

## Klausur Exam No.

Author, Institute

**Bearbeitungszeit:** 90 Minuten

- Bitte kontrollieren Sie die Vollständigkeit des an Sie ausgegebenen Klausurexemplars.
- Tragen Sie auf dem Deckblatt Ihren Namen und die Matrikelnummer ein und unterschreiben Sie die Klausur.
- Achten Sie auf Lesbarkeit und Nachvollziehbarkeit Ihrer Antworten und Lösungswege.
- **Erlaubte Hilfsmittel:** Ein handschriftlich angefertigter DIN-A4-Zettel mit Notizen.  
Andere/Weitere Hilfsmittel sind **nicht** zugelassen. Die Nutzung nicht zugelassener Hilfsmittel führt zur Bewertung „nicht bestanden“.

**Gutes Gelingen!**

— vom Studierenden auszufüllen —

Name: .....

Vorname: .....

Matr.-Nr.: .....

Ich erkläre, daß ich mich zur Prüfung ordnungsgemäß angemeldet habe, zur Prüfung zugelassen bin und mich prüfungsfähig fühle. Ich werde die Klausur eigenständig bearbeiten und ausschließlich die zugelassenen Hilfsmittel nutzen.

Unterschrift: .....

— vom Prüfer auszufüllen —

| Aufgabe  | 1 | 2 | 3 | 4 | $\Sigma$ |
|----------|---|---|---|---|----------|
| Punkte   | 5 | 5 | 8 | 5 | 23       |
| Erreicht |   |   |   |   |          |

Note: ..... Minden, den ..... Unterschrift Erstprüfer: .....

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## 1: Space for *answers* using fenced divs with class „solution“

5 Punkte

Instead of using the TeX notation for starting a question you can use a markdown header. It will be transformed into a exam question. Add the points as attribute `punkte` to the header.

A level 1 header will be translated into a question with an extra `\clearpage` before.

That is, the following markdown code

```
1 ## Space for answers using fenced divs with class "solution" {punkte=5}
```

will be transformed by the `exams.lua` filter into

```
1 \myQuestion[5]{{Space for \emph{answers} using fenced divs with class
2 \enquote{solution} and \enquote{streifenend}}}
```

**Warning:** Don't do any fancy in the header! Results would be unpredictable! (Emphasis and question marks should be OK, though. Inline code with backticks does NOT work!)

Here goes the question ...

Using a fenced div with class „solution“ **without attributes** we can separate the question part and the answer part. The environment produces a blue/gray bar on the left side, which length depends on the amount of text within this environment.

Also we can use Markdown in there ...

To produce a sample solution, use `\x{...}` or `[...]{.answer}` and provide the solution as parameter/content. This will not be printed in the normal exam :)

```
1 ::: solution
2 * Zeile 19: \x{12}
3 \bigskip
4 * Zeile 20: \x{A}
5 \bigskip
6 * Zeile 21: [42]{.answer}
7 \bigskip
8 * Zeile 22: \x{X}
9 \bigskip
10
11 **je 0.5P** (*Summe 2P*){.answer}
12 :::
```

- Zeile 19:
- Zeile 20:
- Zeile 21:
- Zeile 22:

## 2: Space for answers using a fenced div with class „solution“

5 Punkte

Here goes the question ...

Using a fenced div with class „solution“ and **attribute „length“** we can separate the question part and the answer part. The environment produces a blue/gray bar on the left side, which length depends on the attribute `length` of the div.

Also we can use Markdown in there ...

Everything in the div will only appear in the solution sheet. This requires the `exams.lua` filter.

```
1 ::: {.solution length=60mm}
2 This text will appear ONLY in the solution ...
3 :::
```



*Note:* The `length` attribute is used to determine the length of the blank space in the exams sheet. However, in the solution sheet, the element is just as long as needed by the given content. To avoid differences in the page layout between exam and solution sheet you need to fill the unused solution space with `\vspace` as shown in the example above ...

### Fenced div with class „solution“ without attributes

The same fenced div *without* the attribute `length` will just draw the blue/gray stripe to the left side and always present the content:

```
1 ::: {.solution}
2 This text will appear in the exam as well as in the solution ...
3
4   Length           Height A           Height B           Class
5   -----
6   \x{2.0}          \x{2.0}          10.0              \x{A}
7   5.0              4.0              40.0              B
8   0.8              \x{0.4}          \x{4.5}           \x{C}
9   1.4              2.0              15.0              A
10
11 :::
```

This text will appear in the exam as well as in the solution ...

| Length | Height A | Height B | Class |
|--------|----------|----------|-------|
|        |          | 10.0     |       |
| 5.0    | 4.0      | 40.0     | B     |
| 0.8    |          |          |       |
| 1.4    | 2.0      | 15.0     | A     |

Unfortunately, Pandoc still uses `longtable`, which cannot be used inside a `minipage` (which is used here to produce the blue/gray marker on the left side). Thus we need to handle markdown tables in the filter and translate it to simple LaTeX `tabular` ...

This is usefull for „Fill in the blank“ questions.

### 3: Multiple Choice with „mc“ div

8 Punkte

Instead of using the TeX notation for starting a question you can use a markdown header. It will be transformed into a exam question. Add the points as attribute `punkte` to the header.

A level 1 header will be translated into a question with an extra `\clearpage` before.

That is, the following markdown code

```
1 # Multiple Choice with "mc" div {punkte=8}
```

will be transformed by the `exams.lua` filter into

```
1 \clearpage
2 \myQuestion[8]{Multiple Choice with \enquote{mc} div}
```

**Warning:** Don't do any fancy in the header! Results would be unpredictable! (Emphasis and question marks should be OK, though. Inline code with backticks does NOT work!)

Here goes the question ...

nice figure

For multiple choice questions use a `mc` div, which will be transformed by the `exams.lua` filter into a customized LaTeX table with a blue/gray bar on the left side. The parameters are the column headers for correct and wrong answers/choices.

Each line constitutes a possible answer. Use a span with class `ok` for correct answers and a span with class `nok` for wrong answers. The content will not appear in the normal exam version. In the sample solution, all correct answers are marked.

(Keep in mind, in the end it is just a customized LaTeX table).

```
1 ::: {.mc ok="CorrecT" nok="wrOng" points="**je 0.5P** (*Summe 2P*)"}
2   [... blablabla.]{.nok}
3   [... **wuppie** :)]{.ok}
4   [... *fluppie.*]{.nok}
5   [... `foobar`.]{.nok}
6 :::
```

| Correct                  | wrOng                    |                      |
|--------------------------|--------------------------|----------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | ... blablabla.       |
| <input type="checkbox"/> | <input type="checkbox"/> | ... <b>wuppie</b> :) |
| <input type="checkbox"/> | <input type="checkbox"/> | ... <i>fluppie</i> . |
| <input type="checkbox"/> | <input type="checkbox"/> | ... foobar.          |

Using a fenced div you can use markdown formatting inside the answers.

**Warning:** The `mc` div and all contained `ok`/`nok` spans are translated into a LaTeX table. Make sure to **only** use `ok`/`nok` spans inside the `mc` div! Doing otherwise will produce TeX errors ...

#### 4: Long questions

|          |
|----------|
| 5 Punkte |
|----------|

- You can combine the mentioned environments.
- In case a question needs to start on a new page, use a level 1 header (otherwise start a question with a level 2 header).
- If you want a page break *after* the question, end the question with `\clearpage`.

*Fortsetzung nächste Seite*

- If the question is really long, you can indicate this using the `\Fortsetzung` LaTeX macro. This prints the string „Fortsetzung“ at the bottom of the page to indicate the continuation of the question on the next page to the students.

Note, currently this is not equivalent to a `\clearpage`, i.e. you need to use an explicit `\clearpage`.



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