

iexec: L^AT_EX Package for Inputable Shell Executions*

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1 Introduction

This package helps you execute shell commands right from the document and then put their output to the document:

Today is **22-Oct-2022**

```
1 \documentclass{article}
2 \usepackage{iexec}
3 \usepackage[paperwidth=3in]{geometry}
4 \pagestyle{empty}
5 \begin{document}
6 Today is \textbf{%
7   \iexec{date +%e-%b-%Y}}
8 \end{document}
```

\iexec The only command provided by this package is `\iexec [options] {cmd}`. Its only mandatory argument *cmd* is the command to be executed through the terminal shell (bash, or whatever is set as the default one in your console).

You have to run `pdflatex` (or just `latex`) with the `--shell-escape` flag in order to let [shellesc](#) execute your shell command.

2 Options

quiet If you don't want the output to be visible, use `\phantom{\iexec{...}}`. Otherwise, you can use quiet option:

```
I just want to delete some file:
\iexec[quiet]{rm -f foo.txt}
```

In this case, whatever the shell command produces will not be included into the document.

stdout The output of your code is saved into the file provided as an optional argument of `\iexec` (the default value is `iexec.tmp`):

```
Today is \iexec[stdout=date.txt]{date +%e-%b-%Y | tr -d '\n'}.
```

The tailing part of the command here removes all ends-of-line.

stderr The error output of the code is saved into the file provided as an optional argument of `\iexec` (by default the error output is streamed into `stdout`):

```
Today is \iexec[stderr=my.txt]{broken-command}.
```

exit The exit code of the command is saved into a file. You can change the name of it using `exit` option:

```
Today is \iexec[exit=code.txt]{./broken-command.sh}.
```

trace The file specified will be deleted right after its usage. If you don't want this to happen, use `trace` package option: all files will remain in the directory where they were created. It's possible to turn tracing on globally, for the entire document, using `trace` option of the package:

```
\documentclass{article}
\usepackage[trace]{iexec}
\begin{document}
This file won't be deleted: \iexec[stdout=me.txt]{whoami}.
\end{document}
```

append The `stdout` produced will be appended to the file specified:

```
\documentclass{article}
\usepackage[trace]{iexec}
\begin{document}
\iexec[append,stdout=foo.txt,quiet]{echo 'Hello, '}
\iexec[append,stdout=foo.txt,quiet]{echo 'Jeffrey!'}
\input{foo.txt}
\end{document}
```

log The `stdout` produced will be printed in `TEX` log:

```
\iexec[log]{echo 'Hello, \LaTeX!'}
```

null The `stdout` of the command will be sent to `/dev/null`:

```
\iexec[null]{rm some-file.txt}
```

ignore By default, we report an error if exit code is not equal to zero. You can suppress this with `ignore` option:

```
\iexec[ignore]{broken-command}
```

3 Implementation

First, we include [shellesc](#) package, which we use to execute shell commands:

```
1 \RequirePackage{shellesc}
```

Then, we parse package options:

```
2 \RequirePackage{xkeyval}
3 \makeatletter
4 \newif\ifiexec@trace
5 \DeclareOptionX{trace}{\ifiexec@tracetrue}
6 \ProcessOptionsX\relax
7 \makeatother
```

*The sources are in GitHub at [yegor256/iexec](#)

Then, we prepare to parse the options of \iexec command:

```

8 \RequirePackage{pgfkeys}
9 \makeatletter\pgfkeys{
10 /iexec/.is family,
11 /iexec,
12 exit/.store in = \iexec@exit,
13 exit/.default = iexec.ret,
14 stdout/.store in = \iexec@stdout,
15 stdout/.default = iexec.tmp,
16 stderr/.store in = \iexec@stderr,
17 trace/.store in = \iexec@traceit,
18 append/.store in = \iexec@append,
19 log/.store in = \iexec@log,
20 null/.store in = \iexec@null,
21 quiet/.store in = \iexec@quiet,
22 ignore/.store in = \iexec@ignore,
23 stdout,exit
24 }\makeatother

```

\iexec@typeout Then, we define an internal command \iexec@typeout for printing the content of a file, as suggested [here](#):

```

25 \RequirePackage{expl3}
26 \makeatletter\ExplSyntaxOn
27 \NewDocumentCommand{\iexec@typeout}{m}{
28 \iexec_typeout_file:n { #1 }}
29 \ior_new:N \g_iexec_typeout_ior
30 \cs_new_protected:Nn \iexec_typeout_file:n
31 {
32 \ior_open:Nn \g_iexec_typeout_ior { #1 }
33 \ior_str_map_inline:Nn \g_iexec_typeout_ior
34 {\iow_term:n { ##1 }}
35 \ior_close:N \g_iexec_typeout_ior
36 }
37 \ExplSyntaxOff\makeatother

```

\iexec Then, we define \iexec command. It is implemented with the help of \ShellEscape from shellesc package:

```

38 \makeatletter
39 \newread\iexec@exitfile
40 \newcommand\iexec[2][]{%
41 \begingroup%
42 \pgfqkeys{/iexec}{#1}%

```

First, we verify that latex is running with --shell-escape option, since without it nothing will work; so, it's better to throw an error earlier than later:

```

43 \ifnum\ShellEscapeStatus=1\else%
44 \PackageError{iexec}{You must run TeX processor with
45 --shell-escape option}{}%
46 \fi%
47 \begingroup%

```

Then, start the log from a clean line:

```

48 \ifdefined\iexec@log%
49 \message{^^J}%
50 \fi%

```

Then, we define a few special chars in order to escape them in the shell (the full list of them is in [macros2e](#)):

```
51      \let\%\@percentchar%
52      \let\\\@backslashchar%
53      \let\{\@charlb%
54      \let\}\@charrb%
```

Then, we execute it:

```
55      \def\iexec@cmd{(#2)
56      \ifdefined\iexec@append>\fi>
57      \ifdefined\iexec@null/dev/null\else\iexec@stdout\fi
58      \space\ifdefined\iexec@stderr2>\iexec@stderr\else2>&1\fi;
59      /bin/echo -n $? >\iexec@exit}
60      \ShellEscape{\iexec@cmd}%
```

Then, a message is printed to TeX log:

```
61      \ifdefined\iexec@log%
62      \message{iexec: [\iexec@cmd]^^J}%
63      \fi%
64      \endgroup%
```

Then, if required, the content of the stdout file will be printed to the log:

```
65      \ifdefined\iexec@null\else%
66      \ifdefined\iexec@log%
67      \message{iexec: This is the content of \iexec@stdout:^^J}%
68      \iexec@typeout{\iexec@stdout}%
69      \message{<EOF>^^J}%
70      \fi\fi%
```

Then, we check exit code, unless there is ignore option:

```
71      \immediate\openin\iexec@exitfile=\iexec@exit%
72      \read\iexec@exitfile to \iexec@code%
73      \immediate\closein\iexec@exitfile%
74      \ifnum\iexec@code=0\else%
75      \ifdefined\iexec@ignore%
76      \ifdefined\iexec@log%
77      \message{iexec: Execution failure ignored,
78      the exit code was \iexec@code^^J}%
79      \fi%
80      \else%
81      \PackageError{iexec}{Execution failure,
82      the exit code was \iexec@code}{}%
83      \fi%
84      \fi%
```

Then, include the produced output into the current document:

```
85      \ifdefined\iexec@null\else%
86      \ifdefined\iexec@quiet%
87      \ifdefined\iexec@log%
88      \message{iexec: Due to 'quiet' option we didn't read
89      the content of '\iexec@stdout'
90      \ifdefined\pdffilesize (\pdffilesize{\iexec@stdout}
91      bytes)\fi^^J}%
92      \fi%
93      \else%
94      \ifdefined\iexec@log%
```

```

95     \message{iexec: We are going to include the content of
96     '\iexec@stdout'\ifdefined\pdffilesize (\pdffilesize
97     {\iexec@stdout} bytes)\fi...^^J}%
98     \fi%
99     \input{\iexec@stdout}%
100     \message{iexec: The content of '\iexec@stdout'
101     was included into the document^^J}%
102     \fi\fi%

```

Finally, delete the file or leave it untouched:

```

103     \ifdefined\iexec@null\else%
104     \ifiexec@trace%
105     \ifdefined\iexec@log%
106     \message{iexec: Due to package option 'trace',
107     the files '\iexec@stdout' and '\iexec@exit' were
108     not deleted^^J}%
109     \fi%
110     \else%
111     \ifdefined\iexec@traceit%
112     \ifdefined\iexec@log%
113     \message{iexec: Due to 'trace' package option,
114     the files '\iexec@stdout' and '\iexec@exit'
115     were not deleted^^J}%
116     \fi%
117     \else%
118     \ShellEscape{rm \iexec@stdout}%
119     \ifdefined\iexec@log%
120     \message{iexec: The file '\iexec@stdout' was deleted^^J}%
121     \fi%
122     \ShellEscape{rm \iexec@exit}%
123     \ifdefined\iexec@log%
124     \message{iexec: The file '\iexec@exit' was deleted^^J}%
125     \fi%
126     \fi%
127     \fi\fi%
128     \endgroup
129 } \makeatother

```

Change History

0.10.0	General: The option "ignore" suppresses the checking of "iexec.ret" value. 3	instead of rewriting it (this is how it was before). 3
	\iexec: The ability to track exit code was added. Now, the code is saved into "iexec.ret" file, which is then read and checked for zero value. . . 4	The option "log" was introduced, to turn on log/debug messages in TeX log (they were all visible always, which was sometimes annoying. Also, this option enables printing of the entire content of stdout to the log too (this may be pretty convenient for debugging). 3
	The file "iexec.ret" is reused for all scripts. 3	
0.11.0	General: The option "exit" allows to change the name of the file with exit code. 3	0.8.0
	\iexec: The file with exit code now contains just numbers, without end of line. 4	\iexec: The option "null" was introduced, allowing redirection of stdout to "/dev/null". Doesn't work on Windows, though. 4
0.7.0	General: The option "append" was introduced — if it's turned on, stdout will be appended to the file,	0.9.0
		\iexec: The option "stderr" was introduced, allowing redirection of stderr to a file. Without this option specified, stderr will go to stdout. . 4

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