DTU

KRAVSPECIFIKATION & PROGRAMDESIGN

02161 SOFTWARE ENGINEERING 1

Afleveringsgruppe 13:

Rasmus Wiuff **s163977**
Mathies Henriksen **s200747**
Max-Emil Scotten **s204633**
Kasper Sylvest **s205281**
github.com/rwiuff/02161ExamProject

19. marts 2023

INDHOLD

Rasmus Wiuff **s163977**
Mathies Henriksen **s200747**
Max-Emil Scotten **s204633**
Kasper Sylvest **s205281**
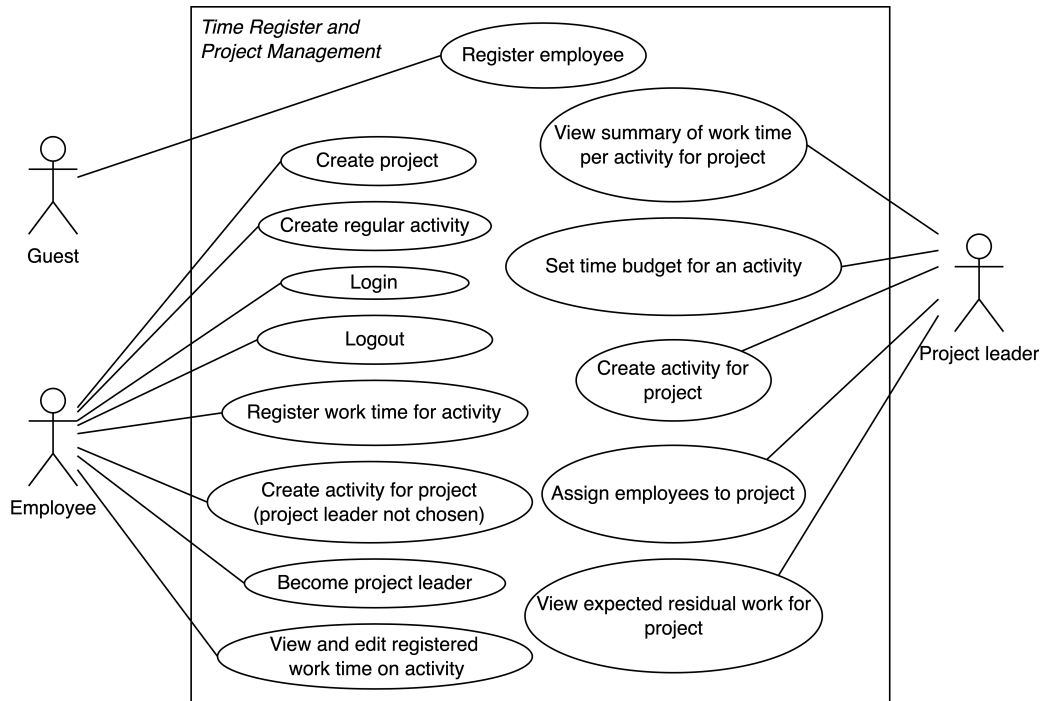
1 | KRAVSPECIFIKATION

1.1. INDLEDNING

Denne del af eksamensopgaven dokumenterer vores planlægningsproces, der skal tilvejebringe et tids/projektstyringsprogram 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 firecifret 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
Se og rediger i registreret arbejdstid på aktivitet	Listing 11
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
Se forventet restarbejde på projekt	Listing 16

1.4. DETALJEREDE USE CASES

Opret medarbejder

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Kasper Sylvest **s205281**

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

Log in

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Mathies Henriksen **s200747**
Max-Emil Scotten **s204633**
Kasper Sylvest **s205281**

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 guest is logged in
8      And there is an employee
       ↪  in the application with first name "Michael", last name "Laudrup" and 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" and 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 an employee is logged in
8      When the user logs out
9      Then the user is logged in as a guest
```

Opret projekt

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Mathies Henriksen **s200747**
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Kasper Sylvest **s205281**

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 an 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" with project number 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. An employee can self assign as project leader on a project
28      Given an employee is logged in
29      And a project
        ↪ with title "Projektplanlægning" with project number 23001 exists in the application
30      When the user takes the role as project leader on project 23001
31      Then the user is the project leader 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 exists in the application with title "Projektplanlægning" project number 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" project number 23001
42      When the user sets the start week to 2304
43      Then the project has start week 2304
```

Opret fast aktivitet

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Kasper Sylvest **s205281**

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 an 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 and 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 and 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 and 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 "" and 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. An 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 and 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 and 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 and 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 and end week 2306
```

Opret projekt aktivitet for projekt uden projektleder

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Max-Emil Scotten **s204633**
Kasper Sylvest **s205281**

Listing 6: Use case: Opret projekt aktivitet for projekt uden projektleder. Fortsætter på Listing 7

```
1  Feature: Creating a project activity for a project without a project leader
2  Description: An employee creates a project activity for a project without a project leader
3  Actors: employee
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" and project number 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 the title "Graphics design"
14     When the user assigns the project activity to project 23001
15     Then the
       ↪ project with the project number 23001 has a project activity titled "Graphics design"
16
17 Scenario: 2. A time budget 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 with project number 23001
20     When the user sets the time budget to 50 hours
       ↪ on the project activity with the title "Graphics design" and project number 23001
21     Then the project activity with
       ↪ the title "Graphics design" and project number 23001 has a time budget of 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 with project number 23001
26     When the user sets the start week to 2304 on the project
       ↪ activity with the title "Graphics design" on the project with project number 23001
27     Then the project
       ↪ activity with the title "Graphics design" and project number 23001 has start week 2304
28
29 Scenario: 4. An 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 with project number 23001
32     When the user sets the end week to 2304 on the
       ↪ project activity with title "Graphics design" on the project with project number 23001
33     Then the project
       ↪ activity with title "Graphics design" and project number 23001 has end week 2304
```

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Kasper Sylvest **s205281**

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 the title "Graphics 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 with project number 23001
44      And there is a project activity with the title "Graphics 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 time budget 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 time budget to 50 hours
        ↪ on the project activity with the title "Graphics design" and project number 23001
52      Then the error message "Login krævet" is given
53
54  Scenario: 3a. A guest is not able to set a start week on 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 with project number 23001
57      When the user sets the start week to
        ↪ 2304 on the project activity with the title "Graphics design" and project number 23001
58      Then the error message "Login krævet" is given
59
60  Scenario: 3b. A start week needs to be before or the same as the end week
61      Given the user is logged in as "mila"
62      And an activity
        ↪ with the title "Graphics design" exists within the project with project number 23001
63      When the user sets the start week to 2304 and the end week to 2303 on the project
        ↪ activity with the title "Graphics design" on the project with project number 23001
64      Then the error message "Starttid skal være før eller ens med sluttid" is given
65
66  Scenario: 4a. A guest is not able to set an end week on 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 with project number 23001
69      When the user sets the end week to 2304 on project
        ↪ activity with the title "Graphics design" on the project with project number 23001
70      Then the error message "Login krævet" is given
71
72  Scenario: 4b. An 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 with project number 23001
75      When the user sets the start week to 2304 and end week to 2303 on the project
        ↪ activity with the title "Graphics design" on the project with project number 23001
76      Then the error message "Start tid skal være før eller ens med sluttid" is given
```

Opret projekt aktivitet for projekt med projektleder

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Kasper Sylvest **s205281**

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

```
1  Feature: Creating a project activity for a project with assigned project leader
2  Description: A project leader 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" and initials "mila"
8      And there is an employee in
       ↪  the application with first name "Mette", last name "Frederiksen" and initials "mefr"
9      And a project with the title
       ↪  "Video game", project number 23001 and project leader "mefr" exists in the application
10
11 #MAIN SCENARIOS
12 Scenario: 1. A project leader can create a project activity
13     Given the user is logged in as "mefr"
14     And there is a project activity with the title "Graphics design"
15     When the user creates the project activity in the application
16     Then the
       ↪  project with project number 23001 has a project activity with title "Graphics design"
17
18 ... (flere tests ligesom for projekt uden projektleder)
19
20 #ALTERNATIVE SCENARIOS
21 Scenario: 1a. An 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 the title "Graphics 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
```

Påtag projektlederstilling

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Kasper Sylvest **s205281**

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

```
1   Feature: Take on the role of project leader
2   Description:
    ↪  An employee can, when there is not already one, appoint themselves as project leader.
3   Actors: Employees
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 the title "Video game" and project number 23001 exists in the application
9
10  #MAIN SCENARIOS
11  Scenario: 1. An employee can appoint themselves as project leader
12      Given the user is logged in as "mila"
13      And there is no project leader for the project with the title "Video game"
14      When the employee appoints himself as a project leader
15      Then the employee is the project leader on the project
16
17  #ALTERNATIVE SCENARIOS
18  Scenario: 1a.
    ↪  An employee appoints himself as project leader on a project where there is already one.
19      Given the user is logged in as "mila"
20      And there is a project leader on the project with title "Video
        ↪  game" in the collection of projects that is not the user with the initials "mila"
21      When the employee appoints himself as the project leader
22      Then the error message "Der kan kun være en projektleder" is given
23
24  Scenario: 1b. An employee appoints himself as project leader on a project that does not exist
25      Given the user is logged in as "mila"
26      And a project with the title "Not A Project" does not exist in the collection of projects
27      When the employee appoints himself as a project leader
28      Then the error message "Projektet kunne ikke findes i samlingen af projekter" is given
```

Registrer arbejdstid på projekt aktivitet

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Listing 10: *Use case: Registrer arbejdstid på projekt aktivitet*

```
1  Feature: Register work time on a project activity
2  Description: An employee registers their work time on a project activity.
3  Actors: employee
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" and project number 23001 exists in the application
9      And an activity
       ↪ with the title "Graphics design" exists within the project titled "Video Game"
10     And the user is logged in as "mila"
11
12 #MAIN SCENARIOS
13 Scenario: 1. Register work time on project activity
14     When the user registers a work time of 6 hours to the
       ↪ project activity with title "Graphics design" in the project with project number 23001
15     Then the user has 6 hours of registered work
       ↪ time on the project activity with title "Graphics design" and project number 23001
16
17 #ALTERNATIVE SCENARIOS
18 Scenario: 1.a Register worktime in half-hour increments
19     When the user registers a work time of 6.5 hours to the
       ↪ project activity with title "Graphics design" in the project with project number 23001
20     Then the user has 6.5 hours of registered work time on the
       ↪ project activity with title "Graphics design" in the project with project number 23001
21
22 Scenario: 1.b Project not found
23     When the user registers a work time of 6 hours to the
       ↪ project activity with title "Graphics design" in the project with project number 23002
24     Then the error message "Ukendt projekt" is given
25
26 Scenario: 1.c Project activity not found
27     When the user registers a work time of 6 hours
       ↪ to the project activity with title "Regndans" in the project with project number 23001
28     Then the error message "Ukendt projekt aktivitet" is given
```

Se og rediger i registreret arbejdstid på aktivitet

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Kasper Sylvest **s205281**

Listing 11: *Use case: Se og rediger i registreret arbejdstid på aktivitet*

```
1  Feature: View and edit registered work time on a project activity
2      Description: An employee wishes to view or edit registered work time on an activity
3      Actors: employee and guest
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 the title "Video game" and project number 23001 exists in the application
9      And an activity titled "Graphics design" exists within the project titled "Video Game"
10     And the employee with initials "mila" has registered 6 hours of work
        ↪ time to the activity titled "Graphics design" in the project with project number 23001
11     And the employee with initials "mila" has registered 10 hours of work
        ↪ time to the activity titled "Graphics design" in the project with project number 23001
12
13 #MAIN SCENARIOS
14 Scenario: 1. An employee can view a list of work time registrations for an activity
15     Given the user is logged in as "mila"
16     When the list of work time registrations is requested
        ↪ for the activity titled "Graphics design" in the project with project number 23001
17     Then a list containing 2 items with the values 6 and 10 is returned
18
19 Scenario: 2. An employee can view the total amount of registered work time for an activity
20     Given the user is logged in as "mila"
21     When the total amount of registered work time is requested
        ↪ for the activity titled "Graphics design" in the project with project number 23001
22     Then 16 hours is returned
23
24 Scenario: 3. An employee can edit the total amount of registered work time for an activity
25     Given the user is logged in as "mila"
26     And the user edits the total amount of registered work time to 18 hours
        ↪ for the activity titled "Graphics design" in the project with project number 23001
27     When the total amount of registered work time is requested
        ↪ for the activity titled "Graphics design" in the project with project number 23001
28     Then 18 hours is returned
29
30 Scenario: 4. An employee can edit individual work time registrations for an activity
31     Given the user is logged in as "mila"
32     And the user edits the first registered work time registration to 7 hours
        ↪ for the activity titled "Graphics design" in the project with project number 23001
33     When the list of work time registrations is requested
        ↪ for the activity titled "Graphics design" in the project with project number 23001
34     Then a list containing 2 items with the values 7 and 10 hours is returned
35
36 #ALTERNATIVE SCENARIOS
37 Scenario: 1a. Guests are unable to view the list of work time registrations for an activity
38     Given a guest is logged in
39     When the list of work time registrations is requested
        ↪ for the activity titled "Graphics design" in the project with project number 23001
40     Then the error message "Login kræves" is given
```

Se oversigt over registreret arbejdstid pr. aktivitet Anfør budgetteret tid til løsning af aktivitet

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Rasmus Wiuff **s163977**
Mathies Henriksen **s200747**
Max-Emil Scotten **s204633**
Kasper Sylvest **s205281**

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

```
41
42      Scenario:
        ↪ 2a. Guests are unable to view the total amount of registered work time for an activity
43      Given a guest is logged in
44      When the total amount of registered work time is requested for
        ↪ the project activity titled "Graphics design" in the project with project number 23001
45      Then the error message "Login kræves" is given
46  Scenario:
    ↪ 3a. Guests are unable to edit the total amount of registered work time for an activity
47      Given a guest is logged in
48      When the user edits the first registered work time registration to 7 hours
        ↪ for the activity titled "Graphics design" in the project with project number 23001
49      Then the error message "Login kræves" is given
50
51  Scenario: 4a. Guests are unable to edit individual work time registrations for an activity
52      Given a guest is logged in
53      When the user edits the total amount of registered work time
        ↪ for the activity titled "Graphics design" in the project with project number 23001
54      Then the error message "Login kræves" is given
55
56  Scenario: 1b. An employee wishes
    ↪ to view the list of work time registrations for an activity with no work time registered
57      Given the user is logged in as "mila"
58      And an activity titled "Implement physics" exists within the project titled "Video Game"
59      When the list of work time registrations is requested
        ↪ for the activity titled "Implement physics" in the project with project number 23001
60      Then
        ↪ the error message "Ingen arbejdstid er registreret for denne aktivitet endnu" is given
61
62  Scenario: 2b. An employee wishes to
    ↪ view the total amount of registered work time for an activity with no registered work time
63      Given the user is logged in as "mila"
64      And an activity titled "Implement physics" exists within the project titled "Video Game"
65      When the the total amount of registered work time is requested
        ↪ for the activity titled "Implement physics" in the project with project number 23001
66      Then
        ↪ the error message "Ingen arbejdstid er registreret for denne aktivitet endnu" is given
67
68  Scenario: 3b. An employee wishes to
    ↪ edit the total amount of registered work time for an activity with no registered work time
69      Given the user is logged in as "mila"
70      And an activity titled "Implement physics" exists within the project titled "Video Game"
71      When the user edits the total amount of registered work time to 18 hours
        ↪ for the activity titled "Implement physics" in the project with project number 23001
72      Then
        ↪ the error message "Ingen arbejdstid er registreret for denne aktivitet endnu" is given
73
74  Scenario: 4b. An employee wishes
    ↪ to edit individual work time registrations for an activity with no registered work time
75      Given the user is logged in as "mila"
76      And an activity titled "Implement physics" exists within the project titled "Video Game"
77      When the user edits the first registered work time registration to 7 hours
        ↪ for the activity titled "Implement physics" in the project with project number 23001
78      Then the error message "Ingen arbejdstid er registreret for denne aktivitet endnu"
```

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Rasmus Wiuff **s163977**
Mathies Henriksen **s200747**
Max-Emil Scotten **s204633**
Kasper Sylvest **s205281**

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

```
1   Feature: View summary of registered work time pr. activity
2   Description: A project leader can view a summary of registered work time per activity
3   Actors: Project leader and employee
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 there is an employee
        ↪ in the application with first name "Lars", last name "Svendsen" and initials "lasv"
9       And a project with title "Video game" exists in the application
10      And employee
        ↪ with initials "lasv" is assigned to the project titled "Video Game" as project leader
11      And multiple activities
        ↪ with registered work time for "mila" exists within the project titled "Video game"
12
13  #MAIN SCENARIO
14  Scenario: 1. The project leader can view a summary of registered work time pr. activity
15      Given the user is logged in as "lasv"
16      And employee
        ↪ "Lars Svendsen" is assigned the project titled "Video Game" as project manager
17      When "lasv" wishes to view a summary of the work time for the project titled "Video game"
18      Then a summary
        ↪ of registered work time pr. activity under the project titled "Video game" is shown
19
20  #ALTERNATIVE SCENARIO
21  Scenario: 1a. An employee
    ↪ recieves an error message when attempting to view the summary of registered work time
22      When "mila" wishes to view a summary of the work time for the project titled "Video game"
23      Then the error
        ↪ message "Kun projektlederen kan tilgå oversigten af arbejdstid for projektet" is given
24
25  Scenario: 1b. A project leader can only
    ↪ view the summary of registered work time for the project to which the person is assigned
26      Given a project with title "Web development" exists in the application
27      When "lasv"
        ↪ wishes to view a summary of the worktime for the project titled "Web development"
28      Then an error
        ↪ message "Kun projektlederen kan tilgå oversigten af arbejdstid for projektet" is given
29
30  Scenario: 1c. The project leader recieves an error message if no work time has been registered
31      When "lasv" wishes to view a summary of the worktime for the project "Video game"
32      Then
        ↪ the error message "Ingen arbejdstid er registreret under dette projekt endnu" is given
```

Listing 14: *Budgetteret tid til aktivitet*

```
1   Feature: Set time budget for a regular activity
2   Description: Project leader assigns the time bugdet for a given activity
3   Actors: Project manager
4
5   #MAIN SCENARIO
6   Scenario: Project manager assigns a time budget
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", project number "23001" exists in the application
9       And employee "mila" is assigned to the project titled "Video Game" as project manager
10      And an activity
        ↪ with the title "Graphics design" exists within the project titled "Video Game"
11      And the user is logged in as "mila"
12      And the user assigns a time budget of "32" hours to the activity titled "Graphics design"
13      Then the activity titled "Graphics design" has a time budget of "32" hours
14
15  #ALTERNATIVE SCENARIOS
```

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Rasmus Wiuff **s163977**
Mathies Henriksen **s200747**
Max-Emil Scotten **s204633**
Kasper Sylvest **s205281**

Tilknyt medarbejdere til projekt

Listing 15: Tilknyt medarbejder

```
1  Feature: Assign employees onto project
2  Description: Project leader assigns emplyees for a project
3  Actors: Project leader
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", project number "23001" exists in the application
9      And employee "mila" is assigned the project titled "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 titled "Video Game"
13     Then the employee "brla" is assigned to the project titled "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", project number "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 titled "Video Game"
22     Then the project titled
       ↪   "Video Game" returns the error message "Only project managers can assign employees"
23
24  Scenario: Employee doesn't 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", project number "23001" exists in the application
27     And employee "mila" is assigned to the project titled "Video Game" as project manager
28     And the user is logged in as "mila"
29     And "mila" assigns "brla" to the project titled "Video Game"
30     Then the project titled "Video Game" returns the error message "Employee not found"
```

Se forventet restarbejde på projekt

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Rasmus Wiuff **s163977**
Mathies Henriksen **s200747**
Max-Emil Scotten **s204633**
Kasper Sylvest **s205281**

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", project number "23001" exists in the application
9      And employee "mila" is assigned to the project titled "Video Game" as project manager
10     And an activity
        ↪ with the title "Graphics design" exists within the project titled "Video Game"
11     And the user is logged in as "mila"
12     And the user assigns a time budget of "32" hours to the activity titled "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 time budget to 50 hours on the
        ↪ project activity with title "Graphic design" on the project with project number 23001
15     And the user registers a work time of 6 hours to the
        ↪ project activity with title "Graphics design" in the project with project number 23001
16     When the project manager gets the remaining time on "Graphics design"
17     Then the activity returns 44 hours
```

1.5. DISKUSSION: KRAVSPECIFIKATION

1.5.1. Oplægsmæssige overvejelser og afgrænsninger

En admin rolle

Oplægget nævner som udgangspunkt ikke et krav om en administrator rolle, men derimod at det er et internt system og at der ikke er behov for et sikkerhedslag. Ofte er det oplagt at have en admin facilitet, og i dette projekt kunne det som eksempel give mening til oprettelse af medarbejdere. Men i forbindelse med en kortlægning af projektet samt afgrænsning af funktioner, ser vi større værdi for kunden at fokusere på de ønskede funktioner istedet for at *gætte* på at de vil have en admin. Desuden kan en sådan rolle laves senere, hvis nødvendigt.

UI og fokus på business logik

Oplægget har ingen krav til bruger interface, men derimod rigeligt med krav til funktionalitet. Vi ønsker at levere noget brugbart til kunden hurtigt, og have K.I.S.S *(Keep It Simple Stupid)* i fokus for vores beslutninger og afgrænsing. Fra tidlige leverancer kan vi bruge kundens feedback til at videreudvikle på softwareløsningen iterativt, og bedre kunne prioritere udvikling af funktioner løbende. Derfor har vi i første ikke noget grafisk bruger interface, men derimod et program der køres i et CLI *(Command Line Interface)*.

Medarbejdere med samme navn ...

1.5.2. Tekniske overvejelser

Abstractions og compositions ...

- Oprettelse af medarbejdere som gæst/admin

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

- Flere medarbejdere med samme navn
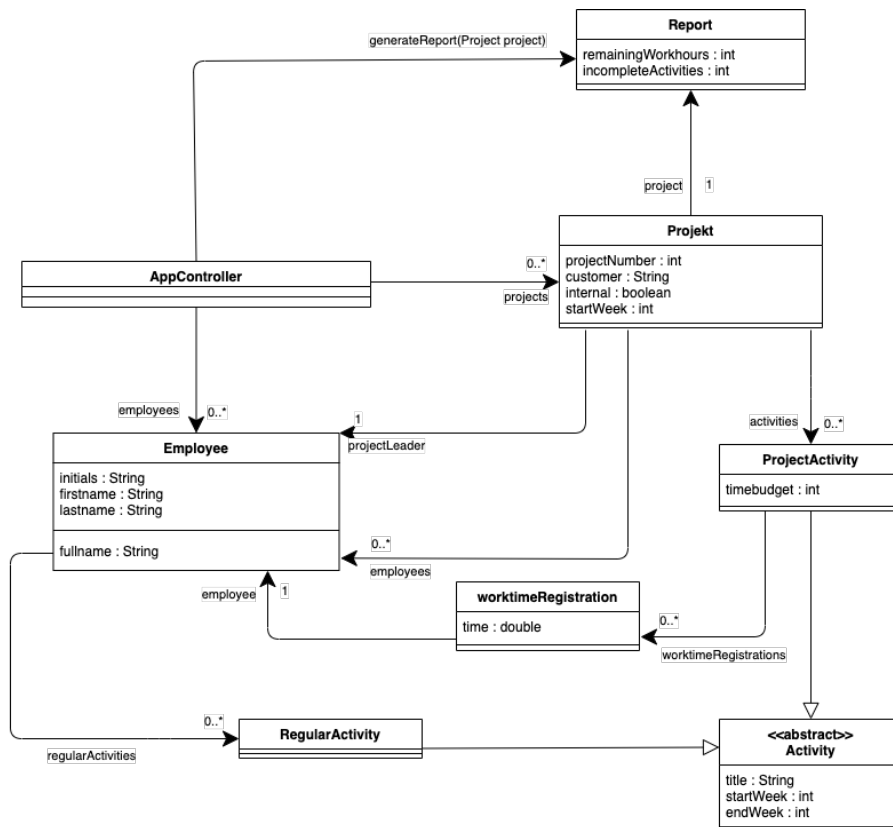
Oplægsmæssige overvejelser

-

Faglige overvejelser

- Abstractions og compositions unødvendige da java har garbage collector

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Max-Emil Scotten **s204633**
Kasper Sylvest **s205281**

2 PROGRAMDESIGN

2.1. KLASSEDIAGRAM AF PROGRAMDESIGN

Figur 2: *Klassediagram*

2.2. SEKVENSDIAGRAMMER

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Rasmus Wiuff **s163977**
Mathies Henriksen **s200747**
Max-Emil Scotten **s204633**
Kasper Sylvest **s205281**

FIGURER

TABELLER

LISTINGS