

Repurposing an eqexam Document

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Demo files that are attached to this document are,

- **test03.tex**, **graphics.zip.txt** (The graphics are in a ZIP file, save this file to your computer, and change the name from graphics.zip.txt to graphics.zip, place in a folder named graphics, one level lower than where you place the source file test03.tex.
- **test03_ns.pdf**: Compiled with nosolutions option and the command `\vspacewithkeyOn` executed in the preamble
- **test03_a.pdf**: Compiled with the answerkey option and the command `\vspacewithkeyOn` executed in the preamble
- **test03_vs.pdf**: Compiled with the vspacewithsolns option and the command `\vspacewithkeyOn` executed in the preamble
- **test03_so.pdf**: Compiled with the solutiononly option and the command `\vspacewithkeyOn` executed in the preamble
- **test03_avo.pdf**: Compiled with the answerkey option and the command `\vspacewithkeyOff` executed in the preamble

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1. Introduction

In this blog, we explore some of the options and techniques that are designed to repurpose a single eqexam document. In this article, we take the eqexam document, `test03.tex`, and compile it under various options to get four important variations of the document:

1. [Section 2.1](#). With the `nosolutions` option, we obtain the exam document as the student would see on test day.
2. [Section 2.2](#). The `answerkey` option produces the exam with answers.
3. [Section 2.3](#). The `vspacewithsols` option produces a combination of the two previous options; the exam appears as the student would take it on test day, but the solutions to the exam appear at the end of the document.
4. [Section 2.4](#). The `solutiononly` option creates a document with the solutions only.

The source file for all the examples discussed in this blog is [test03.tex](#), click on this red link and save to your own computer, there you can study it and compile it.

2. Repurposing an eqexam document

In this section, we survey the four ways a eqexam document author can compile a single source file to obtain four different output documents.

2.1. The `nosolutions` option

When we compile the source file, under the `nosolutions` option, we obtain the exam document the student would normally see on the day of the test. View this compiled document by clicking on the red link: [test03_ns.pdf](#).

Now, assuming you are looking at `test03_ns.pdf` with one eye, and reading this text with the other eye, we discuss the features of this document.

The demo file for this option is [test03_ns.pdf](#); the document was compiled with the following package options, including the `nosolutions` option:

```
\usepackage[pointsonleft,nototals,forcolorpaper,usexkv,useforms,
  nosolutions,showgrayletters]{eqexam}
```

Extensive commenting may be found in the document [test03_ns.pdf](#) itself.

You'll note that I've compiled this document (`test03_ns.pdf`), as well as all others, with the `forcolorpaper` option. I've done this with conjunction to the `showgrayletters`.¹ In the preamble, I've used the (new) `\forceNoColor` command, which defines as black all the standard colored elements, but allows the gray color. You'll note that the multiple choice questions have capital gray letters within the boxes, this is useful for cross-referencing an answer in one of the solutions options (`answerkey`, `vspacewithsols`, or `solutiononly`)

¹The gray letters would appear as black letters if we were compile with the usual `forpaper` option.

2.2. The answerkey option

When compiled with the answerkey option, the solutions to all the questions appear. This is handy for a solution key to the exam, the instructor can use it as such; the instructor has the option of publishing the document on the class web site after the exam for the students to study.

The demo file for this option is [test03_a.pdf](#); the package options used are listed below, including the answerkey option:

```
\usepackage[pointsonleft,nototals,forcolorpaper,usexkv,useforms,
  answerkey,showgrayletters]{eqexam}
```

Extensive commenting may be found in the document [test03_a.pdf](#) itself.

All documents were compiled with the command `\vspacewithkeyOn` appearing in the preamble, a new feature of eqexam. In the past, when an eqexam document is compiled with the answerkey option, the optional vertical spacing parameter of the `solution` environment is ignored. When `\vspacewithkeyOn` is executed (`\vspacewithkeyOff` turns off this feature), eqexam calculates the vertical space the typeset solution takes up, and does a `\vspace*` to increase the vertical space, if needed, in accordance with the vertical space parameter of the `solution` environment. For example, if the document author types `\begin{solution}[2in]`, the vertical space will be 2 inches (or greater) when document is compiled with the answerkey option.

Compare the two documents [test03_a.pdf](#) and [test03_ns.pdf](#) side by side.² Observe that from page to page, the problems begin and end in about the same place on each page. Cool! In fact, very cool!

Also compare the two files [test03_avo.pdf](#) and [test03_a.pdf](#). The former file was compiled with the answerkey option and with `\vspacewithkeyOff` in the preamble. There are slight differences in spacing for problems 3 and 4 (problems 1 and 2 had no solutions so there is no change in vertical spacing). The differences between the two files are most dramatic on the last page, for problems 9 and 10; for these two problems had large vertical spacing specified in the `solution` environment.

2.3. The vspacewithsolns option

As mentioned earlier, the `vspacewithsolns` is a combination of options `nosolutions` and `answerkey`. When the document is compiled with this option, the exam appears as it would on test day (with no answers or solutions); however, the solutions to the test appear at the end of the document. I've recently begun using this option to publish old tests for my students, they can take the test, then self-grade themselves by looking up the answers "in the back of the book," something they are most familiar with. I've received some nice positive feedback from this review strategy.

The demo file for this option is [test03_vs.pdf](#); the package options used are listed below, including the `vspacewithsolns` option:

²Perhaps using the new Windows 7 feature.

```
\usepackage[pointsonleft,nototals,forcolorpaper,usexkv,useforms,
vspacewithsolns,showgrayletters]{eqexam}
```

Extensive commenting may be found in the document [test03_vs.pdf](#) itself.

One of the problems that arose in developing this option is that normally, fill in the blank, true and false, and multiple choice questions have no solution (as created by the `solution` environment). If a problem does not have a solution, then that problem is not written to the solutions file `\jobname.sol`, and does not appear at the end of the file. To counter-balance this deficiency, I've developed some special techniques that give a very nice solution (at the end of the file). See the comments in the PDF, as well as the source file

2.4. The `solutiononly` option

This is a option requested by my good friend, Jürgen. He and a colleague were working on a book, and he asked me to develop on option that displays the solutions only.³ “OK,” said I. This option may be used as answer key to an exam for the instructor or for the class. The instructor may give a take home (or in-class) exam, then, at a later time, publish the solutions only document.

The demo file for this option is [test03_so.pdf](#); the package options used are listed below, including the `solutiononly` option:

```
\usepackage[pointsonleft,nototals,forcolorpaper,usexkv,useforms,
solutiononly,showgrayletters]{eqexam}
```

Extensive commenting may be found in the document [test03_so.pdf](#) itself.

To produce a solutions only file, you must

1. declare your intentions to build a solutions only file by placing the command `\encloseProblemsWith{<solns_name>}` in the preamble;
2. enclose the exam questions in a `<solns_name>`, that is, enclose the exam questions in a `\begin{<solns_name>}/\end{<solns_name>}` pair.
3. compile the source with the `vspacewithsolns` options as many times as needed to bring any cross-references and calculations up to date;
4. finally, compile with the `solutiononly` option.

The pair `\begin{<solns_name>}/\end{<solns_name>}` is nothing more than a comment environment (comment package). The command `\encloseProblemsWith` is defined as follows,

```
\def\encloseProblemsWith#1{%
  \ifsolutiononly\excludcomment{#1}\else
  \includcomment{#1}\fi}
```

³He used it to printout the solutions for proofreading.

When the `solutiononly` option is used, we exclude the specified comment, otherwise, we include it. Compiling under `vspacewithsolutions` produces the `\jobname.sol`, while compiling under `solutiononly` does not change the `.sol` file, and it is input at the end of the document.

Well, that's pretty much it for now, I simply must get back to my retirement. ~~DS~~