

paperandpencil.sty
A style for creating questionnaires with
L^AT_EX

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IMPORTANT:

The present style provides a basis for the construction of paper&pencil questionnaires (paperandpencil.sty). *paperandpencil* requires the document class scrreprt. Furthermore, it is recommended to choose the following margin sizes in the preamble:

```
\usepackage[top=2.5cm,bottom=2.5cm,left=2.5cm,right=2.5cm]{geometry}
```

It is strongly recommended to define the right and the left margin as 2.5 cm. In contrast the distance at the top and at the bottom can be varied.

1 Question formatting

1.1 Question numbering

Default: **bold, with period**

For another format it is necessary to insert the following syntax into the preamble. The modifiers instructions for each option are:

(i) bold, no period

```
\renewcommand*\thechapter{\bf{\arabic{chapter}}}
```

(ii) standard, with period

```
\renewcommand*\thechapter{\arabic{chapter}.}
```

(iii) standard, without period

```
\renewcommand*\thechapter{\arabic{chapter}}
```

(iv) italics, with period

```
\renewcommand*\thechapter{\em{\arabic{chapter}.}}
```

(v) italics, without period

```
\renewcommand*\thechapter{\em{\arabic{chapter}}}
```

(vi) underscored

```
\renewcommand*\thechapter{\underline{#1}}
```

Here the desired formatting is entered instead of #1 in accordance with (i)-(v).

(vii) To enlarge the distance between question numbering and the question text, the command `\hspace{... cm}` with the desired distance (in cm) has to be entered. The corresponding default setting is:

```
\renewcommand*\thechapter{\bf{\arabic{chapter}.}\hspace{... cm}}
```

Items (i) to (vi) apply accordingly.

1.2 Question text

Default: **standard font**

A question is created by the command `\question{question text ...?}` and appears as follows:

1. question text ...?

If another font is desired, it is possible to change the font by entering the following commands:

- (i) Question text: **bold**

```
\question{\bf question text ...?}
```

1. **question text ...?**

- (ii) Question text: **italics**

```
\question{\em question text ...?}
```

1. *question text ...?*

- (iii) Question text: **underscored**

```
\question{\underline{question text ...?}}
```

1. question text ...?

1.3 Instructions and comments

Questions often have question comments or require instructions. *paperandpencil* offers **three versions** for comments/instructions, which follow the question text:

- (i) **Comment immediately below the question:**

Question text: bold and comment in standard font

```
\question{{\bf question text ...?}\\ comment ...}
```

The `\\` creates the desired line break. The output has the following appearance:

1. **question text ...?**
comment ...

- (ii) **Comment follows the question separated by a blank line:**

Question text: bold and comment in standard font

```
\question{{\bf question text ...?}\\ \\ comment ...}
```

The `\\ \\` creates the desired line break with an additional blank line. The question has the following appearance:

1. **question text ...?**

comment ...

(iii) **Comment follows the question in a separate box:**

The command `\begin{fshaded}` results in a shaded box within a black frame. The content of the box can be entered as usual with the general commands. The command `\end{fshaded}` terminates the text input. The question and instruction appear as follows:

```
\question{\bf question text ...?}
\begin{fshaded}
comment ...
\end{fshaded}
```

1. question text ...?

comment ...

Comments can also be used within answer categories. Chapter 2.8 introduces the implementation of comments standing next to braces or below a line.

2 Vertical answer categories

The following chapter presents vertically grouped answer categories.

2.1 The layout `answersA` (answer categories to the right)

By using the layout `answersA`, vertical answer categories can be created which are distanced of 2 cm from the left margin and 6 cm from the right. **Boxes** to check are on the **right** side next to the answer categories. *paperandpencil* offers four different options to format the answer categories:

1. `\pbox{...}` creates a dotted line behind the answer category with a **small** check box at its end.
2. `\pbigbox{...}` creates a dotted line behind the answer category with a **big** check box at its end.
3. `\ebox{...}` creates a blank line behind the answer category with a **small** checkbox at its end.
4. `\ebigbox{...}` creates a blank line behind the answer category with a **big** check box at its end.

The four named options are illustrated with the following example:

```
\begin{answersA}
  \item\pbox{Mehr als 20 Jahre}
  \item\pbigbox{11 bis 20 Jahre}
  \item\ebox{6 bis 10 Jahre}
  \item\ebigbox{1 bis 5 Jahre}
\end{answersA}
```

creates:

```
Mehr als 20 Jahre ..... 
11 bis 20 Jahre ..... 
6 bis 10 Jahre 
1 bis 5 Jahre 
```

Often **non-substantial** answer categories like *don't know* or *no answer* are supposed to appear slightly distant from the remaining answer categories. To implement this, the command `\vspace{0.25cm}` has to be entered behind the default, after which a vertical gap is supposed to follow.

The commands:

```
\begin{answersA}
  \item\pbox{Mehr als 5 Jahre}
  \item\pbox{1 bis 5 Jahre}
  \item\pbox{Weniger als 1 Jahr}\vspace{0.25cm}
  \item\pbox{Weiß nicht}
  \item\pbox{Keine Angabe}
\end{answersA}
```

generate:

- Mehr als 5 Jahre.....
- 1 bis 5 Jahre.....
- Weniger als 1 Jahr.....
- Weiß nicht.....
- Keine Angabe.....

2.2 The layout `answersB` (answer categories to the left)

The layout `answersB` has a distance of 2 cm from the left margin and 6 cm from the right. However, the check box is now on the left rather than the right side of the answer category. If the answer category exceeds the length of the line, a line break is automatically generated. The following example illustrates the construction and appearance of `answersB`.

The commands:

```
\begin{answersB}
  \item Mehr als 5 Jahre
  \item 1 bis 5 Jahre
  \item Weniger als 1 Jahr
\end{answersB}
```

generate:

- Mehr als 5 Jahre
- 1 bis 5 Jahre
- Weniger als 1 Jahr

2.3 The layout `answersC` (bigger check boxes)

`answersC` is analogous to `answersB`, the only difference being the bigger check box in layout `answersC`. An example follows to illustrate the appearance of `answersC`.

The commands

```
\begin{answersC}
  \item Mehr als 5 Jahre
  \item 1 bis 5 Jahre
  \item Weniger als 1 Jahr
\end{answersC}
```

generate:

- Mehr als 5 Jahre
- 1 bis 5 Jahre
- Weniger als 1 Jahr

2.4 The layout `longanswersA`

The layout `longanswersA` is similar to the design of the layout `answersA`. The only difference being that `longanswersA` extends across the whole width of the page. This is reasonable if answer categories are very long. As for `answersA` it is possible to choose between the formatting options `\pbox`, `\pbigbox`, `\ebox`, `\ebigbox` (compare 2.1). Here is an example to show the conception of `longanswersA` and other formatting possibilities:

```
\begin{longanswersA}
  \item\pbox{Hauptschulabschluss (bzw. Volksschulabschluss)}
  \item\pbigbox{Realschulabschluss (Mittlere Reife)}
  \item\ebox{Polytechnische Oberschule 10. Klasse}
  \item\ebigbox{Allgemeine oder fachgebundene Hochschulreife / Abitur}
\end{longanswersA}
```

This generates the answer category:

Hauptschulabschluss (bzw. Volksschulabschluss).....	<input type="checkbox"/>
Realschulabschluss (Mittlere Reife).....	<input type="checkbox"/>
Polytechnische Oberschule 10. Klasse	<input type="checkbox"/>
Allgemeine oder fachgebundene Hochschulreife / Abitur	<input type="checkbox"/>

2.5 The layout `longanswersB`

`longanswersB` is analogous to `answersB`. Like `longanswersA`, `longanswersB` also extends across the whole width of the page.

The commands

```
\begin{longanswersB}
  \item Hauptschulabschluss (bzw. Volksschulabschluss)
  \item Realschulabschluss (Mittlere Reife)
  \item Polytechnische Oberschule 10. Klasse
  \item Allgemeine oder fachgebundene Hochschulreife / Abitur
\end{longanswersB}
```

generate the output:

- Hauptschulabschluss (bzw. Volksschulabschluss)
- Realschulabschluss (Mittlere Reife)
- Polytechnische Oberschule 10. Klasse
- Allgemeine oder fachgebundene Hochschulreife / Abitur

2.6 The layout `longanswersC`

Like `longanswersB`, the layout `longanswersC` ranges over the whole width of the page and is designed in analogy to `answersC`. The only difference is that the check box is bigger than in `longanswersB`. The following example shows this.

The commands

```
\begin{longanswersC}
```



```

\item Hauptschulabschluss (bzw. Volksschulabschluss)
\item Realschulabschluss (Mittlere Reife)
\item Polytechnische Oberschule 10. Klasse
\item Allgemeine oder fachgebundene Hochschulreife / Abitur
\end{longanswersC}

```

generate:

- Hauptschulabschluss (bzw. Volksschulabschluss)
- Realschulabschluss (Mittlere Reife)
- Polytechnische Oberschule 10. Klasse
- Allgemeine oder fachgebundene Hochschulreife / Abitur

2.7 \vertikalblock

Vertical blocks are often used for different groups of items for which the same set of answer categories are appropriate. This is implemented in the form of a table. *paperandpencil* offers the possibility to create such vertical blocks. For this purpose the command `\vertikalblock...` is entered. For ... substitute the English language number corresponding to the number of the answer categories.

The command `\vertikalblockthree{#1}{#2}{#3}{#4}` results in a vertical block with three answer categories. The input is to be made as follows:

At positions of #1, #2 and #3 the desired answer categories are entered. For #4 queries are entered. Each query is preceded by `\blocktextthree{...}` (the English number has to correspond to the one in `\vertikalblock...`).

The commands

```

\vertikalblockthree{keine Kenntnisse}{mittel}{sehr gute}{
\blocktextthree{Textverarbeitung}
\blocktextthree{Tabellenkalkulation}
\blocktextthree{Statistikprogramme}
\blocktextthree{HTML/JAVA-Programmierung}}

```

generate:

	keine Kenntnisse	mittel	sehr gute
Textverarbeitung	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tabellenkalkulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Statistikprogramme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HTML/JAVA-Programmierung	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note: *paperandpencil* can only create vertical blocks between two and five answer categories.

2.8 Hybrid questions

2.8.1 Standard hybrid questions

To generate a standard hybrid question it is necessary to insert a line after an item in question layouts like `\answers` and `\longanswers`, so answers can be entered by hand. Therefore we look at the following answer category:

- Hauptschulabschluss (bzw. Volksschulabschluss).....
- Realschulabschluss (Mittlere Reife).....
- Polytechnische Oberschule 10. Klasse
- Fachhochschulreife
- Allgemeine oder fachgebundene Hochschulreife / Abitur
- Anderer Abschluss und zwar _____
Bitte tragen Sie hier den Abschluss ein
- Noch Schüler
- Keinen Schulabschluss

Layout `longanswersA` was combined with the option `\pbox`. To insert a line with a respondent instruction, the following command was used:

```
\item\pbox{Anderer Abschluss und zwar \linetext{Bitte tragen Sie hier den  
Abschluss ein}}
```

In *paperandpencil* the text below the line is italic by default. The procedure presented for `longanswers` can be extrapolated to `answers`.

To generate

- Personalwesen
 - Finanzplanung
 - Verwaltungstätigkeit
 - sonstige Tätigkeiten
 - Welche? _____
-

the command `\linetext{}` was used to position the first line beside the item *Welche?*. To obtain a completely blank line in one of the three `\answers` layouts the command `\longline` has to be entered.

2.8.2 Complex hybrid questions

To generate questions combining several check boxes with additional free text, *paperandpencil* offers the options `\hybridbracket`, `\hybridline` and `\hybridclear`.

With `\hybridbracket{#1}{#2}` answer categories can be generated which are joined by a brace where the respondent instruction can be noted at the right side. At the position of `#1` the respective answer categories are inserted. To obtain a line break, the command `\\` is used. The respondent instruction is inserted for `#2`.

To request an open answer in a hybrid question, the command `\hybridline{#1}{#2}` has to be used. The text which queries the open answer is inserted for `#1`. The assignment below the line to enter the answer is supposed to release at the position of `#2`.

For the remaining answer categories, which have neither a brace nor an open answer the command `\hybridclear` has to be used.

To demonstrate the functionality of these `\hybrid` elements an example is shown below.

By entering

```
\hybridbracket{\underline{Ja}, und zwar ...\\
  \pbox{\quad in einer Unterf\u{u}hrung}\\
  \pbox{\quad im Bus}\\
  \pbox{\quad in einer Tiefgarage}\\
  \pbox{\quad am Bahnhof}\\
  \pbox{\quad im Wald}}
  {\em Sie k\u{o}nnen mehrere K\u{a}stchen ankreuzen}
\hybridline{\underline{Ja}, an einem anderen Ort:}{Ort bitte eintragen}
\hybridclear{\pbox{\underline{Nein}, an keinem der oben angefu\u{h}rten Orte}}
\hybridclear{\pbox{\underline{Wei\u{B} nicht}}}
```

the following construction results:

<u>Ja</u> , und zwar ... in einer Unterf\u{u}hrung..... <input type="checkbox"/> im Bus <input type="checkbox"/> in einer Tiefgarage..... <input type="checkbox"/> am Bahnhof..... <input type="checkbox"/> im Wald..... <input type="checkbox"/>	}	<i>Sie k\u{o}nnen mehrere K\u{a}stchen ankreuzen</i>
<u>Ja</u> , an einem anderen Ort:		<i>Ort bitte eintragen</i>
<u>Nein</u> , an keinem der oben angefu\u{h}rten Orte <input type="checkbox"/>		
<u>Wei\u{B} nicht</u> <input type="checkbox"/>		

3 Horizontal answer categories

The following chapter introduces answer options which have horizontally grouped answer categories.

3.1 Defined endpoint scales

3.1.1 `\hup`

With the four options belonging to the layout of `\hup` horizontal answer categories can be created, which can then be numbered ascending from left to right. Number span can range from five to eleven points.

In `\hupA...{#1}{#2}` the numbering starts at zero and ends with the number inserted as a spelt out numeral for `#1` legend is entered which is supposed to appear top left and for `#2` the legend which is supposed to appear top right. The numbers appear below the boxes.

Entering

```
\hupAseven{ganz und gar {\bf unzufrieden}}{ganz und gar {\bf zufrieden}}
```

creates the following horizontal answer category:

ganz und gar										ganz und gar
unzufrieden										zufrieden
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
0	1	2	3	4	5	6	7			

The next option, `\hupB...{#1}{#2}`, differs from `\hupA` merely in that the numbering does not start at zero but one. All other inputs correspond to the procedure of `\hupA`.

```
\hupBnine{ganz und gar {\bf unzufrieden}}{ganz und gar {\bf zufrieden}}
```

produces:

ganz und gar										ganz und gar
unzufrieden										zufrieden
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1	2	3	4	5	6	7	8	9		

`\hupC...{#1}{#2}` and `\hupD...{#1}{#2}` emerge from `\hupA` and `\hupB` invert header and footer. In other words: the numbers are situated on top and the legend underneath.

The command

```
\hupCsix{ganz und gar {\bf unzufrieden}}{ganz und gar {\bf zufrieden}}
```

generates:

	0	1	2	3	4	5	6			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
ganz und gar								ganz und gar		
unzufrieden								zufrieden		

and by entering

```
\hupDeight{ganz und gar {\bf unzufrieden}}{ganz und gar {\bf zufrieden}}
```

you get:

	1	2	3	4	5	6	7	8	
	□	□	□	□	□	□	□	□	
ganz und gar									ganz und gar
unzufrieden									zufrieden

3.1.2 \hdown

The class `\hdown` differs from `\hup` in that numbering is not ascending from the left to the right but in reverse. The lowest number is therefore on the right side and the highest number on the left side. In terms of the position the numbering and the legend of the four `\hdown` options are handled in completely analogy to `\hup`.

By entering

```
\hdownAsix{ganz und gar {\bf zufrieden}}{ganz und gar {\bf unzufrieden}}
```

the following is generated:

ganz und gar								ganz und gar
zufrieden								unzufrieden
	□	□	□	□	□	□	□	
	6	5	4	3	2	1	0	

and entering

```
\hdownBfive{ganz und gar {\bf zufrieden}}{ganz und gar {\bf unzufrieden}}
```

obtains:

ganz und gar					ganz und gar
zufrieden					unzufrieden
	□	□	□	□	□
	5	4	3	2	1

as well as

```
\hdownCten{ganz und gar {\bf zufrieden}}{ganz und gar {\bf unzufrieden}}
```

produces:

	10	9	8	7	6	5	4	3	2	1	0	
	□	□	□	□	□	□	□	□	□	□	□	
ganz und gar												ganz und gar
zufrieden												unzufrieden

and

```
\hdownDeleven{ganz und gar {\bf zufrieden}}{ganz und gar {\bf unzufrieden}}
```

generates:

11	10	9	8	7	6	5	4	3	2	1
□	□	□	□	□	□	□	□	□	□	□
ganz und gar zufrieden					ganz und gar unzufrieden					

3.2 Naming each scale point

3.2.1 `\horizontal`

In `\hup` and `\hdown` legends are intended only on the left and on the right. If each box should have a legend above, *paperandpencil* provides the category `\horizontal`. Between three and seven boxes can be generated.

The basic command to create such a horizontal answer category is `\horizontal...{#1}{#2}`. For the ... the desired number of boxes is entered as a spelt out numeral. At the position of #1 the legend is inserted which is supposed to appear above the boxes. Therefore the command `\up...` is required. In analogy to #2 the command `\down...` is used. For ... the same number has to be entered which has already been used for `\horizontal...`. To demonstrate such a horizontal answer category two examples follow.

First a horizontal scale with five boxes, where the left, the central and the right box should be labeled. Numbering is supposed to appear below the boxes.

The sequence

```
\horizontalfive{\upfive{stimme zu}}{\halb und halb}{\downfive{1}{2}{3}{4}{5}}
```

results in the following scale:

stimme zu			halb und halb			stimme nicht zu
□		□	□		□	□
1		2	3		4	5

Now a horizontal scale with seven boxes shall be generated. The numbers are supposed to appear above the boxes and the legend below. However, only the left, the central and the right box should be labeled.

For that purpose the command

```
\horizontalseven{\upseven{1}{2}{3}{4}{5}{6}{7}}{\downseven{stimme zu}}{\halb und halb}{\downseven{stimme nicht zu}}
```

is used and the result is:

1	2	3	4	5	6	7
□	□	□	□	□	□	□
stimme zu			halb und halb			stimme nicht zu

3.2.2 `\htext`

For horizontally labeled scales without numbers *paperandpencil* offers the function `\htext`. As already known the desired number of boxes is added by entering the spelt out numeral. There are as many braces as boxes. Each brace contains a legend. *paperandpencil* allows three to seven boxes in `\htext`. For a better understanding an example with five boxes is provided.

By the command

```
\htextfive{stimme voll und ganz zu}{stimme eher zu}{teils teils}{stimme eher  
nicht zu}{stimme überhaupt nicht zu}
```

the following emerges:

stimme voll und ganz zu	stimme eher zu	teils teils	stimme eher nicht zu	stimme überhaupt nicht zu
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.2.3 `\htextline`

In case a scale is supposed to offer a non-substantial answer option (e.g. *don't know*) which is separated by a line from the other options, *paperandpencil* offers the command `\htextline`. This command has the same function as `\htext`. An example follows.

By entering

```
\htextlinesix{stimme voll und ganz zu}{stimme eher zu}{teils teils}{stimme  
eher nicht zu}{stimme überhaupt nicht zu}{weiß nicht}
```

you get:

stimme voll und ganz zu	stimme eher zu	teils teils	stimme eher nicht zu	stimme überhaupt nicht zu	weiß nicht
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.3 Ranking

Ranking is also considered as a horizontal answer category. Here the respondent is asked to rank certain attributes using a specified scale. In order to familiarize the respondent with separate scale values it is common practice that an instruction follows the question. This instruction is to insert as previously described in section 1.3.

Ranking is started with the command `\begin{ranking}`. Thereafter `\categories{#1}{#2}` follows, providing each of the two columns of the ranking with a headline. #1 specifies the heading for the left column, #2 for the right column. The individual attributes to be ranked are listed with `\rankbracket{#1}`. `\rankbracket` provides for entry of the respondent's evaluation within a square bracket. If respondents may want to name additional unlisted attributes, there is also the possibility to add an open answer category using `\rankopen{#1}`. If in this instance an annotation or other text is supposed to appear beside the right-hand column, this is substituted for #1, otherwise this line of the right-hand column will remain blank. Once all attributes are entered, the command `\end{ranking}` closes the ranking. An example follows to demonstrate a ranking.

```
\begin{ranking}
\categories{Merkmal}{Wichtigkeit}
\rankbracket{Fahrrad}
\rankbracket{Auto}
\rankbracket{Inline-Skater}
\rankbracket{Öffentliche Verkehrsmittel}
\rankbracket{andere}
\rankopen{($\Leftarrow$ bitte beschreiben)}
\end{ranking}
```

generates:

Merkmal	Wichtigkeit
Fahrrad	[]
Auto	[]
Inline-Skater	[]
Öffentliche Verkehrsmittel	[]
andere	[]
_____	(\Leftarrow bitte beschreiben)

If a box to write in is supposed to appear instead of the squared brackets, `\rankbracket` is replaced by `\rankbox`. Using `\rankbox`, the previous example looks like this:

Merkmal	Wichtigkeit
Fahrrad	<input type="checkbox"/>
Auto	<input type="checkbox"/>
Inline-Skater	<input type="checkbox"/>
Öffentliche Verkehrsmittel	<input type="checkbox"/>
andere	<input type="checkbox"/>
_____	(\Leftarrow bitte beschreiben)

4 Semantic differentials

Semantic differentials are devices to ask respondents indirectly. The respondent is offered the possibility to indicate how strong he or she associates an item with specific attributes. *paperandpencil* can implement semantic differentials whose scales span five to seven points.

The command starting a semantic differential is `\begin{semantic...}`. At the position of ... a spelt out numeral is entered which describes the dimension of the scale. The opposing attributes standing to the right and left beside the scale boxes are created with `\sem...{#1}{#2}`. For ..., use the identical numeral already used in the initiating command. The attribute pairs have to be substituted for #1 and #2. The command `\end{semantic...}` closes the semantic differential.

For example, by entering

```
\begin{semanticseven}  
\semseven{weich}{hart}  
\semseven{heiter}{traurig}  
\semseven{verschwommen}{klar}  
\semseven{stark}{schwach}  
\semseven{redselig}{verschwiegen}  
\end{semanticseven}
```

the following semantic differential is generated:

	1	2	3	4	5	6	7	
weich								hart
heiter								traurig
verschwommen								klar
stark								schwach
redselig								verschwiegen

5 Open questions

For creating open questions *paperandpencil* offers the choice between continuous and dotted lines.

5.1 Continuous lines with `\open`

The command `\open#1` is used to produce continuous lines. At the position of `#1` the desired number of lines is entered by inserting the numeral.

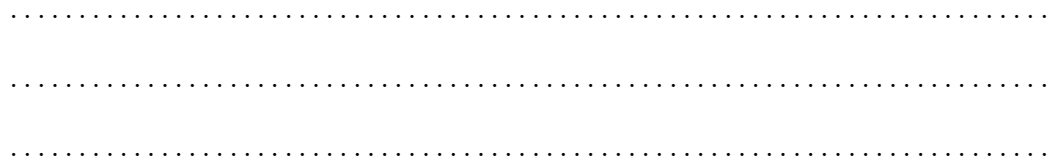
paperandpencil provides a span of one to ten lines. For example: `\opentwo` produces two lines in form of:



5.2 Dotted lines with `\opendots`

For dotted lines the command `\opendots#1` is used. As mentioned for continuous lines at the position of `#1` the desired number of lines is entered by inserting the numeral. Here is also a span of one to ten lines available.

For example: `\opendotsthree` produces three dotted lines in form of:



6 Filter

6.1 The layout `linkanswers`

If a filter is supposed to apply to the answer categories, the aforementioned layout of chapter 2 cannot be used. The layout `linkanswers` is intended to implement a filter.

There are different options to choose from in order to implement a filter: on the one hand `\link{#1}{#2}` and on the other hand `\framedlink{#1}{#2}`. By using the option `\framedlink` the filter is set into a frame while option `\link` provides no frame. At position `#1` the answer is entered which triggers the filter. For `#2` the description of the filter is entered.

To specify, within the layout `linkanswers` an answer, which does not activate any filter the command `\nolink{#1}` is employed. At the position of `#1` the answer option is entered. The formatting options `\pbox`, `\pbigbox`, `\ebox` and `\ebox`, which were described in chapter 2, are available here as well.

If a filter is not supposed to refer to another question by that question's number, but directly leading to a subsequent question by an arrow, the command `\linkwithquestion{#1}{#2}{#3}` is used. For `#1`, the answer is substituted from which the arrow originates. For `#2` the target question to which the filter points is entered. Finally `#3` is replaced by the answering options. Here one can choose between the formats `\pbox`, `\pbigbox`, `\ebox` and `\ebox`.

If no more than two answer options are provided, these can be separated by a `\quad`. If there are more than two answer options, it is recommended to induce a line break by entering `\smallskip`.

To demonstrate this procedure, two simple examples follow.

By entering

```
\begin{linkanswers}
  \framedlink{Ja}{\em Bitte weiter mit Frage xy}
  \nolink{Nein}[0.25cm]
  \nolink{Weiß nicht}
\end{linkanswers}
```

the following results:

Ja.....	<input type="checkbox"/>	→	<table border="1"><tr><td><i>Bitte weiter mit Frage xy</i></td></tr></table>	<i>Bitte weiter mit Frage xy</i>
<i>Bitte weiter mit Frage xy</i>				
Nein.....	<input type="checkbox"/>			
Weiß nicht.....	<input type="checkbox"/>			

Entering

```
\begin{linkanswers}
  \linkwithquestion{\pbox{Ja}}{Haben Sie das derzeit benutzte Gerät in den
  letzten 12 Monaten gekauft?}{\pbox{Ja}\smallskip

  \pbox{Nein}}
  \nolink{\pbox{Nein}}
\end{linkanswers}
```

instead, the following results:

Ja..... → Haben Sie das derzeit benutzte Gerät
in den letzten 12 Monaten gekauft?
Ja.....
Nein.....
Nein.....

6.2 The layout `coloredfilter` (filter with background color)

Filters can also point to questions highlighted by appearing within a colored box. To this end, *paperandpencil* offers the layout `coloredfilter`. The command `\begin{coloredfilter}` generates a box with a grey background. Thereafter one can continue with any question and answer type. It is important that the text margin within the box is a little bit wider on the right side compared to unboxed text. Once the box is supposed to end, the command `\end{coloredfilter}` closes it. For a better understanding an example follows.

With the commands

```
\question{\bf Ist das Studienfach, das Sie jetzt studieren, das Studienfach,
mit dem Sie ursprünglich Ihr Studium begonnen haben?}

\begin{linkanswers}
\framedlink{Ja}{Weiter mit Frage 4}[0.2cm]
\framedlink{Nein}{Weiter mit Frage 2}
\end{linkanswers}

\begin{coloredfilter}
\question{\bf Welches Studium haben Sie ursprünglich begonnen?}
\hfill Erststudium war: \hspace{-5cm}\year
\question{\bf Wie zutreffend sind für Sie die folgenden Gründe für einen
Studienwechsel gewesen?}
\vertikalblockfive{trifft stark zu}{trifft zu}{halb und halb}{trifft nicht zu}
{trifft überhaupt nicht zu}{
\blocktextfive{Ich konnte meine Vorstellungen nicht verwirklichen}
\blocktextfive{Ich sah nur schlechte Zukunftsaussichten}
\blocktextfive{Meine Interessen haben sich verlagert}
\blocktextfive{Ich hatte familiäre Gründe}}
\end{coloredfilter}
```

the following is obtained:

1. Ist das Studienfach, das Sie jetzt studieren, das Studienfach, mit dem Sie ursprünglich Ihr Studium begonnen haben?

Ja..... →

Weiter mit Frage 4

Nein →

Weiter mit Frage 2

2. Welches Studium haben Sie ursprünglich begonnen?

Erststudium war:

3. Wie zutreffend sind für Sie die folgenden Gründe für einen Studienwechsel gewesen?

	trifft stark zu	trifft zu	halb und halb	trifft nicht zu	trifft überhaupt nicht zu
Ich konnte meine Vorstellungen nicht verwirklichen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ich sah nur schlechte Zukunftsaussichten	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meine Interessen haben sich verlagert	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ich hatte familiäre Gründe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7 Quantitative answer options

7.1 Dates

Many questionnaires require entries for year and month. *paperandpencil* offers pre-assembled defaults for these.

If month and year are required there are two different layouts available. The command `\monthandyearA` results in

Monat Jahr

while `\monthandyearB` generates the following:

Monat Jahr

If only the year is required, *paperandpencil* offers five options.

The command `\year` produces four empty boxes, in which the year can be entered:

The versions `\yearxxA` and `\yearxxB` differ by generating:

19

respectively

20

Alternatively, years can be entered using lines. The commands `\yearlineA` or `\yearlineB` generate as a result 19_____ respectively 20_____.

7.2 Miscellaneous

Commonly, entries for percentages or distances (in kilometers) are requested. *paperandpencil* offers layout options for either. The command `\km` generates:

, km

The command `\percent` generates three empty boxes next to which a percent sign appears. The result is aligned to the left. If the details are supposed to align to the right, the command has to be modified by `\hfill\percent\hspace{xcm}`, with x cm specifying the distance to the right margin in centimeters.

By using a right margin of 4 cm e.g., the following appears:

%

Other numerical formats are created by an option varying the number of boxes and to insert text stating the requested item. For example, to inquire how many students attended a lecture in the last term one may resort to the command `\xxxbox` which produces three empty boxes. Using the previously described syntax for alignment to the right side, answering option `\hfill\xxxbox` `Studenten\hspace{xcm}` is produced with a right margin of 4 cm:

Studenten

Alternatively the command `\xxbox` can be used, which generates two boxes. The handling is analogous to the command `\xxxbox`.

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