

# Exercise bank - Manual

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# 1 Motivation

Exercises are saved as separate files containing part problems. These files can be used to make sets, and you can cherry-pick or exclude certain part problems as you see fit. This makes it easier to maintain and keep your exercises flexible as the syllabus changes.

## 2 Flow/Moderate start

I suspect that working with this package will break your current flow. So let's go through it.

This package assumes you put all of your exercises within the folder named `exercises` (you can change the default folder using `\setExercisesDir→P.6`)

exercises/myexercise.tex

```
\begin{intro}
  This introduces our problem
\end{intro}
\begin{problem}
  This is a partproblem 1,
  and will be hidden (just wait, you'll see)
\end{problem}
\begin{problem}
  This is a partproblem 2.
  This will not be hidden, but become part problem a!
\end{problem}
```

Let's build all of them first. In the main file, (the one where you include this package):

main.tex

```
\documentclass{article}
\usepackage{exercisebank}
\makeset{myExerciseSet}{myexercise}
\begin{document}
  \buildset{myExerciseSet}
\end{document}
```

This builds the entire set, and adds Problem header and partproblem counters ( (1a) and (1b) ) by default.

### 2.1 Select

Now, let's build only the second problem.

main.tex

```
\documentclass{article}
\usepackage{exercisebank}
\makeset{myExerciseSet}{\select{myexercise}{2}}
\begin{document}
  \buildset{myExerciseSet}
\end{document}
```

This should only build the intro and the one exercise you `\select`ed!  
Now, say you want to hide the intro. Well all you have to do in this case is make the package treat the intro as a problem in regards to what is `\select`ed. Just add the optional argument `[<intro>]` to `\make`. That is switch

```
\makeset{myExerciseSet}{\select{myexercise}{2}}
```

with

```
\makeset[intro]{myExerciseSet}{\select{myexercise}{3}}
```

Notice that there are 3 ‘partproblems’ now since we have to count the intro!

## 2.2 Exclude

But what if you have an exercise with 12 partproblems, and you only want to exclude the 7th partproblem? Well, then `\Exclude` is here to rescue the day for you.

```
\makeset{myExerciseSet}{\exclude{soManyExercises}{7}}
```

Here it’s important to note that the `[intro]` argument would not make the intros disappear. If we wanted to only exclude the intro from our previous example file `exercises/myexercise.tex` we would do

```
\makeset[intro]{myExerciseSet}{\exclude{myexercise}{1}}
```

So we’re excluding the partproblem 1. But that’s the intro when we send the `[intro]` optional argument

## 2.3 Multiple

In `\makeset` you can just separate exercises with commas! Here is an example:  
Let’s say you have two files with exercises. One located in `exercises/circuits/RLC.tex` and one in `exercises/ohm/ohmsGeneralLaw.tex`, and you want to include partproblem 1 through 5 from `RLC.tex` and all of the exercises from `ohmsGeneralLaw.tex`.

```
\makeset{\select{circuits/RLC}{1,...,5}, ohmsGeneralLaw}
```

This will divide it up with problem headers. So that what is in the `RLC.tex`-file will be Problem 1, and `ohmsGeneralLaw.tex` Problem 2.

## 2.4 Mixnmatch

What if you want to make both of them the same exercise? Well, then you pass the `[nohead]` argument to `\makeset`:

```
\makeset[nohead]{\phead, \select{circuits/RLC}{1,...,5}, ohmsGeneralLaw}
```

The `\phead` command makes a problem header. You can pass them as much as you want:

```
\makeset[nohead]{\phead, \select{circuits/RLC}{1,...,5},
                 ohmsGeneralLaw, \phead, someOtherExercise, moreExercises}
```

## 2.5 Solutions

The last thing to cover then is solutions. In your exercise files you just use the solution environment

```
\begin{solution}
Solution goes here
\end{solution}
```

They are hidden by default, so you would have to use `\DisplaySolutions` in your main file to display them.

That covers the basics. Enjoy

! • `\begin{problem}`, `\end{problem}`,  
`\begin{solution}`, `\end{solution}`,  
`\begin{intro}` and `\end{intro}` has to be on their own line without any spaces!

## 3 Reference

### 3.1 Environments

```
\begin{problem}
  <environment content>
\end{problem}
```

Inside the exercises folder, you keep your exercises. Inside there you'd use a problem environment to write your partproblems. It might be a little confusing that you're using `\begin{problem}` instead of `\begin{partproblem}` when you're writing a partproblem, but it's less typing.

! `\end{problem}` has to be on it's own line without any leading spaces!

```
\begin{solution}
  <environment content>
\end{solution}
```

Things inside here is only visible if `\DisplaySolutions` are given before `\begin{document}`

! `\end{solution}` has to be on it's own line without any leading spaces!

`\DisplaySolutions`

Turns on the solutions, so they are shown.

```
\begin{intro}
  <environment content>
\end{intro}
```

Sometimes you'd want to introcude your exercises and tell a little bit about it. Maybe have a figure there also. Those things should go inside this environment. This can be treated as a problem in terms of counting. See `\makeset`<sup>P.6</sup> for more info.

! `\end{intro}` has to be on it's own line without any leading spaces!

## 3.2 Internationalization

```
\translateExBank{<Translation key/vals>}
```

This is to translate the text inside the package. As of now the available key/values are

- Problem
- Solution

The Norwegian translation would then be done with

```
\translateExBank{Problem=Oppgave, Solution=Løsning}
```

## 3.3 Triggers

```
\Trigger{<Any Macro>}
```

See `\At`<sup>→P. 6</sup>

Available triggers:

`\At\InputExercise`

Triggers before a file is included

`\At\BeginProblem`

Triggers before a file is included, but only if problem headers are to be written (no [nohead] given)

`\At\EndProblem`

Triggers right after problem is included if [nohead] *not* given

`\At\BeginBuildset`

Triggers right before a set has begun building (not if `\sprite` is used). You might want to put your set-header here

`\At\EndBuildset`

Triggers when a set has stopped building (not if `\sprite` is used)

### 3.4 General reference

`\ownLineNoSpacesGotIt`

This is to annoy the user enough to get his attention about the requirements of the `problem`<sup>→P. 4</sup>, `solution`<sup>→P. 5</sup> and `intro`<sup>→P. 5</sup> environments. Compilation won't work unless `\end{problem}`, `\end{solution}` and `\end{intro}` are on their own lines and without any spaces. This warning can be removed by doing `\def\ownLineNoSpacesGotIt` before `\usepackage{exbank}`.

`\setExercisesDir{<directory>}`

This is the directory, relative to the file you included the package, where the package should be looking for exercises. Default is `exercises`

This package also includes some extra stuff. For example the `\At` and `\Trigger`

`\At{<AnyMacro>}`

Here you can send any macro because it isn't evaluated! For example `\At\BeginSomething` is fine and even if `\BeginSomething` is not defined. Also and when using `\Trigger` it just ignores it if it didn't exist. It's pretty similar in function as to `\AtBeginDocument`.

```
\At\BeginSomething{DoSomething}
Which is triggered with
\Trigger\BeginSomething, this evaluates to DoSomething
```

### 3.5 Making sets

`\makeset[<intro,nohead>]{<filable>}`

This command is the one you use to make a set! Later you use `\buildset` to build the sets you make. The `\filable` argument is either the name of the file relative to the `\exercisedir`-path (default its in the root called exercises), or you could use the `\select` or `\exclude` to respectively cherry pick or exclude exercises. (See their docs).

`[\intro]` this counts the intro environment as a part problem, so that you can `\select` or `\exclude` the intro

`[\nohead]` prevents the builder from adding a problem header. This is handy if you want to create an exercise that is composed of multiple parts. You can use the `\phead` to insert the problem header where you want it

```
\makeset[nohead]{\phead, \select{myexercise}{1,2,3}}
```

`\exclude{\exerciseFileName}{\Comma separated numbers}`

As you can see in the intro section of the documentation, this is for excluding partproblems To be used in `\makeset` <sup>→ P. 6</sup>

`\select{\exerciseFileName}{\Comma separated numbers}`

As you can see in the intro section of the documentation, this is for cherry picking partproblems To be used in `\makeset` <sup>→ P. 6</sup>

`\about{\text}`

This contains information about an exercise set. It is intended to be on the top of an exercise, explaining short what the exercise is about. It's only visible when using `\sprite`

`\sprite[\PiP]`

This is a way to visualize all exercises. It takes one optional argument which is how many pages inside one page. Defaults to 4

! If `\sprite` is used, it should be the only command in `\begin{document}\end{document}`

`\pplabel{\label}`

Labels a partproblem. You can reference to it later using `\ppref{\label}`

`\ppref{\label}`

Reference a partproblem created by `\pplabel{\label}`. This prints e.g. 1c)

`\ppref{\label}`

Reference a partproblem created by `\pplabel{\label}`. This prints e.g. 1

### 3.6 Counters

`problemcounter`-counter holds the current problem number and `partproblemcounter`-counter holds the current partproblem *number*.