DTU

KRAVSPECIFIKATION & PROGRAMDESIGN

02161 SOFTWARE ENGINEERING 1

Afleveringsgruppe 13:

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github.com/rwiuff/02161ExamProject

19. marts 2023

INDHOLD

Kravspecifikation & Programdesign
Kursus 02161
Software Engineering 1
19. marts 2023

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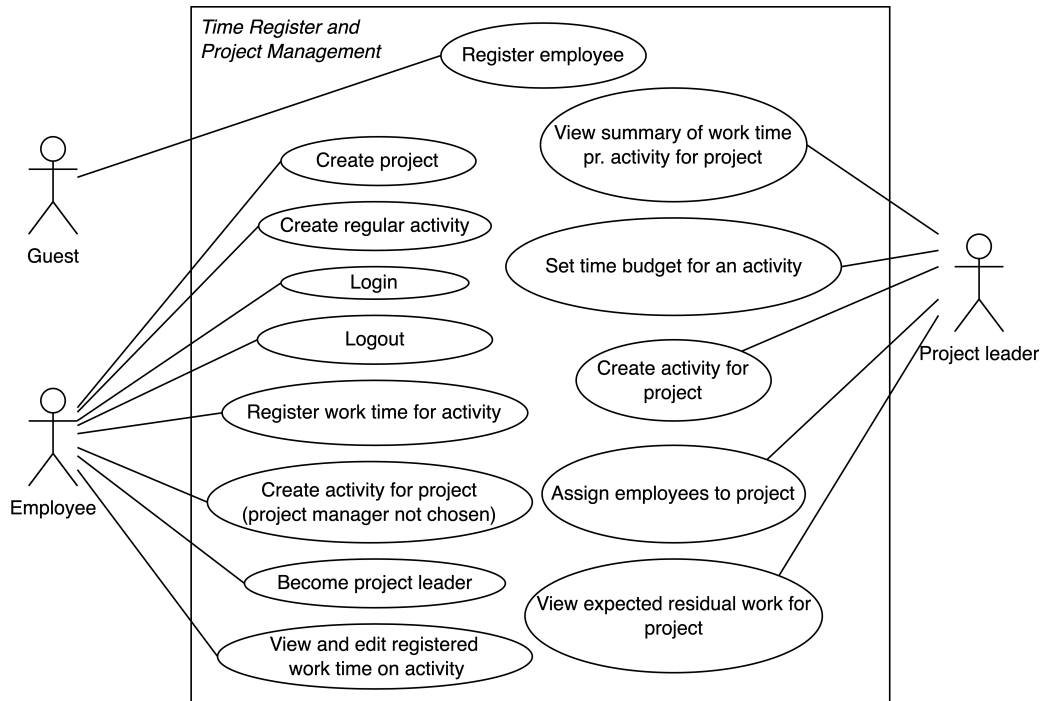# 1 | KRAVSPECIFIKATION

1.1. INDLEDNING

Denne del af eksamensopgaven dokumenterer vores planlægningsproces, der skal tilvejebringe et tids/projektstyrings-program der møder Softwarehuset A/S' ønsker. Det gøres ved hjælp af ideer og modeller fra Behavior- og Test Driven Development, der ved hjælp af brainstorming lader os gå fra kundeønsker til scenarier, fra scenarier til tests og fra tests til kode (tests og kode i næste rapport), alt sammen med rod i beskrivelsen af Softwarehusets ønsker.

1.2. ORDLISTE

Medarbejder	*[Employee]* En medarbejder er en person ansat i Softwarehuset A/S, som er tildelt aktiviteter. En medarbejder kan udføre aktiviteter og registrere arbejdstid brugt på aktiviteter, uagtet om medarbejderen er tilknyttet aktiviteten. Hver medarbejder har et medarbejder ID.
Projekt aktivitet	*[Project activity]* En delopgave af et projekt. Hver aktivitet er tilknyttet en medarbejder.
Fast aktivitet	*[Regular activity]* Aktivitet der ikke kan pålægges et projekt. F.eks. ferie, sygdom, kurser.
Projekt	*[Project]* Udviklingsarbejde udført for en kunde (eksternt) eller for Softwarehuset A/S (internt). Et projekt administreres af en projektleder og er inddelt i aktiviteter. Hvert projekt har et projektnummer.
Kunde	*[Customer]* En ekstern entitet som bestiller og er modtager af projekter.
Projektleder	*[Project leader]* En medarbejder der har ret til at oprette og tildele aktiviteter for et givent projekt.
Softwarehuset A/S	*[Softwarehuset A/S]* Entitet som er modtager af et projekt, hvis projektet er internt.
Medarbejder initialer	*[Employee initials]* Unik identifikation for hver enkelt medarbejder, bestående af fire bogstaver. To første fra fornavn efterfulgt af to første fra efternavn. F.eks. rawi. Hvis initialer allerede er taget, vælges bogstav et og tre i efternavn, derefter et og fire, osv.
Projektnummer	*[Project number]* Identifikation for hvert enkelt projekt. Har formen årstal efterfulgt af et fireciffret løbenummer. F.eks. 23001
Budgetteret tid	*[Time budget]* En aktivitets estimerede antal hele timer.
Arbejdstid	*[Work time]* Mængde tid i inkrementer af halve timer, brugt på en aktivitet. Kan registreres af den medarbejder som har brugt arbejdstid på en given aktivitet.
Start- og sluttid	*[start- and end week]* En periode med opløsning på uge-niveau til aktiviteter. Begge tider angives som år og uge, ved formatet ÅÅUU. F.eks. 2304 for uge 4 i 2023. En starttid afgrænser starten af en given uge, en sluttid afgrænser ved slutningen af en given uge. Start- og sluttid kan derfor godt være ens.

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1.3. USE CASE DIAGRAMMER

Figur 1: Use case diagram for programmet **Timeregistrering og projektstyring** hvori de tre aktører inkluderet er Gæst, Medarbejder og Projektleder.

Tabel 1: *Todo usecases*

Detaljeret use case	Cucumber feature
Opret Medarbejder	Listing 1
Log in	Listing 2
Log ud	Listing 3
Opret projekt	Listing 4
Opret fast aktivitet	Listing 5
Opret Aktivitet for projekt uden projektleder	Listings 6 og 7
Opret Aktivitet for projekt med projektleder	Listing 8
Påtag projektleder stilling	Listing 9
FORSLAG: Registrer arbejdstid på projekt aktivitet	Listing 10
FORSLAG: Se egen registreret arbejdstid på projekt aktiviteter	Listing 11
Se og rediger i registreret arbejdstid på aktivitet	Listing 12
Se oversigt over arbejdstid pr. aktivitet og projekt	Listing 13
Anfør budgetteret tid til løsning af aktivitet	Listing 14
Tilknyt medarbejdere til projekt	Listing 15
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1.4. DETALJEREDE USE CASES

Opret medarbejder

Listing 1: Use case: Opret medarbejder

```
1  Feature: Register employee
2  Description: A new employee is added to the application
3  Actors: Guest
4
5  #MAIN SCENARIOS
6  Scenario: 1. Register an employee
7      Given a guest is logged in
8      And there is an employee with first name "Michael" last name "Laudrup" initials "mila"
9      When the user registers the employee
10     Then an employee with
       ↪  first name "Michael" last name "Laudrup" initials "mila" exists in the application
11
12 Scenario: 2. Employee already exist
13     Given a guest is logged in
14     And the application has
       ↪  a registered employee with first name "Michael" last name "Laudrup" initials "mila"
15     And there is an employee with first name "Michael" last name "Laudrup" initials "mila"
16     When the user registers the employee
17     Then the error message "Medarbejder med initialer "mila" ekisisterer allerede" is given
18
19 #ALTERNATIVE SCENARIOS
20 Scenario: 1a. A name is required to register an employee
21     Given a guest is logged in
22     And there is a employe with name "" initials "mila"
23     When the user registers the employee
24     Then the error message "Et navn mangler" is given
25
26 Scenario: 1b. Initials is required to register an employee
27     Given a guest is logged in
28     And there is a employe with first name "Michael" last name "Laudrup" initials ""
29     When the user registers the employee
30     Then the error message "Initialer mangler" is given
31
32 Scenario: 2a. Employees with same name can be registered
33     Given a guest is logged in
34     And there is an employee
       ↪  in the application with first name "Michael" last name "Laudrup" initials "mila"
35     And there is a employe with first name "Michael" last name "Laudrup" initials "milb"
36     When the user registers the employee
37     Then an employee with
       ↪  first name "Michael" last name "Laudrup" initials "milb" exists in the application
```

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Log in

Listing 2: Use case: Medarbejder log in

```
1  Feature: Employees can login
2  Description: An employee logs in to the application
3  Actors: employee
4
5  #MAIN SCENARIOS
6  Scenario: 1. Login using initials
7      Given a guest is logged in
8      And there is an employee
       ↪  in the application with first name "Michael" last name "Laudrup" initials "mila"
9      When the user logs in using initials "mila"
10     Then the user is
       ↪  logged in as an employee with first name "Michael" last name "Laudrup" initials "mila"
11
12 Scenario: 2. Employee does not exist
13     Given a guest is logged in
14     When the user logs in using initials "mila"
15     Then the error message "Ukendt medarbejder" is given
16
17 #ALTERNATIVE SCENARIOS
18 Scenario: 1a. Login is case insensitive
19     Given a guest is logged in
20     And there is an employee
       ↪  in the application with first name "Michael" last name "Laudrup" initials "mila"
21     When the user logs in using initials "MiLa"
22     Then the user is
       ↪  logged in as an employee with first name "Michael" last name "Laudrup" initials "mila"
```

Log ud

Listing 3: Use case: Medarbejder log ud

```
1  Feature: Employees can log out
2  Description: An employee logs out of the application
3  Actors: employee
4
5  #MAIN SCENARIOS
6  Scenario: 1. Logout
7      Given a employee is logged in
8      When the user logs out
9      Then the user is logged in as a guest
10
11 #ALTERNATIVE SCENARIOS
12 ...
```

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Opret projekt

Listing 4: Use case: Opret projekt

```
1  Feature: Creating a project
2  Description: An employee creates a project in the application
3  Actors: employee
4
5  #MAIN SCENARIOS
6  Scenario: 1. Creating a project
7      Given a employee is logged in
8      And the year is 2023
9      And there is a project with title "Projektplanlægning"
10     When the user creates the project in the application
11     Then a
    ↪  project with title "Projektplanlægning" projectnumber 23001 exists in the application
12
13  #ALTERNATIVE SCENARIOS
14  Scenario: 1a. A guest is not able to create a project
15      Given a guest is logged in
16      And the year is 2023
17      And there is a project with title "Projektplanlægning"
18      When the user creates the project in the application
19      Then the error message "Kun medarbejdere kan oprette et projekt" is given
20
21  Scenario: 1b. A title is required to create a project
22      Given an employee is logged in
23      And there is a project with title ""
24      When the user creates the project in the application
25      Then the error message "En titel mangler" is given
26
27  Scenario: 1c. A employee can self assign as projectleader on a project
28      Given an employee is logged in
29      And a project exist in the application with title "Projektplanlægning" projectnumber 23001
30      When the user takes the role as projectleader on project 23001
31      Then the user is the projectleader on project 23001
32
33  Scenario: 1d. A project can be an internal project
34      Given an employee is logged in
35      And a project exist in the application with title "Projektplanlægning" projectnumber 23001
36      When the user sets the project as an internal project
37      Then the project is an internal project
38
39  Scenario: 1e. A project can have a start week
40      Given an employee is logged in
41      And a project exist in the application with title "Projektplanlægning" projectnumber 23001
42      When the user sets the start week to 2304
43      Then the project has start week 2304
```

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Opret fast aktivitet

Listing 5: Use case: Opret fast aktivitet

```
1   Feature: Creating a regular activity
2   Description: An employee creates a regular activity in the application
3   Actors: employee
4
5   #MAIN SCENARIOS
6   Scenario: 1. Creating a regular activity
7       Given a employee is logged in
8       And there is a regular activity with title "Ferie" start week 2304 end week 2306
9       When the user creates the regular activity in the application
10      Then the user has a regular activity with title "Ferie" start week 2304 end week 2306
11
12  #ALTERNATIVE SCENARIOS
13  Scenario: 1a. A guest is not able to create a regular activity
14      Given a guest is logged in
15      And there is a regular activity with title "Ferie" start week 2304 end week 2306
16      When the user creates the regular activity in the application
17      Then the error message "Kun medarbejdere kan oprette en fast aktivitet" is given
18
19  Scenario: 1b. A title is required to create a regular activity
20      Given an employee is logged in
21      And there is a regular activity with title "" start week 2304 end week 2306
22      When the user creates the regular activity in the application
23      Then the error message "En titel mangler" is given
24
25  Scenario: 1c. A start week is required to create a regular activity
26      Given an employee is logged in
27      And there is a regular activity with title "Ferie" start week "" end week 2306
28      When the user creates the regular activity in the application
29      Then the error message "En start uge mangler" is given
30
31  Scenario: 1d. A end week is required to create a regular activity
32      Given an employee is logged in
33      And there is a regular activity with title "Ferie" start week 2304 end week ""
34      When the user creates the regular activity in the application
35      Then the error message "En slut uge mangler" is given
36
37  Scenario: 1e. Start week needs to be before end week
38      Given an employee is logged in
39      And there is a regular activity with title "Ferie" start week 2306 end week 2304
40      When the user creates the regular activity in the application
41      Then the error message "Start uge skal være før slut uge" is given
42
43  Scenario: 1f. Same start and end week is allowed
44      Given an employee is logged in
45      And there is a regular activity with title "Ferie" start week 2306 end week 2306
46      When the user creates the regular activity in the application
47      Then the user has a regular activity with title "Ferie" start week 2306 end week 2306
```

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Opret projekt aktivitet for projekt uden projektleder

*Listing 6: Use case: Opret projekt aktivitet for projekt uden projektleder. Fortsætter på Listing *

```gherkin
1   Feature: Creating a project activity for project without projectleader
2   Description: An employee creates a project activity for a project without a projectleader
3   Actors: employee
4
5   #BACKGROUND
6   Background:
7       Given there is an employee
        ↪  in the application with first name "Michael" last name "Laudrup" initials "mila"
8       And a project with title "Video game" projectnumber 23001 exists in the application
9
10  #MAIN SCENARIOS
11  Scenario: 1. Creating a project activity
12      Given the user is logged in as "mila"
13      And there is a project activity with title "Graphic design"
14      When the user assigns the project activity to project 23001
15      Then the project 23001 has a project activity with title "Graphic design"
16
17  Scenario: 2. A timebudget can be added to a project activity
18      Given the user is logged in as "mila"
19      And an activity with the title "Graphics design" exists within the project 23001
20      When the user sets the
        ↪  timebudget 50 hours on project activity with title "Graphic design" on project 23001
21      Then the
        ↪  project activity with title "Graphic design" on project 23001 has timebudget 50 hours
22
23  Scenario: 3. A start week can be set to a project activity
24      Given the user is logged in as "mila"
25      And an activity with the title "Graphics design" exists within the project 23001
26      When the user sets
        ↪  the start week 2304 on project activity with title "Graphic design" on project 23001
27      Then the project activity with title "Graphic design" on project 23001 has start week 2304
28
29  Scenario: 4. A end week can be set to a project activity
30      Given the user is logged in as "mila"
31      And an activity with the title "Graphics design" exists within the project 23001
32      When the user sets
        ↪  the end week 2304 on project activity with title "Graphic design" on project 23001
33      Then the project activity with title "Graphic design" on project 23001 has end week 2304
```

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Listing 7: Fortsat fra Listing 6. Use case: Opret projekt aktivitet for projekt uden projektleder

```
34  #ALTERNATIVE SCENARIOS
35  Scenario: 1a. A guest is not able to create a project activity
36      Given a guest is logged in
37      And there is a project activity with title "Graphic design"
38      When the user creates the project activity in the application
39      Then the error message "Login krævet" is given
40
41  Scenario: 1b. A project activity title is unique in a project
42      Given the user is logged in as "mila"
43      And an activity with the title "Graphics design" exists within the project 23001
44      And there is a project activity with title "Graphic design"
45      When the user creates the project activity in the application
46      Then the error message "Projekt aktivitet findes allerede" is given
47
48  Scenario: 2a. A guest is not able to set a timebudget on a project activity
49      Given a guest is logged in
50      And an activity with the title "Graphics design" exists within the project 23001
51      When the user sets the
        ↪    timebudget 50 hours on project activity with title "Graphic design" on project 23001
52      Then the error message "Login krævet" is given
53
54  Scenario: 3a. A guest is not able to set a start week can be set to a project activity
55      Given the user is logged in as "mila"
56      And an activity with the title "Graphics design" exists within the project 23001
57      When the user sets
        ↪    the start week 2304 on project activity with title "Graphic design" on project 23001
58      Then the error message "Login krævet" is given
59
60  Scenario: 3b. A start week needs to be before or same as end week
61      Given the user is logged in as "mila"
62      And an activity with the title "Graphics design" exists within the project 23001
63      When the user sets the start week
        ↪    2304 end week 2303 on project activity with title "Graphic design" on project 23001
64      Then the error message "Start tid skal være før eller ens med sluttid" is given
65
66  Scenario: 4a. A guest is not able to set a end week can be set to a project activity
67      Given the user is logged in as "mila"
68      And an activity with the title "Graphics design" exists within the project 23001
69      When the user sets
        ↪    the end week 2304 on project activity with title "Graphic design" on project 23001
70      Then the error message "Login krævet" is given
71
72  Scenario: 4b. A end week needs to be after or same as start week
73      Given the user is logged in as "mila"
74      And an activity with the title "Graphics design" exists within the project 23001
75      When the user sets the start week
        ↪    2304 end week 2303 on project activity with title "Graphic design" on project 23001
76      Then the error message "Start tid skal være før eller ens med sluttid" is given
```

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Opret projekt aktivitet for projekt med projektleder

Listing 8: Use case: Opret projekt aktivitet for projekt med projektleder

```
1  Feature: Creating a project activity for project with assigned projectleader
2  Description: An projectleader creates a project activity for a project
3  Actors: employee, projectleader
4
5  #BACKGROUND
6  Background:
7      Given there is an employee
       ↪ in the application with first name "Michael" last name "Laudrup" initials "mila"
8      And there is an employee
       ↪ in the application with first name "Mette" last name "Frederiksen" initials "mefr"
9      And a project with
       ↪ title "Video game" projectnumber 23001 projectleader "mefr" exists in the application
10
11 #MAIN SCENARIOS
12 Scenario: 1. Projectleader can create a project activity
13     Given the user is logged in as "mefr"
14     And there is a project activity with title "Graphic design"
15     When the user creates the project activity in the application
16     Then the project 23001 has a project activity with title "Graphic design"
17
18 ... (flere tests ligesom for projekt uden projektleder)
19
20 #ALTERNATIVE SCENARIOS
21 Scenario: 1a. A employee is not able to create a project activity
22     Given the user is logged in as "mila"
23     And there is a project activity with title "Graphic design"
24     When the user creates the project activity in the application
25     Then the error message "Kun projektlederen kan redigere denne projekt aktivitet" is given
26
27 ... (flere tests ligesom for projekt uden projektleder)
28
```

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Påtag projektlederstilling

Listing 9: *Use case: Medarbejder udpeger sig som projektleder*

```
1   Feature: Take on the role of project manager
2   Description:
    ↪  An employee can, when there is not already one, appoint themselves as project manager.
3   Actors: Employees
4
5   #BACKGROUND
6   Background:
7       Given there is an employee
        ↪  in the application with first name "Michael" last name "Laudrup" initials "mila"
8       And a project with title "Video game" projectnumber 23001 exists in the application
9
10  #MAIN SCENARIOS
11  Scenario: An
    ↪  employee appoints himself as project manager on a project where there is not already one.
12      Given The user is logged in as "mila"
13      And There is no project manager for the project with title "Video game"
14      When The employee appoints himself as a project manager
15      Then The employee is project manager on the project
16
17  #ALTERNATIVE SCENARIOS
18  Scenario:
    ↪  An employee appoints himself as project manager on a project where there is already one.
19      Given The user is logged in as "mila"
20      And There is a project manager on
        ↪  the project with title "Video game" in the collection of projects that is not the user
21      When The employee appoints himself as a project manager
22      Then A PositionAlreadyFilledException is thrown
23
24  Scenario: An employee appoints himself as project manager on a project that does not exist
25      Given: The user is logged in as "mila"
26      And A project with title "Not A Project" does not exist in the collection of projects
27      When The employee appoints himself as a project manager
28      Then A NoSuchProjectException is thrown
```

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Registrer arbejdstid på projekt aktivitet !!! FORSLAG !!!

Listing 10: Use case: Registrer arbejdstid på projekt aktivitet

```
1  # !!! FORSLAG !!! (kasper)
2  Feature: Register worktime on project activity
3  Description: An employee registers worktime to a project activity.
4  Actors: employee
5
6  #BACKGROUND
7  Background:
8      Given there is an employee
         ↪ in the application with first name "Michael" last name "Laudrup" and initials "mila"
9      And a project with title "Video game" projectnumber 23001 exists in the application
10     And an activity with the title "Graphics design" exists within the project "Video Game"
11     And the user is logged in as "mila"
12
13 #MAIN SCENARIOS
14 Scenario: 1. Register worktime on project activity
15     When the user registers
        ↪ worktime 6 hours to project activity with title "Graphics design" in project 23001
16     Then the user has 6 hours
        ↪ registered worktime on project activity with title "Graphics design" in project 23001
17
18 #ALTERNATIVE SCENARIOS
19 Scenario: 1.a Register worktime in half-hour increments
20     When the user registers
        ↪ worktime 6.5 hours to project activity with title "Graphics design" in project 23001
21     Then the user has 6.5 hours
        ↪ registered worktime on project activity with title "Graphics design" in project 23001
22
23 Scenario: 1.b Project not found
24     When the user registers
        ↪ worktime 6 hours to project activity with title "Graphics design" in project 23002
25     Then the error message "Ukendt projekt" is given
26
27 Scenario: 1.b Project activity not found
28     When the user
        ↪ registers worktime 6 hours to project activity with title "Regndans" in project 23001
29     Then the error message "Ukendt projekt aktivitet" is given
```

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Se registreret arbejdstid på projekt aktivitet !!! FORSLAG !!!

Listing 11: Use case: Se registreret arbejdstid på projekt aktivitet

```
1   # !!! FORSLAG !!! (kasper)
2   Feature: View worktime on project activity
3   Description: An employee registers worktime to a project activity.
4   Actors: employee
5
6   #BACKGROUND
7   Background:
8       Given there is an employee
        ↪ in the application with first name "Michael" last name "Laudrup" and initials "mila"
9       And a project with title "Video game" projectnumber 23001 exists in the application
10      And an activity with the title "Graphics design" exists within the project "Video Game"
11      And the employee with initials "mila" has registered
        ↪ worktime 6 hours to project activity with title "Graphics design" in project 23001
12      And the employee with initials "mila" has registered
        ↪ worktime 10 hours to project activity with title "Graphics design" in project 23001
13
14  #MAIN SCENARIOS
15  Scenario: 1. Employee can get a list of worktime registrations for a project activity
16      Given the user is logged in as "mila"
17      When a list of registered
        ↪ worktime registrations is requested for activity "Graphics design" in project 23001
18      Then a list with 2 items is returned
19
20  Scenario: 2. Employee can get a total of worktime registrations for a project activity
21      Given the user is logged in as "mila"
22      When a total
        ↪ of registered worktime is requested for activity "Graphics design" in project 23001
23      Then 16 hours is returned
24
25  #ALTERNATIVE SCENARIOS
26  Scenario: 1a. Guests is unable to get a list of worktime registrations for a project activity
27      Given a guest is logged in
28      When a list of registered
        ↪ worktime registrations is requested for activity "Graphics design" in project 23001
29      Then the error message "Login kræves" is given
30
31  Scenario: 2a. Guests is unable to get a total of worktime registrations for a project activity
32      Given a guest is logged in
33      When a total
        ↪ of registered worktime is requested for activity "Graphics design" in project 23001
34      Then the error message "Login kræves" is given
```

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Se og rediger i registreret arbejdstid på aktivitet

Listing 12: Use case: Se og rediger i registreret arbejdstid på aktivitet

```
1  Feature: View and edit registered worktime on activity
2  Description:
   ↪  It should be possible for an employee to view the amount of worktime used on any activity.
3  Furthermore, the employee should be able to edit the registered worktime.
4  Actors: employee
5
6  #BACKGROUND
7  Background:
8      Given there is an employee
       ↪  in the application with first name "Michael" last name "Laudrup" and initials "mila"
9      And a project with title "Video game" exists in the application
10     And an activity with the title "Graphics design" exists within the project "Video Game"
11     And 24 hours
       ↪  of worktime registered on "Graphics Design" within "Video game" for "Michael Laudrup"
12
13 #MAIN SCENARIOS
14 Scenario: View registered worktime on activity
15     Given the employee "Michael Laudrup" wishes to view registered worktime
16     And a project menu option "Video game" is chosen
17     When the activity menu option "Graphics Design" is chosen
18     Then the text "24 hours of registered worktime" appears
19
20 Scenario: Edit registered worktime on activity
21     Given the employee "Michael Laudrup" wishes to edit registered worktime
22     And a project menu option "Video game" is chosen
23     And the activity menu option "Graphics Design" is chosen
24     When the registered worktime is changed to 48 hours
25     Then the registered
       ↪  worktime for "Graphics design" within "Video game" for "Michael Laudrup" is 48 hours
26
27 #ALTERNATIVE SCENARIOS
28 Scenario: No registered worktime exists
29     Given an activity with the title "Animation" exists within the project "Video Game"
30     And the employee "Michael Laudrup" wishes to view the reigstered worktime
31     And a project menu option "Video Game" is chose
32     When the activity menu option "Animation" is chosen
33     Then the text "No worktime is registered on this activity"
```

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Se oversigt over registreret arbejdstid pr. aktivitet

Listing 13: Use case: Se og rediger i registreret arbejdstid på aktivitet

```
1  Feature: View summary of registered worktime pr. activity
2  Description: ...
3  Actors: Project manager
4
5  #BACKGROUND
6  Background:
7      Given there is an employee
        ↪  in the application with first name "Michael" last name "Laudrup" and initials "mila"
8      And a project with title "Video game" exists in the application
9      And multiple activities with registered worktime for "Michael Laudrup" exists
10
11 #MAIN SCENARIO
12 Scenario: No activites created for project
13     Given there
        ↪  is an employee in the application with the name "Lars Svendsen" and initials "lasv"
14     And employee "Lars Svendsen" is assigned the project "Video Game" as project manager
15     When "Lars Svendsen" wishes to view a summary of the worktime for the project "Video game"
16     Then a summary of worktime for all the activites under the project "Video game" is shown
17
18 #ALTERNATIVE SCENARIO
19 Scenario:
20     When "Michael
        ↪  Laudrup" wishes to view a summary of the worktime for the project "Video game"
21     Then the error message "Only the project manager can access this feature" appears
22
23 Scenario:
24     Given a project with title "Web development" exists in the application
25     And there
        ↪  is an employee in the application with the name "Lars Svendsen" and initials "lasv"
26     And employee "Lars Svendsen" is assigned the project "Video Game" as project manager
27     When "Lars
        ↪  Svendsen" wishes to view a summary of the worktime for the project "Web development"
28     Then an error message "No activites are created for this project"
```

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Anfør budgetteret tid til løsning af aktivitet

Listing 14: Budgetteret tid til aktivitet

```gherkin
1  Feature: Set timebudget regular activity
2  Description: Project leader assigns the timebugdet for a given activity
3  Actors: Project manager
4
5  #MAIN SCENARIO
6  Scenario: Project manager assigns a timebudget
7      Given there is an employee
         ↪ in the application with first name "Michael" last name "Laudrup" and initials "mila"
8      And a project with title "Video game" projectnumber "23001" exists in the application
9      And employee "mila" is assigned the project "Video Game" as project manager
10     And an activity with the title "Graphics design" exists within the project "Video Game"
11     And the user is logged in as "mila"
12     And the user assigns a timebudget of "32" hours to the activity "Graphics design"
13     Then the activity "Graphics design" has a timebudget of "32" hours
14
15  #ALTERNATIVE SCENARIOS
16  Scenario: Employee assigns timebuget
17     Given there is an employee
         ↪ in the application with first name "Michael" last name "Laudrup" and initials "mila"
18     And a project with title "Video game" projectnumber "23001" exists in the application
19     And an activity with the title "Graphics design" exists within the project "Video Game"
20     And the user is logged in as "mila"
21     And the user assigns a timebudget of "32" hours to the activity "Graphics design"
22     Then the activity
         ↪ "Graphics design" returns error message "Only project managers can assign timebudgets"
```

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Tilknyt medarbejdere til projekt

Listing 15: Tilknyt medarbejder

```
1  Feature: Assign employees onto projekt
2  Description: Project leader assigns emplyees for a projekt
3  Actors: Project manager
4
5  #MAIN SCENARIO
6  Scenario: Project manager assigns an employee
7      Given there is an employee
           ↪  in the application with first name "Michael" last name "Laudrup" and initials "mila"
8      And a project with title "Video game" projectnumber "23001" exists in the application
9      And employee "mila" is assigned the project "Video Game" as project manager
10     And the user is logged in as "mila"
11     And there is an employee
           ↪  in the application with first name "Brian" last name "Laudrup" and initials "brla"
12     And "mila" assigns "brla" to the project "Video Game"
13     Then the employee "brla" is assigned to project "Video Game"
14
15  #ALTERNATIVE SCENARIOS
16  Scenario: Employee assigns employee to project
17      Given there is an employee
           ↪  in the application with first name "Michael" last name "Laudrup" and initials "mila"
18      And a project with title "Video game" projectnumber "23001" exists in the application
19      And the user is logged in as "mila"
20      And there is an employee
           ↪  in the application with first name "Brian" last name "Laudrup" and initials "brla"
21      And "mila" assigns "brla" to the project "Video Game"
22      Then the project
           ↪  "Video Game" returns error message "Only project managers can assign employees"
23
24  Scenario: Employee doesnt exist
25      Given there is an employee
           ↪  in the application with first name "Michael" last name "Laudrup" and initials "mila"
26      And a project with title "Video game" projectnumber "23001" exists in the application
27      And employee "mila" is assigned the project "Video Game" as project manager
28      And the user is logged in as "mila"
29      And "mila" assigns "brla" to the project "Video Game"
30      Then the project "Video Game" returns error message "Employee not found"
```

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Se forventet restarbejde på projekt

Listing 16: *Hent restarbejde*

```
1   Feature: Get reamining activity progress
2   Description: Project leader gets remaining time on activity
3   Actors: Project manager
4
5   #MAIN SCENARIO
6   Scenario: Project manager gets remaining time on activity
7       Given there is an employee
        ↪   in the application with first name "Michael" last name "Laudrup" and initials "mila"
8       And a project with title "Video game" projectnumber "23001" exists in the application
9       And employee "mila" is assigned the project "Video Game" as project manager
10      And an activity with the title "Graphics design" exists within the project "Video Game"
11      And the user is logged in as "mila"
12      And the user assigns a timebudget of "32" hours to the activity "Graphics design"
13      And there is an employee
        ↪   in the application with first name "Brian" last name "Laudrup" and initials "brla"
14      And the user sets the
        ↪   timebudget 50 hours on project activity with title "Graphic design" on project 23001
15      And the user registers
        ↪   worktime 6 hours to project activity with title "Graphics design" in project 23001
16      When the project manager gets remaining time on "Graphics design"
17      Then the activity returns 44 hours
```

1.5. DISKUSSION: KRAVSPECIFIKATION

Uklarhed i oplæg, valg og afgrænsninger

- Oprettelse af medarbejdere som gæst/admin

- Tekst baseret UI, vi har fokus på business logik, og levere noget til kunden hurtigt der virker. K.I.S.S   `Nice`

- Flere medarbejdere med samme navn
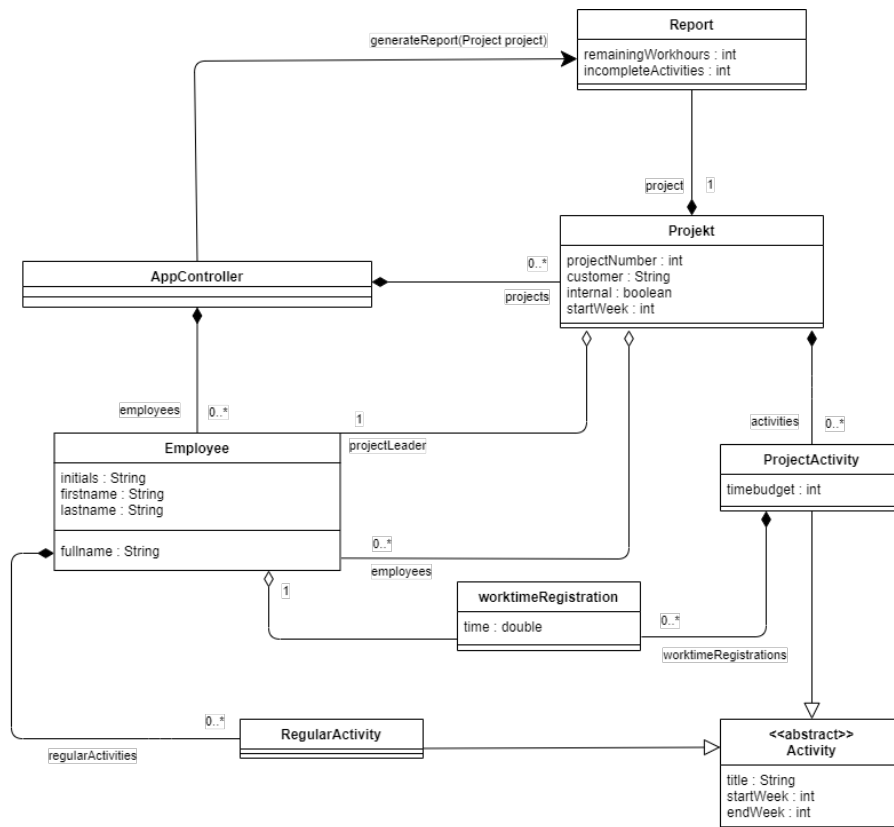
Oplægsmæssige overvejelser

-

Faglige overvejelser

- Abstractions og compositions unødvendige da java har garbage collector

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2 | PROGRAMDESIGN

2.1. KLASSEDIAGRAM AF PROGRAMDESIGN

Figur 2: Klassediagram

2.2. SEKVENSDIAGRAMMER

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FIGURER

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