite has already as a response "Rejected", so that it can either be changed to "Accepted" or stays as it is, seeing that if the user doesn't accept it, he will be rejecting it.
        * -The sent invite has a response being "No answer" and, at a certain time near the begining of the meeting, the answer would change to "Rejected". The answer can be changed before it at any time to "Accepted" or "Rejected"

    * **Resposta**: In FRM04, the status of someone that did not answer should be "no answer" or "unknown".

* **TESTES UNITÁRIOS**

* EnsureInviteStateChangesToAcceptedWhenUserAccepts
* EnsureMeetingContainsUserWhenInviteIsAccepted
* EnsureInviteStateChangesToRefusedWhenUserRefuses
* EnsureMeetingDoesNotContainsUserWhenInviteIsRefused

[File Ends] sem4pi-22-23-61-master\docs\US4003\US4003-ANALYSIS.md

[File Begins] sem4pi-22-23-61-master\docs\US4003\US4003-SD(ACCEPT_INVITE).puml

```
@startuml
'http://plantuml.com/skinparam.html
skinparam handwritten true
skinparam monochrome true
skinparam packageStyle rect
skinparam defaultFontName FG Virgil
skinparam shadowing false

actor SystemUser as Actor
participant AcceptRefuseInvitesUI as UI
participant AuthzRegistry as AuthzRes
participant AuthorizationService as AuthzSvc
participant UserSession as UserS
participant AcceptRefuseInvitesController as InvitesController
participant AcceptRefuseInvitesService as Invitesvc
participant InviteRepository as Repo
participant "theInvite:Invite" as Invite
participant Meeting as Meeting


-> UI: Accept/Refuse meeting invites
activate UI
    UI -> AuthzRes : authz=authorizationService()
    activate AuthzRes
    deactivate AuthzRes
    UI -> AuthzSvc : s=session()
    activate AuthzSvc
    deactivate AuthzSvc
    UI -> UserS : myUser=authenticatedUser()
    activate UserS
    deactivate UserS

    UI -> InvitesController: create(InviteRepository)
    activate InvitesController
    deactivate InvitesController
```

```
    loop for each selected invite
    UI -> InvitesController: invitesReceived(myUser.username())
    activate InvitesController
    InvitesController -> Invitesvc : invitesReceived(username)
    activate Invitesvc
    Invitesvc -> Repo : findInvitesByReceiverUsername(username)
    activate Repo
    Repo --> Invitesvc
    deactivate Repo
    Invitesvc --> InvitesController
    deactivate Invitesvc
    InvitesController --> UI
    deactivate InvitesController
    UI --> Actor : ask user invite \nselection
    Actor -> UI : select and \naccept invite

    UI -> InvitesController : acceptInvite(theInvite, myUser)
    activate InvitesController
        InvitesController -> Invitesvc : acceptInvite(theInvite, myUser)
        activate Invitesvc
            Invitesvc -> Invite : addMeetingParticipants(myUser)
            activate Invite
                Invite -> Meeting : addParticipants(myUser)
                activate Meeting
                deactivate Meeting
            deactivate Invite
            Invitesvc -> Invite : setState(InviteState.ACCEPTED)
            activate Invite
            deactivate Invite
        deactivate Invitesvc
    deactivate InvitesController




deactivate UI
end
@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US4003\US4003-SD(ACCEPT_INVITE).puml

[File Begins] sem4pi-22-23-61-master\docs\US4003\US4003-SD(REFUSE_INVITE).puml

```
@startuml
'http://plantuml.com/skinparam.html
skinparam handwritten true
skinparam monochrome true
skinparam packageStyle rect
skinparam defaultFontName FG Virgil
skinparam shadowing false

actor SystemUser as Actor
participant AcceptRefuseInvitesUI as UI
participant AuthzRegistry as AuthzRes
participant AuthorizationService as AuthzSvc
participant UserSession as UserS
participant AcceptRefuseInvitesController as InvitesController
participant AcceptRefuseInvitesService as Invitesvc
participant InviteRepository as Repo
participant "theInvite:Invite" as Invite


-> UI: Accept/Refuse meeting invites
activate UI
    UI -> AuthzRes : authz=authorizationService()
    activate AuthzRes
    deactivate AuthzRes
    UI -> AuthzSvc : s=session()
    activate AuthzSvc
    deactivate AuthzSvc
    UI -> UserS : myUser=authenticatedUser()
    activate UserS
    deactivate UserS

    UI -> InvitesController: create(InviteRepository)
    activate InvitesController
    deactivate InvitesController

    loop for each selected invite
    UI -> InvitesController: invitesReceived(myUser.username())
    activate InvitesController
    InvitesController -> Invitesvc : invitesReceived(username)
    activate Invitesvc
    Invitesvc -> Repo : findInvitesByReceiverUsername(username)
```

```
    activate Repo
    Repo --> Invitesvc
    deactivate Repo
    Invitesvc --> InvitesController
    deactivate Invitesvc
    InvitesController --> UI
    deactivate InvitesController
    UI --> Actor : ask user invite \nselection
    Actor -> UI : select and \nreject invite

    UI -> InvitesController : refuseInvite(theInvite)
    activate InvitesController
        InvitesController -> Invitesvc : refuseInvite(theInvite)
        activate Invitesvc
            Invitesvc -> Invite : setState(InviteState.REJECTED)
            activate Invite
            deactivate Invite
        deactivate Invitesvc
    deactivate InvitesController

deactivate UI
end
@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US4003\US4003-SD(REFUSE_INVITE).puml

[File Begins] sem4pi-22-23-61-master\docs\US4004\US4004-ANALYSIS.md

Análise User Story 4004 - Como usuário, visualizar uma lista de participantes na reunião e seu status

* **REGRAS DE NEGÓCIO**

    * O utilizador tem uma opção para visualizar a lista
    * Na lista existem 3 estados: aceite, rejeitado

* **Perguntas ao cliente:**

    * **Pergunta 1**: Isso significa que só devem ser apresentados os participantes que possuam status "accept" or "reject" (portanto não seriam mostrados os participantes com status "pending" ou "owner" por exemplo), ou serve apenas como exemplo para se entender o que refere quando se fala no status?

* **Resposta**: A ideia é que apareçam todos os participantes e o seu estado. Suponho que quem ainda não respondeu não terá nada no estado ou "pending" ou "unknown".

* **TESTES UNITÁRIOS**

[File Ends] sem4pi-22-23-61-master\docs\US4004\US4004-ANALYSIS.md

[File Begins] sem4pi-22-23-61-master\docs\US4004\US4004-SD.puml

```
@startuml
'http://plantuml.com/skinparam.html
skinparam handwritten true
skinparam monochrome true
skinparam packageStyle rect
skinparam defaultFontName FG Virgil
skinparam shadowing false

actor SystemUser as Actor
participant ListParticipantUI as UI
participant ListParticipantController as Controller
participant ListParticipantService as Service
participant MeetingRepository as MeetingRepo
participant InviteRepository as InviteRepo
participant Meeting as Meeting
participant Invite as Invite
participant SystemUser as User

-> UI: View participants of a meeting
activate UI
    UI -> Controller: getMeetingById(meetingTitle)
    activate Controller
        Controller -> Service: findByMeetingById(meetingTitle)
        activate Service
            Service -> MeetingRepo: findByMeetingById(meetingTitle)
            activate MeetingRepo
            MeetingRepo --> Service
            deactivate MeetingRepo
        Service --> Controller
        deactivate Service
    Controller -> UI: meeting
    deactivate Controller
    alt meeting is null
```

```
        UI -> Actor: display "No meeting found with the given ID."
    else
        UI -> Controller: findInvitesByMeeting(meeting)
        activate Controller
            Controller -> Service: findInvitesByMeeting(meeting)
            activate Service
                Service -> InviteRepo: findInvitesByMeeting(meeting)
                activate InviteRepo
                InviteRepo --> Service
                deactivate InviteRepo
            Service --> Controller
            deactivate Service
        Controller -> UI: participantsStatus
        deactivate Controller
        UI -> Actor: display participants list
    end
deactivate UI
@enduml
```

[File Ends] sem4pi-22-23-61-master\docs\US4004\US4004-SD.puml

[File Begins] sem4pi-22-23-61-master\docs\readme.md

Project Planning and Technical Documentation

1. Group Members

The members of the group:

Student Nr.	Name
[1210965](Group_Elements/1210965/readme.md)	José Teixeira
[1200614](Group_Elements/1200614/readme.md)	João Miranda
[1201718](Group_Elements/1201718/readme.md)	João Cruz
[1200874](Group_Elements/1200874/readme.md)	Miguel Oliveira
[1200801](Group_Elements/1200801/readme.md)	Daniel Braga

2. Task Assignment

The assignment of tasks (requirements/user stories/use cases) during the project.

Student Nr.	Sprint A	Sprint B	Sprint C
[1170000](Group_Elements/1210965/readme.md)	[US G002](us_g002(base)(apagar depois)/readme.md)	[US 1001](us_1001(Base)(Apagar depois)/readme.md)	[US

3004](us_3004(base)(apagar depois)/readme.md) |

[File Ends] sem4pi-22-23-61-master\docs\readme.md

[File Begins] sem4pi-22-23-61-master\libs\ModeloConceptual (1).drawio.html

<!--[if IE]><meta http-equiv="X-UA-Compatible" content="IE=5,IE=9" ><![endif]-->
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lightbox","edit":"_blank","xml":"<mxfile
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AppleWebKit/537.36 (KHTML, like Gecko) Chrome/111.0.0.0 Safari/537.36\"
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KdzZeNtuy\" name=\"Modelo Conceitual\">\n   <mxGraphModel
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yDy=0;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
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target=\"cFPUC0em5CPohN2MoM2B-106\" edge=\"1\">\n
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parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"gMcGTzHWLV_Uvh6kmHHh-32\"
target=\"gMcGTzHWLV_Uvh6kmHHh-31\" edge=\"1\">\n
<mxGeometry x=\"-0.1649\" width=\"160\"
relative=\"1\" as=\"geometry\">\n <mxPoint
x=\"940\" y=\"270\" as=\"sourcePoint\" />\n
<mxPoint x=\"1090\" y=\"280\" as=\"targetPoint\"
/>\n <Array as=\"points\">\n <mxPoint
x=\"1360\" y=\"-890\" />\n <mxPoint
x=\"2119\" y=\"-890\" />\n </Array>\n
<mxPoint as=\"offset\" />\n </mxGeometry>\n
</mxCell>\n <mxCell id=\"cFPUC0em5CPohN2MoM2B-70\"
value=\"\"
style=\"endArrow=block;endSize=16;endFill=0;html=1;rounded=0;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"gMcGTzHWLV_Uvh6kmHHh-34\"

target=\"gMcGTzHWLV_Uvh6kmHHh-31\" edge=\"1\">\n
<mxGeometry x=\"-0.0103\" y=\"5\" width=\"160\"
relative=\"1\" as=\"geometry\">\n <mxPoint
x=\"1030\" y=\"370\" as=\"sourcePoint\" />\n
<mxPoint x=\"1030\" y=\"50\" as=\"targetPoint\"
/>\n <Array as=\"points\" />\n <mxPoint
as=\"offset\" />\n </mxGeometry>\n </mxCell>\n
<mxCell id=\"cFPUC0em5CPohN2MoM2B-73\" value=\"has\"
style=\"endArrow=classic;html=1;rounded=0;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"gMcGTzHWLV_Uvh6kmHHh-32\"
target=\"cFPUC0em5CPohN2MoM2B-107\" edge=\"1\">\n
<mxGeometry x=\"-0.3489\" y=\"-2\" width=\"50\"
height=\"50\" relative=\"1\" as=\"geometry\">\n
<mxPoint x=\"997\" y=\"140\" as=\"sourcePoint\"
/>\n <mxPoint x=\"973\" y=\"350\"
as=\"targetPoint\" />\n <mxPoint y=\"1\"
as=\"offset\" />\n </mxGeometry>\n </mxCell>\n
<mxCell id=\"cFPUC0em5CPohN2MoM2B-75\"
value=\"<Value Object>
Meeting
Duration\" style=\"rounded=0;whiteSpace=wrap;html=1;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\" vertex=\"1\">\n
<mxGeometry x=\"1950\" y=\"550\" width=\"120\"
height=\"60\" as=\"geometry\" />\n </mxCell>\n
<mxCell id=\"cFPUC0em5CPohN2MoM2B-76\" value=\"has\"
style=\"endArrow=classic;html=1;rounded=0;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"gMcGTzHWLV_Uvh6kmHHh-49\"
target=\"cFPUC0em5CPohN2MoM2B-75\" edge=\"1\">\n
<mxGeometry x=\"0.0012\" width=\"50\"
height=\"50\" relative=\"1\" as=\"geometry\">\n
<mxPoint x=\"2280\" y=\"702.5\" as=\"sourcePoint\"
/>\n <mxPoint x=\"2340\" y=\"702.5\"
as=\"targetPoint\" />\n <mxPoint as=\"offset\" />\n
</mxGeometry>\n </mxCell>\n <mxCell
id=\"cFPUC0em5CPohN2MoM2B-77\" value=\"<Value
Object>
Number of Rows\"
style=\"rounded=0;whiteSpace=wrap;html=1;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\" vertex=\"1\">\n
<mxGeometry x=\"3090\" y=\"-9.999999999999996\"
width=\"120\" height=\"60\" as=\"geometry\" />\n
</mxCell>\n <mxCell id=\"cFPUC0em5CPohN2MoM2B-79\"
value=\"<Entity>
Column\"
style=\"rounded=0;whiteSpace=wrap;html=1;\"

parent=\"WIyWlLk6GJQsqaUBKTNV-1\" vertex=\"1\">\n
<mxGeometry x=\"2915\" y=\"-150\" width=\"120\"
height=\"60\" as=\"geometry\" />\n </mxCell>\n
<mxCell id=\"cFPUC0em5CPohN2MoM2B-80\"
value=\"<Entity>
Row\"
style=\"rounded=0;whiteSpace=wrap;html=1;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\" vertex=\"1\">\n
<mxGeometry x=\"2725\" y=\"-150\" width=\"120\"
height=\"60\" as=\"geometry\" />\n </mxCell>\n
<mxCell id=\"cFPUC0em5CPohN2MoM2B-81\" value=\"has\"
style=\"endArrow=classic;html=1;rounded=0;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"gMcGTzHWLV_Uvh6kmHHh-27\"
target=\"cFPUC0em5CPohN2MoM2B-79\" edge=\"1\">\n
<mxGeometry width=\"50\" height=\"50\"
relative=\"1\" as=\"geometry\">\n <mxPoint
x=\"1470\" y=\"-30\" as=\"sourcePoint\" />\n
<mxPoint x=\"1530\" y=\"-50\" as=\"targetPoint\"
/>\n </mxGeometry>\n </mxCell>\n <mxCell
id=\"cFPUC0em5CPohN2MoM2B-82\" value=\"has\"
style=\"endArrow=classic;html=1;rounded=0;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"gMcGTzHWLV_Uvh6kmHHh-27\"
target=\"cFPUC0em5CPohN2MoM2B-80\" edge=\"1\">\n
<mxGeometry width=\"50\" height=\"50\"
relative=\"1\" as=\"geometry\">\n <mxPoint
x=\"1480\" y=\"-20\" as=\"sourcePoint\" />\n
<mxPoint x=\"1540\" y=\"-40\" as=\"targetPoint\"
/>\n </mxGeometry>\n </mxCell>\n <mxCell
id=\"cFPUC0em5CPohN2MoM2B-83\" value=\"<Value
Object>
ID\"
style=\"rounded=0;whiteSpace=wrap;html=1;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\" vertex=\"1\">\n
<mxGeometry x=\"2725\" y=\"-280\" width=\"120\"
height=\"60\" as=\"geometry\" />\n </mxCell>\n
<mxCell id=\"cFPUC0em5CPohN2MoM2B-84\" value=\"has\"
style=\"endArrow=classic;html=1;rounded=0;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"cFPUC0em5CPohN2MoM2B-80\"
target=\"cFPUC0em5CPohN2MoM2B-83\" edge=\"1\">\n
<mxGeometry width=\"50\" height=\"50\"
relative=\"1\" as=\"geometry\">\n <mxPoint
x=\"2811\" y=\"130\" as=\"sourcePoint\" />\n
<mxPoint x=\"2779\" y=\"-80\" as=\"targetPoint\"

/>\n </mxGeometry>\n </mxCell>\n <mxCell id=\"cFPUC0em5CPohN2MoM2B-85\" value=\"has\" style=\"endArrow=classic;html=1;rounded=0;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\" source=\"cFPUC0em5CPohN2MoM2B-79\" edge=\"1\">\n <mxGeometry x=\"-0.4666\" y=\"-2\" width=\"50\" height=\"50\" relative=\"1\" as=\"geometry\">\n <mxPoint x=\"2821\" y=\"140\" as=\"sourcePoint\" />\n <mxPoint x=\"2980\" y=\"-220\" as=\"targetPoint\" />\n <mxPoint as=\"offset\" />\n </mxGeometry>\n </mxCell>\n <mxCell id=\"cFPUC0em5CPohN2MoM2B-87\" value=\"has\" style=\"endArrow=classic;html=1;rounded=0;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\" source=\"cFPUC0em5CPohN2MoM2B-80\" target=\"cFPUC0em5CPohN2MoM2B-129\" edge=\"1\">\n <mxGeometry x=\"-0.4666\" y=\"2\" width=\"50\" height=\"50\" relative=\"1\" as=\"geometry\">\n <mxPoint x=\"2605\" y=\"-200\" as=\"sourcePoint\" />\n <mxPoint x=\"2850.3846153846152\" y=\"-220\" as=\"targetPoint\" />\n <mxPoint as=\"offset\" />\n </mxGeometry>\n </mxCell>\n <mxCell id=\"cFPUC0em5CPohN2MoM2B-88\" value=\"has\" style=\"endArrow=classic;html=1;rounded=0;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\" source=\"cFPUC0em5CPohN2MoM2B-79\" target=\"cFPUC0em5CPohN2MoM2B-83\" edge=\"1\">\n <mxGeometry width=\"50\" height=\"50\" relative=\"1\" as=\"geometry\">\n <mxPoint x=\"2865\" y=\"-130\" as=\"sourcePoint\" />\n <mxPoint x=\"3109.6153846153848\" y=\"-220\" as=\"targetPoint\" />\n </mxGeometry>\n </mxCell>\n <mxCell id=\"cFPUC0em5CPohN2MoM2B-92\" value=\"edits\" style=\"endArrow=classic;html=1;rounded=0;entryX=0;entryY=0.5;entryDx=0;entryDy=0;exitX=1;exitY=0.5;exitDx=0;exitDy=0;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\" source=\"gMcGTzHWLV_Uvh6kmHHh-31\" target=\"gMcGTzHWLV_Uvh6kmHHh-27\" edge=\"1\">\n <mxGeometry x=\"-0.1452\" width=\"50\" height=\"50\" relative=\"1\" as=\"geometry\">\n <mxPoint x=\"2171\" y=\"121\" as=\"sourcePoint\" />\n <mxPoint x=\"1360\" as=\"targetPoint\" />\n <mxPoint as=\"offset\" />\n <Array as=\"points\">\n <mxPoint x=\"2520\"

y=\"130\" />\n <mxPoint x=\"2520\"
y=\"20\" />\n </Array>\n </mxGeometry>\n
</mxCell>\n <mxCell id=\"cFPUC0em5CPohN2MoM2B-94\"
value=\"<>
Textual Description\"
style=\"rounded=0;whiteSpace=wrap;html=1;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\" vertex=\"1\">\n
<mxGeometry x=\"40\" y=\"130\" width=\"120\"
height=\"60\" as=\"geometry\" />\n </mxCell>\n
<mxCell id=\"cFPUC0em5CPohN2MoM2B-95\" value=\"has\"
style=\"endArrow=classic;html=1;rounded=0;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"gMcGTzHWLV_Uvh6kmHHh-56\"
target=\"cFPUC0em5CPohN2MoM2B-94\" edge=\"1\">\n
<mxGeometry x=\"0.0032\" width=\"50\"
height=\"50\" relative=\"1\" as=\"geometry\">\n
<mxPoint x=\"240\" y=\"240\" as=\"sourcePoint\"
/>\n <mxPoint x=\"240\" y=\"200\"
as=\"targetPoint\" />\n <Array as=\"points\" />\n
<mxPoint as=\"offset\" />\n </mxGeometry>\n
</mxCell>\n <mxCell id=\"cFPUC0em5CPohN2MoM2B-96\"
value=\"<>
Question Type\"
style=\"rounded=0;whiteSpace=wrap;html=1;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\" vertex=\"1\">\n
<mxGeometry x=\"170\" y=\"10\" width=\"120\"
height=\"60\" as=\"geometry\" />\n </mxCell>\n
<mxCell id=\"cFPUC0em5CPohN2MoM2B-97\" value=\"has\"
style=\"endArrow=classic;html=1;rounded=0;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"gMcGTzHWLV_Uvh6kmHHh-57\"
target=\"cFPUC0em5CPohN2MoM2B-96\" edge=\"1\">\n
<mxGeometry x=\"0.0032\" width=\"50\"
height=\"50\" relative=\"1\" as=\"geometry\">\n
<mxPoint x=\"240\" y=\"240\" as=\"sourcePoint\"
/>\n <mxPoint x=\"240\" y=\"200\"
as=\"targetPoint\" />\n <Array as=\"points\" />\n
<mxPoint as=\"offset\" />\n </mxGeometry>\n
</mxCell>\n <mxCell id=\"cFPUC0em5CPohN2MoM2B-98\"
value=\"Shared Board\"
style=\"shape=umlFrame;whiteSpace=wrap;html=1;pointerEvents=0;width=100;hei
ght=30;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
vertex=\"1\">\n <mxGeometry x=\"2650\" y=\"-
320\" width=\"590\" height=\"550\"
as=\"geometry\" />\n </mxCell>\n <mxCell
id=\"cFPUC0em5CPohN2MoM2B-100\" value=\"Person\"

style=\"shape=umlFrame;whiteSpace=wrap;html=1;pointerEvents=0;width=100;hei
ght=30;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
vertex=\"1\">\n <mxGeometry x=\"1790\" y=\"-
260\" width=\"620\" height=\"460\"
as=\"geometry\" />\n </mxCell>\n <mxCell
id=\"cFPUC0em5CPohN2MoM2B-101\" value=\"Meeting\"
style=\"shape=umlFrame;whiteSpace=wrap;html=1;pointerEvents=0;width=100;hei
ght=30;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
vertex=\"1\">\n <mxGeometry x=\"1900\"
y=\"390\" width=\"400\" height=\"250\"
as=\"geometry\" />\n </mxCell>\n <mxCell
id=\"cFPUC0em5CPohN2MoM2B-105\" value=\"Class\"
style=\"shape=umlFrame;whiteSpace=wrap;html=1;pointerEvents=0;width=100;hei
ght=30;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
vertex=\"1\">\n <mxGeometry x=\"380\" y=\"-
380\" width=\"570\" height=\"300\"
as=\"geometry\" />\n </mxCell>\n <mxCell
id=\"cFPUC0em5CPohN2MoM2B-106\" value=\"<Value
Object>
Date of Birth\"
style=\"rounded=0;whiteSpace=wrap;html=1;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\" vertex=\"1\">\n
<mxGeometry x=\"1480\" y=\"-800\" width=\"120\"
height=\"60\" as=\"geometry\" />\n </mxCell>\n
<mxCell id=\"cFPUC0em5CPohN2MoM2B-107\"
value=\"<Value Object>
Tax Payer
Number\" style=\"rounded=0;whiteSpace=wrap;html=1;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\" vertex=\"1\">\n
<mxGeometry x=\"1480\" y=\"-670\" width=\"120\"
height=\"60\" as=\"geometry\" />\n </mxCell>\n
<mxCell id=\"cFPUC0em5CPohN2MoM2B-109\"
value=\"Manager\"
style=\"shape=umlFrame;whiteSpace=wrap;html=1;pointerEvents=0;width=100;hei
ght=30;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
vertex=\"1\">\n <mxGeometry x=\"1360\"
y=\"505\" width=\"210\" height=\"160\"
as=\"geometry\" />\n </mxCell>\n <mxCell
id=\"cFPUC0em5CPohN2MoM2B-110\" value=\"Teacher\"
style=\"shape=umlFrame;whiteSpace=wrap;html=1;pointerEvents=0;width=100;hei
ght=30;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
vertex=\"1\">\n <mxGeometry x=\"1450\" y=\"-
850\" width=\"540\" height=\"340.3\"
as=\"geometry\" />\n </mxCell>\n <mxCell
id=\"cFPUC0em5CPohN2MoM2B-111\" value=\"Student\"
style=\"shape=umlFrame;whiteSpace=wrap;html=1;pointerEvents=0;width=100;hei

ght=30;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
vertex=\"1\">\n <mxGeometry x=\"1160\" y=\"-
850\" width=\"470\" height=\"330\"
as=\"geometry\" />\n </mxCell>\n <mxCell
id=\"cFPUC0em5CPohN2MoM2B-112\" value=\"Exam\"
style=\"shape=umlFrame;whiteSpace=wrap;html=1;pointerEvents=0;width=100;hei
ght=30;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
vertex=\"1\">\n <mxGeometry x=\"-320\" y=\"-
50\" width=\"810\" height=\"690\"
as=\"geometry\" />\n </mxCell>\n <mxCell
id=\"cFPUC0em5CPohN2MoM2B-113\" value=\"schedules\"
style=\"edgeStyle=orthogonalEdgeStyle;rounded=0;orthogonalLoop=1;jettySize=a
uto;html=1;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"gMcGTzHWLV_Uvh6kmHHh-35\"
target=\"gMcGTzHWLV_Uvh6kmHHh-28\" edge=\"1\">\n
<mxGeometry relative=\"1\" as=\"geometry\">\n
<mxPoint x=\"1510\" y=\"180\" as=\"sourcePoint\"
/>\n <mxPoint x=\"-170\" y=\"370\"
as=\"targetPoint\" />\n <Array as=\"points\">\n
<mxPoint x=\"1790\" y=\"-920\" />\n <mxPoint
x=\"1030\" y=\"-920\" />\n <mxPoint
x=\"1030\" y=\"-410\" />\n <mxPoint
x=\"665\" y=\"-410\" />\n </Array>\n
</mxGeometry>\n </mxCell>\n <mxCell
id=\"cFPUC0em5CPohN2MoM2B-115\" value=\"takes\"
style=\"edgeStyle=orthogonalEdgeStyle;rounded=0;orthogonalLoop=1;jettySize=a
uto;html=1;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"gMcGTzHWLV_Uvh6kmHHh-32\"
target=\"gMcGTzHWLV_Uvh6kmHHh-39\" edge=\"1\">\n
<mxGeometry x=\"-0.0608\" relative=\"1\"
as=\"geometry\">\n <mxPoint x=\"1540\"
y=\"180\" as=\"sourcePoint\" />\n <mxPoint
x=\"735\" y=\"-310\" as=\"targetPoint\" />\n
<Array as=\"points\">\n <mxPoint x=\"1380\"
y=\"-500\" />\n <mxPoint x=\"820\" y=\"-
500\" />\n <mxPoint x=\"820\" y=\"-640\" />\n
</Array>\n <mxPoint as=\"offset\" />\n
</mxGeometry>\n </mxCell>\n <mxCell
id=\"cFPUC0em5CPohN2MoM2B-117\" value=\"Extra Class\"
style=\"shape=umlFrame;whiteSpace=wrap;html=1;pointerEvents=0;width=100;hei
ght=30;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
vertex=\"1\">\n <mxGeometry x=\"560\" y=\"-
700\" width=\"190\" height=\"260\"
as=\"geometry\" />\n </mxCell>\n <mxCell

id=\"cFPUC0em5CPohN2MoM2B-118\" value=\"takes\"
style=\"edgeStyle=orthogonalEdgeStyle;rounded=0;orthogonalLoop=1;jettySize=a
uto;html=1;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"gMcGTzHWLV_Uvh6kmHHh-32\"
target=\"gMcGTzHWLV_Uvh6kmHHh-28\" edge=\"1\">\n
<mxGeometry x=\"-0.0967\" relative=\"1\"
as=\"geometry\">\n <mxPoint x=\"1350\" y=\"-
490\" as=\"sourcePoint\" />\n <mxPoint
x=\"735\" y=\"-320\" as=\"targetPoint\" />\n
<Array as=\"points\">\n <mxPoint x=\"1370\"
y=\"-510\" />\n <mxPoint x=\"1090\" y=\"-
510\" />\n <mxPoint x=\"1090\" y=\"-340\"
/>\n </Array>\n <mxPoint as=\"offset\" />\n
</mxGeometry>\n </mxCell>\n <mxCell
id=\"cFPUC0em5CPohN2MoM2B-121\" value=\"takes\"
style=\"edgeStyle=orthogonalEdgeStyle;rounded=0;orthogonalLoop=1;jettySize=a
uto;html=1;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"gMcGTzHWLV_Uvh6kmHHh-32\"
target=\"gMcGTzHWLV_Uvh6kmHHh-33\" edge=\"1\">\n
<mxGeometry x=\"-0.533\" relative=\"1\"
as=\"geometry\">\n <mxPoint x=\"1350\" y=\"-
480\" as=\"sourcePoint\" />\n <mxPoint
x=\"735\" y=\"-330\" as=\"targetPoint\" />\n
<Array as=\"points\">\n <mxPoint x=\"1390\"
y=\"-490\" />\n <mxPoint x=\"1110\" y=\"-
490\" />\n <mxPoint x=\"1110\" y=\"390\"
/>\n </Array>\n <mxPoint as=\"offset\" />\n
</mxGeometry>\n </mxCell>\n <mxCell
id=\"cFPUC0em5CPohN2MoM2B-122\" value=\"take\"
style=\"edgeStyle=orthogonalEdgeStyle;rounded=0;orthogonalLoop=1;jettySize=a
uto;html=1;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"gMcGTzHWLV_Uvh6kmHHh-35\"
target=\"gMcGTzHWLV_Uvh6kmHHh-39\" edge=\"1\">\n
<mxGeometry x=\"0.5028\" relative=\"1\"
as=\"geometry\">\n <mxPoint x=\"1800\" y=\"-
780\" as=\"sourcePoint\" />\n <mxPoint
x=\"735\" y=\"-330\" as=\"targetPoint\" />\n
<Array as=\"points\">\n <mxPoint x=\"1800\"
y=\"-970\" />\n <mxPoint x=\"653\" y=\"-
970\" />\n </Array>\n <mxPoint x=\"1\"
as=\"offset\" />\n </mxGeometry>\n </mxCell>\n
<mxCell id=\"cFPUC0em5CPohN2MoM2B-124\"
value=\"<Value
Object>
Evaluation\"

style=\"rounded=0;whiteSpace=wrap;html=1;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\" vertex=\"1\">\n
<mxGeometry x=\"-300\" y=\"555\" width=\"120\"
height=\"60\" as=\"geometry\" />\n </mxCell>\n
<mxCell id=\"cFPUC0em5CPohN2MoM2B-125\" value=\"has\"
style=\"endArrow=classic;html=1;rounded=0;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"gMcGTzHWLV_Uvh6kmHHh-33\"
target=\"cFPUC0em5CPohN2MoM2B-124\" edge=\"1\">\n
<mxGeometry x=\"0.0032\" width=\"50\"
height=\"50\" relative=\"1\" as=\"geometry\">\n
<mxPoint x=\"188\" y=\"430\" as=\"sourcePoint\"
/>\n <mxPoint x=\"-45\" y=\"565\"
as=\"targetPoint\" />\n <mxPoint as=\"offset\" />\n
</mxGeometry>\n </mxCell>\n <mxCell
id=\"cFPUC0em5CPohN2MoM2B-127\" value=\"\"
style=\"endArrow=block;endSize=16;endFill=0;html=1;rounded=0;exitX=1;exitY=0.
5;exitDx=0;exitDy=0;entryX=0.4;entryY=0.014;entryDx=0;entryDy=0;entryPerimeter=0;\&
quot; parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"gMcGTzHWLV_Uvh6kmHHh-35\"
target=\"gMcGTzHWLV_Uvh6kmHHh-31\" edge=\"1\">\n
<mxGeometry x=\"-0.0103\" y=\"5\" width=\"160\"
relative=\"1\" as=\"geometry\">\n <mxPoint
x=\"1511\" y=\"390\" as=\"sourcePoint\" />\n
<mxPoint x=\"2120\" y=\"100\" as=\"targetPoint\"
/>\n <Array as=\"points\">\n <mxPoint
x=\"2100\" y=\"-770\" />\n </Array>\n
<mxPoint as=\"offset\" />\n </mxGeometry>\n
</mxCell>\n <mxCell id=\"cFPUC0em5CPohN2MoM2B-129\"
value=\"<Value Object>
Title\"
style=\"rounded=0;whiteSpace=wrap;html=1;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\" vertex=\"1\">\n
<mxGeometry x=\"2915\" y=\"-280\" width=\"120\"
height=\"60\" as=\"geometry\" />\n </mxCell>\n
<mxCell id=\"cFPUC0em5CPohN2MoM2B-132\"
value=\"<Entity>
Enrollment\"
style=\"rounded=0;whiteSpace=wrap;html=1;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\" vertex=\"1\">\n
<mxGeometry x=\"1410\" y=\"-120\" width=\"120\"
height=\"60\" as=\"geometry\" />\n </mxCell>\n
<mxCell id=\"cFPUC0em5CPohN2MoM2B-133\"
value=\"creates\"
style=\"endArrow=block;startArrow=block;endFill=1;startFill=1;html=1;rounded=0;e
ntryX=0;entryY=0.25;entryDx=0;entryDy=0;exitX=1.007;exitY=0.176;exitDx=0;exitDy=0;

exitPerimeter=0;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"gMcGTzHWLV_Uvh6kmHHh-31\"
target=\"gMcGTzHWLV_Uvh6kmHHh-27\" edge=\"1\">\n
<mxGeometry width=\"160\" relative=\"1\"
as=\"geometry\">\n <mxPoint x=\"2440\" y=\"-
70\" as=\"sourcePoint\" />\n <mxPoint
x=\"2600\" y=\"-70\" as=\"targetPoint\" />\n
<Array as=\"points\">\n <mxPoint x=\"2500\"
y=\"110\" />\n <mxPoint x=\"2500\"
y=\"5\" />\n </Array>\n </mxGeometry>\n
</mxCell>\n <mxCell id=\"cFPUC0em5CPohN2MoM2B-136\"
value=\"has\" style=\"endArrow=classic;html=1;rounded=0;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"gMcGTzHWLV_Uvh6kmHHh-32\"
target=\"cFPUC0em5CPohN2MoM2B-106\" edge=\"1\">\n
<mxGeometry x=\"-0.3489\" y=\"-2\" width=\"50\"
height=\"50\" relative=\"1\" as=\"geometry\">\n
<mxPoint x=\"1402\" y=\"-770\" as=\"sourcePoint\"
/>\n <mxPoint x=\"1518\" y=\"-660\"
as=\"targetPoint\" />\n <mxPoint y=\"1\"
as=\"offset\" />\n </mxGeometry>\n </mxCell>\n
<mxCell id=\"cFPUC0em5CPohN2MoM2B-140\" value=\"has\"
style=\"endArrow=classic;html=1;rounded=0;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"gMcGTzHWLV_Uvh6kmHHh-35\"
target=\"cFPUC0em5CPohN2MoM2B-107\" edge=\"1\">\n
<mxGeometry x=\"-0.4286\" width=\"50\"
height=\"50\" relative=\"1\" as=\"geometry\">\n
<mxPoint x=\"1750\" y=\"-760\" as=\"sourcePoint\"
/>\n <mxPoint x=\"1610\" y=\"-760\"
as=\"targetPoint\" />\n <mxPoint as=\"offset\" />\n
</mxGeometry>\n </mxCell>\n <mxCell
id=\"cFPUC0em5CPohN2MoM2B-143\" value=\"Enrollment\"
style=\"shape=umlFrame;whiteSpace=wrap;html=1;pointerEvents=0;width=100;hei
ght=30;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
vertex=\"1\">\n <mxGeometry x=\"1350\" y=\"-
170\" width=\"230\" height=\"140\"
as=\"geometry\" />\n </mxCell>\n <mxCell
id=\"cFPUC0em5CPohN2MoM2B-147\" value=\"is accepted/rejected
by\" style=\"endArrow=classic;html=1;rounded=0;\"
parent=\"WIyWlLk6GJQsqaUBKTNV-1\"
source=\"cFPUC0em5CPohN2MoM2B-132\"
target=\"gMcGTzHWLV_Uvh6kmHHh-34\" edge=\"1\">\n
<mxGeometry x=\"0.2424\" width=\"50\"

height=\"50\" relative=\"1\" as=\"geometry\">\n <mxPoint x=\"1370\" y=\"-770\" as=\"sourcePoint\" />\n <mxPoint x=\"1440\" y=\"445.2382114955357\" as=\"targetPoint\" />\n <Array as=\"points\">\n <mxPoint x=\"1470\" y=\"80\" />\n </Array>\n <mxPoint as=\"offset\" />\n </mxGeometry>\n </mxCell>\n <mxCell id=\"cFPUC0em5CPohN2MoM2B-149\" value=\"requests\" style=\"edgeStyle=orthogonalEdgeStyle;rounded=0;orthogonalLoop=1;jettySize=auto;html=1;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\" source=\"gMcGTzHWLV_Uvh6kmHHh-32\" target=\"cFPUC0em5CPohN2MoM2B-132\" edge=\"1\">\n <mxGeometry x=\"0.1504\" relative=\"1\" as=\"geometry\">\n <mxPoint x=\"1400\" y=\"-770\" as=\"sourcePoint\" />\n <mxPoint x=\"1430\" y=\"-270\" as=\"targetPoint\" />\n <Array as=\"points\">\n <mxPoint x=\"1400\" y=\"-400\" />\n <mxPoint x=\"1470\" y=\"-400\" />\n </Array>\n <mxPoint as=\"offset\" />\n </mxGeometry>\n </mxCell>\n <mxCell id=\"cFPUC0em5CPohN2MoM2B-150\" value=\"has\" style=\"edgeStyle=orthogonalEdgeStyle;rounded=0;orthogonalLoop=1;jettySize=auto;html=1;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\" source=\"gMcGTzHWLV_Uvh6kmHHh-30\" target=\"gMcGTzHWLV_Uvh6kmHHh-33\" edge=\"1\">\n <mxGeometry x=\"-0.1097\" relative=\"1\" as=\"geometry\">\n <mxPoint x=\"1160\" y=\"445\" as=\"sourcePoint\" />\n <mxPoint x=\"896\" y=\"610\" as=\"targetPoint\" />\n <Array as=\"points\">\n <mxPoint x=\"1116\" y=\"405\" />\n </Array>\n <mxPoint as=\"offset\" />\n </mxGeometry>\n </mxCell>\n <mxCell id=\"cFPUC0em5CPohN2MoM2B-151\" value=\"has\" style=\"edgeStyle=orthogonalEdgeStyle;rounded=0;orthogonalLoop=1;jettySize=auto;html=1;entryX=0.5;entryY=0;entryDx=0;entryDy=0;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\" source=\"gMcGTzHWLV_Uvh6kmHHh-35\" target=\"gMcGTzHWLV_Uvh6kmHHh-30\" edge=\"1\">\n <mxGeometry x=\"0.5572\" y=\"3\" relative=\"1\" as=\"geometry\">\n <Array as=\"points\">\n <mxPoint x=\"1780\" y=\"200\" />\n <mxPoint x=\"1147\" y=\"200\" />\n <mxPoint x=\"1147\" y=\"390\" />\n </Array>\n <mxPoint x=\"1770\" y=\"-730\" as=\"sourcePoint\"

/>\n <mxPoint x=\"300\" y=\"390\" as=\"targetPoint\" />\n <mxPoint as=\"offset\" />\n </mxGeometry>\n </mxCell>\n <mxCell id=\"cFPUC0em5CPohN2MoM2B-155\" value=\"Course\" style=\"shape=umlFrame;whiteSpace=wrap;html=1;pointerEvents=0;width=100;height=30;\" parent=\"WIyWlLk6GJQsqaUBKTNV-1\" vertex=\"1\">\n <mxGeometry x=\"790\" y=\"710\" width=\"850\" height=\"370\" as=\"geometry\" />\n </mxCell>\n </root>\n </mxGraphModel>\n </diagram>\n</mxfile>\n"}">
<script type="text/javascript" src="https://viewer.diagrams.net/js/viewer-static.min.js"></script>
</body>
</html>

[File Ends] sem4pi-22-23-61-master\libs\ModeloConceptual (1).drawio.html

[File Begins] sem4pi-22-23-61-master\license.txt

[File Ends] sem4pi-22-23-61-master\license.txt

[File Begins] sem4pi-22-23-61-master\mvnw

```
#!/bin/sh
# ----------------------------------------------------------------------------
# Licensed to the Apache Software Foundation (ASF) under one
# or more contributor license agreements.  See the NOTICE file
# distributed with this work for additional information
# regarding copyright ownership.  The ASF licenses this file
# to you under the Apache License, Version 2.0 (the
# "License"); you may not use this file except in compliance
# with the License.  You may obtain a copy of the License at
#
#    https://www.apache.org/licenses/LICENSE-2.0
#
# Unless required by applicable law or agreed to in writing,
# software distributed under the License is distributed on an
# "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY
# KIND, either express or implied.  See the License for the
# specific language governing permissions and limitations
# under the License.
# ----------------------------------------------------------------------------

# ----------------------------------------------------------------------------
# Maven2 Start Up Batch script
#
# Required ENV vars:
# ------------------
#   JAVA_HOME - location of a JDK home dir
#
# Optional ENV vars
# -----------------
#   M2_HOME - location of maven2's installed home dir
#   MAVEN_OPTS - parameters passed to the Java VM when running Maven
#     e.g. to debug Maven itself, use
#       set MAVEN_OPTS=-Xdebug -
Xrunjdwp:transport=dt_socket,server=y,suspend=y,address=8000
#   MAVEN_SKIP_RC - flag to disable loading of mavenrc files
# ----------------------------------------------------------------------------

if [ -z "$MAVEN_SKIP_RC" ] ; then

  if [ -f /etc/mavenrc ] ; then
    . /etc/mavenrc
```

```
  fi

  if [ -f "$HOME/.mavenrc" ] ; then
    . "$HOME/.mavenrc"
  fi

fi

# OS specific support.  $var _must_ be set to either true or false.
cygwin=false;
darwin=false;
mingw=false
case "`uname`" in
  CYGWIN*) cygwin=true ;;
  MINGW*) mingw=true;;
  Darwin*) darwin=true
          #
          # Look for the Apple JDKs first to preserve the existing behaviour, and then look
          # for the new JDKs provided by Oracle.
          #
          if [ -z "$JAVA_HOME" ] && [ -L
/System/Library/Frameworks/JavaVM.framework/Versions/CurrentJDK ] ; then
            #
            # Apple JDKs
            #
            export
JAVA_HOME=/System/Library/Frameworks/JavaVM.framework/Versions/CurrentJDK/H
ome
          fi

          if [ -z "$JAVA_HOME" ] && [ -L
/System/Library/Java/JavaVirtualMachines/CurrentJDK ] ; then
            #
            # Apple JDKs
            #
            export
JAVA_HOME=/System/Library/Java/JavaVirtualMachines/CurrentJDK/Contents/Home
          fi

          if [ -z "$JAVA_HOME" ] && [ -L "/Library/Java/JavaVirtualMachines/CurrentJDK" ]
; then
            #
            # Oracle JDKs
            #
```

```
            export
JAVA_HOME=/Library/Java/JavaVirtualMachines/CurrentJDK/Contents/Home
          fi

          if [ -z "$JAVA_HOME" ] && [ -x "/usr/libexec/java_home" ]; then
            #
            # Apple JDKs
            #
            export JAVA_HOME=`/usr/libexec/java_home`
          fi
          ;;
esac

if [ -z "$JAVA_HOME" ] ; then
  if [ -r /etc/gentoo-release ] ; then
    JAVA_HOME=`java-config --jre-home`
  fi
fi

if [ -z "$M2_HOME" ] ; then
  ## resolve links - $0 may be a link to maven's home
  PRG="$0"

  # need this for relative symlinks
  while [ -h "$PRG" ] ; do
    ls=`ls -ld "$PRG"`
    link=`expr "$ls" : '.*-> \(.*\)$'`
    if expr "$link" : '/.*' > /dev/null; then
      PRG="$link"
    else
      PRG="`dirname "$PRG"`/$link"
    fi
  done

  saveddir=`pwd`

  M2_HOME=`dirname "$PRG"`/..

  # make it fully qualified
  M2_HOME=`cd "$M2_HOME" && pwd`

  cd "$saveddir"
  # echo Using m2 at $M2_HOME
fi
```

```
# For Cygwin, ensure paths are in UNIX format before anything is touched
if $cygwin ; then
  [ -n "$M2_HOME" ] &&
    M2_HOME=`cygpath --unix "$M2_HOME"`
  [ -n "$JAVA_HOME" ] &&
    JAVA_HOME=`cygpath --unix "$JAVA_HOME"`
  [ -n "$CLASSPATH" ] &&
    CLASSPATH=`cygpath --path --unix "$CLASSPATH"`
fi

# For Migwn, ensure paths are in UNIX format before anything is touched
if $mingw ; then
  [ -n "$M2_HOME" ] &&
    M2_HOME="`(cd "$M2_HOME"; pwd)`"
  [ -n "$JAVA_HOME" ] &&
    JAVA_HOME="`(cd "$JAVA_HOME"; pwd)`"
  # TODO classpath?
fi

if [ -z "$JAVA_HOME" ]; then
  javaExecutable="`which javac`"
  if [ -n "$javaExecutable" ] && ! [ "`expr \"$javaExecutable\" : '\([^ ]*\)'`" = "no" ]; then
    # readlink(1) is not available as standard on Solaris 10.
    readLink=`which readlink`
    if [ ! `expr "$readLink" : '\([^ ]*\)'` = "no" ]; then
      if $darwin ; then
        javaHome="`dirname \"$javaExecutable\"`"
        javaExecutable="`cd \"$javaHome\" && pwd -P`/javac"
      else
        javaExecutable="`readlink -f \"$javaExecutable\"`"
      fi
      javaHome="`dirname \"$javaExecutable\"`"
      javaHome=`expr "$javaHome" : '\(.*\)/bin'`
      JAVA_HOME="$javaHome"
      export JAVA_HOME
    fi
  fi
fi

if [ -z "$JAVACMD" ] ; then
  if [ -n "$JAVA_HOME"  ] ; then
    if [ -x "$JAVA_HOME/jre/sh/java" ] ; then
      # IBM's JDK on AIX uses strange locations for the executables
```

```
      JAVACMD="$JAVA_HOME/jre/sh/java"
    else
      JAVACMD="$JAVA_HOME/bin/java"
    fi
  else
    JAVACMD="`which java`"
  fi
fi

if [ ! -x "$JAVACMD" ] ; then
  echo "Error: JAVA_HOME is not defined correctly." >&2
  echo "  We cannot execute $JAVACMD" >&2
  exit 1
fi

if [ -z "$JAVA_HOME" ] ; then
  echo "Warning: JAVA_HOME environment variable is not set."
fi

CLASSWORLDS_LAUNCHER=org.codehaus.plexus.classworlds.launcher.Launcher

# For Cygwin, switch paths to Windows format before running java
if $cygwin; then
  [ -n "$M2_HOME" ] &&
    M2_HOME=`cygpath --path --windows "$M2_HOME"`
  [ -n "$JAVA_HOME" ] &&
    JAVA_HOME=`cygpath --path --windows "$JAVA_HOME"`
  [ -n "$CLASSPATH" ] &&
    CLASSPATH=`cygpath --path --windows "$CLASSPATH"`
fi

# traverses directory structure from process work directory to filesystem root
# first directory with .mvn subdirectory is considered project base directory
find_maven_basedir() {
  local basedir=$(pwd)
  local wdir=$(pwd)
  while [ "$wdir" != '/' ] ; do
    if [ -d "$wdir"/.mvn ] ; then
      basedir=$wdir
      break
    fi
    wdir=$(cd "$wdir/.."; pwd)
  done
  echo "${basedir}"
```

```
}

# concatenates all lines of a file
concat_lines() {
  if [ -f "$1" ]; then
    echo "$(tr -s '\n' ' ' < "$1")"
  fi
}

export MAVEN_PROJECTBASEDIR=${MAVEN_BASEDIR:-$(find_maven_basedir)}
MAVEN_OPTS="$(concat_lines "$MAVEN_PROJECTBASEDIR/.mvn/jvm.config")
$MAVEN_OPTS"

# Provide a "standardized" way to retrieve the CLI args that will
# work with both Windows and non-Windows executions.
MAVEN_CMD_LINE_ARGS="$MAVEN_CONFIG $@"
export MAVEN_CMD_LINE_ARGS

WRAPPER_LAUNCHER=org.apache.maven.wrapper.MavenWrapperMain

exec "$JAVACMD" \
  $MAVEN_OPTS \
  -classpath "$MAVEN_PROJECTBASEDIR/.mvn/wrapper/maven-wrapper.jar" \
  "-Dmaven.home=${M2_HOME}" "-
Dmaven.multiModuleProjectDirectory=${MAVEN_PROJECTBASEDIR}" \
  ${WRAPPER_LAUNCHER} "$@"
```

[File Ends] sem4pi-22-23-61-master\mvnw

[File Begins] sem4pi-22-23-61-master\mvnw.cmd

```
@REM ----------------------------------------------------------------------------
@REM Licensed to the Apache Software Foundation (ASF) under one
@REM or more contributor license agreements.  See the NOTICE file
@REM distributed with this work for additional information
@REM regarding copyright ownership.  The ASF licenses this file
@REM to you under the Apache License, Version 2.0 (the
@REM "License"); you may not use this file except in compliance
@REM with the License.  You may obtain a copy of the License at
@REM
@REM    https://www.apache.org/licenses/LICENSE-2.0
@REM
@REM Unless required by applicable law or agreed to in writing,
@REM software distributed under the License is distributed on an
@REM "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY
```

```
@REM KIND, either express or implied.  See the License for the
@REM specific language governing permissions and limitations
@REM under the License.
@REM ----------------------------------------------------------------------------

@REM ----------------------------------------------------------------------------
@REM Maven2 Start Up Batch script
@REM
@REM Required ENV vars:
@REM JAVA_HOME - location of a JDK home dir
@REM
@REM Optional ENV vars
@REM M2_HOME - location of maven2's installed home dir
@REM MAVEN_BATCH_ECHO - set to 'on' to enable the echoing of the batch
commands
@REM MAVEN_BATCH_PAUSE - set to 'on' to wait for a key stroke before ending
@REM MAVEN_OPTS - parameters passed to the Java VM when running Maven
@REM     e.g. to debug Maven itself, use
@REM set MAVEN_OPTS=-Xdebug -
Xrunjdwp:transport=dt_socket,server=y,suspend=y,address=8000
@REM MAVEN_SKIP_RC - flag to disable loading of mavenrc files
@REM ----------------------------------------------------------------------------

@REM Begin all REM lines with '@' in case MAVEN_BATCH_ECHO is 'on'
@echo off
@REM enable echoing my setting MAVEN_BATCH_ECHO to 'on'
@if "%MAVEN_BATCH_ECHO%" == "on"  echo %MAVEN_BATCH_ECHO%

@REM set %HOME% to equivalent of $HOME
if "%HOME%" == "" (set "HOME=%HOMEDRIVE%%HOMEPATH%")

@REM Execute a user defined script before this one
if not "%MAVEN_SKIP_RC%" == "" goto skipRcPre
@REM check for pre script, once with legacy .bat ending and once with .cmd ending
if exist "%HOME%\mavenrc_pre.bat" call "%HOME%\mavenrc_pre.bat"
if exist "%HOME%\mavenrc_pre.cmd" call "%HOME%\mavenrc_pre.cmd"
:skipRcPre

@setlocal

set ERROR_CODE=0

@REM To isolate internal variables from possible post scripts, we use another setlocal
@setlocal
```

```
@REM ==== START VALIDATION ====
if not "%JAVA_HOME%" == "" goto OkJHome

echo.
echo Error: JAVA_HOME not found in your environment. >&2
echo Please set the JAVA_HOME variable in your environment to match the >&2
echo location of your Java installation. >&2
echo.
goto error

:OkJHome
if exist "%JAVA_HOME%\bin\java.exe" goto init

echo.
echo Error: JAVA_HOME is set to an invalid directory. >&2
echo JAVA_HOME = "%JAVA_HOME%" >&2
echo Please set the JAVA_HOME variable in your environment to match the >&2
echo location of your Java installation. >&2
echo.
goto error

@REM ==== END VALIDATION ====

:init

set MAVEN_CMD_LINE_ARGS=%*

@REM Find the project base dir, i.e. the directory that contains the folder ".mvn".
@REM Fallback to current working directory if not found.

set MAVEN_PROJECTBASEDIR=%MAVEN_BASEDIR%
IF NOT "%MAVEN_PROJECTBASEDIR%"=="" goto endDetectBaseDir

set EXEC_DIR=%CD%
set WDIR=%EXEC_DIR%
:findBaseDir
IF EXIST "%WDIR%"\.mvn goto baseDirFound
cd ..
IF "%WDIR%"=="%CD%" goto baseDirNotFound
set WDIR=%CD%
goto findBaseDir

:baseDirFound
```

```
set MAVEN_PROJECTBASEDIR=%WDIR%
cd "%EXEC_DIR%"
goto endDetectBaseDir

:baseDirNotFound
set MAVEN_PROJECTBASEDIR=%EXEC_DIR%
cd "%EXEC_DIR%"

:endDetectBaseDir

IF NOT EXIST "%MAVEN_PROJECTBASEDIR%\.mvn\jvm.config" goto
endReadAdditionalConfig

@setlocal EnableExtensions EnableDelayedExpansion
for /F "usebackq delims=" %%a in ("%MAVEN_PROJECTBASEDIR%\.mvn\jvm.config")
do set JVM_CONFIG_MAVEN_PROPS=!JVM_CONFIG_MAVEN_PROPS! %%a
@endlocal & set JVM_CONFIG_MAVEN_PROPS=%JVM_CONFIG_MAVEN_PROPS%

:endReadAdditionalConfig

SET MAVEN_JAVA_EXE="%JAVA_HOME%\bin\java.exe"

set WRAPPER_JAR=""".\.mvn\wrapper\maven-wrapper.jar"""
set WRAPPER_LAUNCHER=org.apache.maven.wrapper.MavenWrapperMain

%MAVEN_JAVA_EXE% %JVM_CONFIG_MAVEN_PROPS% %MAVEN_OPTS%
%MAVEN_DEBUG_OPTS% -classpath %WRAPPER_JAR% "-
Dmaven.multiModuleProjectDirectory=%MAVEN_PROJECTBASEDIR%"
%WRAPPER_LAUNCHER% %MAVEN_CMD_LINE_ARGS%
if ERRORLEVEL 1 goto error
goto end

:error
set ERROR_CODE=1

:end
@endlocal & set ERROR_CODE=%ERROR_CODE%

if not "%MAVEN_SKIP_RC%" == "" goto skipRcPost
@REM check for post script, once with legacy .bat ending and once with .cmd ending
if exist "%HOME%\mavenrc_post.bat" call "%HOME%\mavenrc_post.bat"
if exist "%HOME%\mavenrc_post.cmd" call "%HOME%\mavenrc_post.cmd"
:skipRcPost
```

```
@REM pause the script if MAVEN_BATCH_PAUSE is set to 'on'
if "%MAVEN_BATCH_PAUSE%" == "on" pause

if "%MAVEN_TERMINATE_CMD%" == "on" exit %ERROR_CODE%

exit /B %ERROR_CODE%
```

[File Ends] sem4pi-22-23-61-master\mvnw.cmd

[File Begins] sem4pi-22-23-61-master\pom.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="http://maven.apache.org/POM/4.0.0"
        xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/xsd/maven-4.0.0.xsd">
    <modelVersion>4.0.0</modelVersion>

    <groupId>eapli</groupId>
    <artifactId>base</artifactId>
    <version>1.4.0-SNAPSHOT</version>
    <packaging>pom</packaging>

    <properties>
                <eapli.framework.core.version>v21.1.0-
RELEASE</eapli.framework.core.version>
                <eapli.framework.authz.version>v21.1.0-
RELEASE</eapli.framework.authz.version>
                <eapli.framework.pubsub.version>v21.1.0-
RELEASE</eapli.framework.pubsub.version>

        <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
        <project.reporting.outputEncoding>UTF-8</project.reporting.outputEncoding>
        <maven.compiler.source>11</maven.compiler.source>
        <maven.compiler.target>11</maven.compiler.target>
        <java.version>11</java.version>
    </properties>

    <modules>
        <module>base.app.backoffice.console</module>
        <module>base.app.user.console</module>
        <module>base.app.other.console</module>
        <module>base.app.common.console</module>
        <module>base.app.bootstrap</module>
        <module>base.bootstrappers</module>
        <module>base.core</module>
```

```
    <module>base.infrastructure.application</module>
    <module>base.persistence.impl</module>
</modules>

<dependencies>
            <dependency>
                <groupId>org.bitbucket.pag_isep.eaplifframework</groupId>
                <artifactId>eapli.framework.core</artifactId>
                <version>${eapli.framework.core.version}</version>
            </dependency>
            <dependency>
                <groupId>org.bitbucket.pag_isep.eaplifframework</groupId>
                <artifactId>eapli.framework.infrastructure.authz</artifactId>
                <version>${eapli.framework.authz.version}</version>
            </dependency>
            <dependency>
                <groupId>org.bitbucket.pag_isep.eaplifframework</groupId>
                <artifactId>eapli.framework.infrastructure.pubsub</artifactId>
                <version>${eapli.framework.pubsub.version}</version>
            </dependency>

            <!-- keep junit4 for now -->
            <dependency>
                <groupId>org.junit.vintage</groupId>
                <artifactId>junit-vintage-engine</artifactId>
                <version>5.8.2</version>
                <scope>test</scope>
            </dependency>
            <!-- support junit5 -->
            <dependency>
                <groupId>org.junit.jupiter</groupId>
                <artifactId>junit-jupiter-api</artifactId>
                <version>5.8.2</version>
                <scope>test</scope>
            </dependency>

    <dependency>
      <groupId>com.h2database</groupId>
      <artifactId>h2</artifactId>
      <version>1.4.200</version>
      <scope>runtime</scope>
    </dependency>
    <dependency>
                <groupId>javax.xml.bind</groupId>
```

```
                <artifactId>jaxb-api</artifactId>
                <version>2.3.1</version>
            </dependency>

            <!-- Project Lombok -->
            <dependency>
                <groupId>org.projectlombok</groupId>
                <artifactId>lombok</artifactId>
                <version>1.18.24</version>
                <scope>provided</scope>
            </dependency>
    </dependencies>

    <dependencyManagement>
       <dependencies>
       </dependencies>
    </dependencyManagement>

    <repositories>
            <repository>
                <id>jitpack.io</id>
                <url>https://jitpack.io</url>
            </repository>
    </repositories>

        <build>
            <plugins>
                <!--
                <plugin>
                    <groupId>org.pitest</groupId>
                    <artifactId>pitest-maven</artifactId>
                    <version>1.6.7</version>
                </plugin>
                -->

                <plugin>
                    <groupId>org.apache.maven.plugins</groupId>
                    <artifactId>maven-compiler-plugin</artifactId>
                    <version>3.8.1</version>
                    <configuration>
                        <release>11</release>
                        <annotationProcessorPaths>
                            <path>
```

```
        <groupId>org.projectlombok</groupId>
                                                <artifactId>lombok</artifactId>
                                                <version>1.18.24</version>
                                        </path>
                                </annotationProcessorPaths>
                        </configuration>
                </plugin>

                <plugin>
                        <groupId>org.projectlombok</groupId>
                        <artifactId>lombok-maven-plugin</artifactId>
                        <version>1.18.20.0</version>
                        <executions>
                                <execution>
                                        <id>delombok</id>
                                        <phase>generate-sources</phase>
                                        <goals>
                                                <goal>delombok</goal>
                                        </goals>
                                        <configuration>

        <sourceDirectory>${project.basedir}/src/main/java</sourceDirectory>

        <outputDirectory>${project.build.directory}/delombok</outputDirectory>

        <addOutputDirectory>false</addOutputDirectory>
                                                <formatPreferences>

        <javaLangAsFQN>skip</javaLangAsFQN>
                                                </formatPreferences>
                                                <verbose>false</verbose>
                                        </configuration>
                                </execution>
                                <!-- This is for delomboking also your tests sources.
<execution> <id>test-delombok</id>
                                                <phase>generate-test-sources</phase>
<goals> <goal>testDelombok</goal> </goals>
                                                <configuration> <verbose>false</verbose>
</configuration> </execution> -->
                        </executions>
                </plugin>

                <plugin>
                        <groupId>org.codehaus.mojo</groupId>
```

```
                                <artifactId>versions-maven-plugin</artifactId>
                                <version>2.5</version>
                                <configuration>

        <generateBackupPoms>false</generateBackupPoms>
                                </configuration>
                            </plugin>
                        </plugins>
        </build>
</project>
```

[File Ends] sem4pi-22-23-61-master\pom.xml

[File Begins] sem4pi-22-23-61-master\readme.md

Base Management

```
 _____
|  _ \
| |_) | __ _ ___  ___
|  _ < / _` / __|/ _ \
| |_) | (_| \__ \  __/
|____/ \__,_|___/\___|
```

Engenharia de Aplicações (EAPLI)

Polythecnic of Porto, School of Engineering

This application is part of the lab project for the course unit EAPLI. Parts of the application were developed to show specific approaches or techniques; as such, the overall application is not consistent in terms of design. for production ready code this would obvisously be a problem as we should strive for consistency. In this case, it is acceptable as the inconsistencies are meant to provide samples of different valid approaches.

Base logo created with [kammerl ascii signature](https://www.kammerl.de/ascii/AsciiSignature.php) using font "big"

Who do I talk to?

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Build

make sure Maven is installed and on the PATH

If using an Oracle database, you will need to change your maven settings for downloading the Oracle drivers. see <https://blogs.oracle.com/dev2dev/entry/how_to_get_oracle_jdbc#settings> for more information.

run script

```
rebuild-all.bat
```

Running

make sure a JRE is installed and on the PATH

run script

    run-backoffice

or

    run-user.bat

Project structure

- eapli.base.consoleapp

  - presentation using console
  - Main class
  - application properties in resource folder

- eapli.base.bootstrap
  - bootstrap data. should be ignored on a "real" instalation

- eapli.base.core
  - use case controllers, model, and persistence

Architecture

The application follows a typical layered approach

    UI -> Controller -+-> Domain
                      | ^
                      | |
                      +-> Repositories

Domain objects with persistence knowledge or not

Two different approaches are possible:

- pure domain objects without any knowledge of the persistence
- domain objects that can save and load thenselves from persistence (thus, an Active Record)

In the first case, the controller is responsible for obtaining the domain objects from the repository, asking the domain objects to perform the business logic and then pass them back to the repository. in this case, the domain objects can "easily"

be tested as they do not depend on any other package this gets trickier when we need/want to have lazy load of collections...

In the second case, the controller asks the domain object class to load a certain instance, asks that object to perform the business operation and then asks the object to save itself back to the database

Passing domain objects to the UI or not

The decision is to use domain objects outside of the controllers boundary. One could argue that domain objects should be known only "inside" the application boundary and as such other data structures should be returned to outside layers, i.e., DTO (Data Transfer Objects).

Performing calculations in memory or directly at the persistence layer

Both approaches have advantages and disavantages:

- in memory

  - advantages

    - allows the use of business logic in code
    - disavantages performance may be poor

- at persistence layer

  - advantages

    - use of aggregated SQL functions is straigth forward
    - performance

  - disavantages

    - complicated business logic is hard to implement

//TODO provide one example of each approach.

See also <http://www.martinfowler.com/articles/dblogic.html>

Factoring out common behaviour

use services at the application or domain layer

Can controllers call other controllers?

it is best if they call application services

Should the UI/controller create domain objects directly

Should the rules for the Creator pattern be fully enforced, e.g., the responsibility to create a Payment should be of Expense, or can the controller/UI create a Payment and pass it to the Expense?

How to reuse behavior betwen controllers

Factor out common behaviour in an application service.

When showing movements gruped by type, who performs the sum operation? UI, Controller or Domain object?

the UI might not be smart enough to compute the total sum with enough precision, and would carry a burden for the computer running the interface

the Controller might indeed perform such calculation as it has all the data is needs for a short period of time, but it is not the controller function to perform mathematical operations

the domain object might indeed be the very best resource to calculate the sum for each expense type, but it would not make sense to delegate the domain object to the interface.

When showing movements gruped by type, should types with no values also appear?

this can be another strategy

References and bibliography

Start by reading the essential material listed in [EAPLI framework](https://bitbucket.org/pag_isep/eapli.framework/src/master/README.md)

JPA

- [Entities or DTOs in JPA Queries](https://thoughts-on-java.org/entities-dtos-use-projection/)
- [Primary key mapping](https://thoughts-on-java.org/primary-key-mappings-jpa-hibernate/)

Other useful readings

T.B.D.

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