Auto Multiple Choice - Feature # 230: Use storebox instead of savebox to save computing time

Status:	Closed	**Priority:**	Normal
Author:	Anirvan Sarkar	**Category:**	LaTeX
Created:	10/13/2013	**Assignee:**	
Updated:	01/28/2021	**Due date:**	

Description:	From r1474 AMC uses @savebox@ to save computing time when @shape=oval@. It will take even less time if @storebox@ is used instead of @savebox@.

Following test case result justifies this.

Create a file named *savebox.tex* with the code:

```
<pre>
\documentclass[a4paper]{article}

\usepackage{fancybox}
\usepackage{tikz}
\usepackage{forloop}

\newsavebox{\mybox}
\newcounter{counter}
\begin{document}

\savebox{\mybox}
{
    \begin{tikzpicture}
    \foreach \x in {1,1.001,1.002,...,2}
    {
        \draw (0+\x,0) circle (0.4cm);
    }
    \end{tikzpicture}
}

\forloop{counter}{0}{\value{counter} < 50}
{
    \usebox{\mybox}\\
}

\end{document}
</pre>
```

This creates a @tikzpicture@ which is used for 50 times.

The output of the command @time pdflatex savebox.tex@ on my computer is:

```
<pre>
real    0m8.461s
user    0m8.384s
sys     0m0.060s
</pre>
```

Create another file named *storebox.tex* with the code:

```
<pre>
\documentclass[a4paper]{article}

\usepackage{storebox}
\usepackage{tikz}
\usepackage{forloop}

\newstorebox{\mybox}
\newcounter{counter}
\begin{document}

\storebox{\mybox}
{
    \begin{tikzpicture}
    \foreach \x in {1,1.001,1.002,...,2}
    {
        \draw (0+\x,0) circle (0.4cm);
    }
    \end{tikzpicture}
}

\forloop{counter}{0}{\value{counter} < 50}
{
    \usestorebox{\mybox}\\
}

\end{document}
</pre>
```

Here we are using a @storebox@ instead of @savebox@.

The output of the command @time pdflatex storebox.tex@ on my computer is:

```
<pre>
real    0m2.498s
user    0m2.456s
sys     0m0.028s
</pre>
```

Conclusion: @storebox@ is *faster!!*

+Things to note:+

As the number of times @savebox@ used is increased, the time taken to generate pdf file also increases. For example change the counter from 50 to 60,70,80,... You will notice that time also increases. If you keep on increasing the counter after sometime(counter set to 100) you may get the error: _! TeX capacity exceeded, sorry [main memory size=3000000]_. But with @storebox@ the time is almost constant. Even with counter set to *5000*, the time taken to generate the pdf file was only about *3.1 seconds*.
As @storebox@ stores the box content as a reference instead of writing it every time to the output file

(which @savebox@ does), the pdf file generated is also smaller.

The shift from @savebox@ to @storebox@ will take very less effort. One has to use the package @storebox@ instead of @fancybox@, use the command @\newstorebox@ instead of @\newsavebox@, @\storebox@ instead of @\savebox@ and @\usestorebox@ instead of @\usebox@.

History

10/13/2013 11:00 pm - Alexis Bienvenüe

- File ab.pdf added

- File ab.tex added

@storebox@ seems very good but I have a small issue with @storebox@: it inserts some space (see attached example). Thus calling @\AMCboxDimensions@ will possibly break the layout, which can be annoying.

10/13/2013 11:07 pm - Alexis Bienvenüe

- File deleted (ab.tex)

10/13/2013 11:07 pm - Alexis Bienvenüe

- File deleted (ab.pdf)

10/13/2013 11:09 pm - Alexis Bienvenüe

- File ab.tex added

- File ab.pdf added

(updated the example)

11/05/2014 11:02 am - Alexis Bienvenüe

Since commit:09d7e07592de, AMC uses @storebox@ when package option @storebox@ is set. However, @\AMCboxStyle@ call can add some spaces and change the page layout, so it is recommended to use it once in a separate off-exam page, like
<pre>
...
\begin{document}

Unused page.

\AMCboxStyle{shape=oval}
\clearpage
...
</pre>

01/28/2021 08:38 pm - Alexis Bienvenüe

- Status changed from New to Closed

- % Done changed from 0 to 100

Files

savebox.tex	400 Bytes	10/13/2013	Anirvan Sarkar
storebox.tex	409 Bytes	10/13/2013	Anirvan Sarkar
ab.tex	445 Bytes	10/13/2013	Alexis Bienvenüe
ab.pdf	21.6 kB	10/13/2013	Alexis Bienvenüe