

# 1 Motivation

So I wanted a package that allowed me to mix-and-match exercises. I couldn't find it, so I made it.

## 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`<sup>1</sup>

`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{exbank}
\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.

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<sup>1</sup>I apologize, but I haven't gotten the formatting right here. So there will *either* be no indentations or no colors in my examples. I'm so sorry. Truly.

## 2.1 Select

Now, let's build only the second problem.

main.tex

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

This should only build the intro and the one exercise you  $\rightarrow$ 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  $\rightarrow$ 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 part-problem 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

### 3 Reference

```
\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.

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

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

```
\DisplaySolutions
```

Turns on the solutions, so they are shown.

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

Sometimes you'd want to introduce 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` for more info.

```
\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}}
```

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
```

`\Trigger{⟨Any Macro⟩}`

See `\At`<sup>P. 4</sup> Triggers available:

`\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