TeX Write18 Config

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1 Start

Test Echo someting to a `.txt` file

```
\immediate\write18{echo Hello2 > ./Test_export.txt}
```

which means that, TEX could interact with the system, and could use the system to do some things.

2 Powershell Script

1. Debug Process(Use .ps1 in "Win+R" windows)

```
\immediate\write18{pwsh.exe -NoProfile -File "./Scripts/Gplot_3d.ps1" x**2}
```

2. Test Use self Define commanf in `$profile` in PowerShell

```
\immediate\write18{pwsh.exe -NoProfile -File "./Scripts/Gplot_3d.ps1" x**2}

\begin{center}
    \includegraphics[width=.4\textwidth]{./gnuoutput/Function_output_3d.pdf}
\end{center}
```

3. Make a Command

```
% To use it convenient,make it be a command:
\newcommand{\Gplotz}[1]{%
    \immediate\write18{pwsh.exe -NoProfile -File "./Scripts/Gplot_3d.ps1" #1}
    \includegraphics[width=.4\linewidth]{./gnuoutput/Function_output_3d.pdf}
}
% Example
\Gplotz{x**2 + y**2}
```

It's in Unix, So I can't active with Powershell. use pwsh is very inconvenient

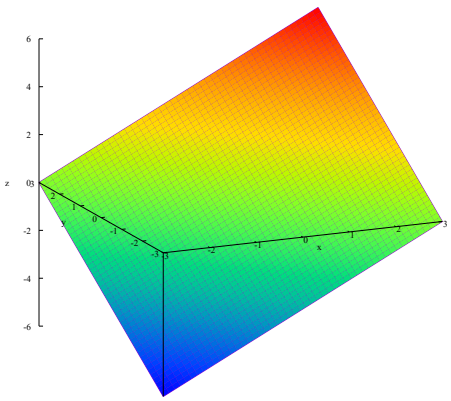
3 LaTeX3 Base:Win and Unix

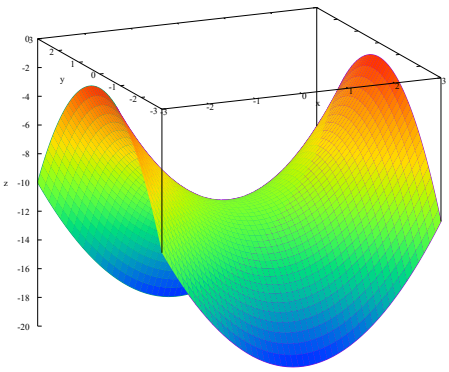
Therefore we use unix like command:

- sed, grep, awk
- mv, cp, mkdir, rm

```
%% 1.counter to identify picture created by Gnuplot
\newcounter{gnu@plot@pic@counter}
\newcommand{\gnu@picture@fullname}{}
\newcommand{\Gplotz}[1]{%
    \sys_shell_now:n {pwsh.exe~ -NoProfile~ -File~ "./Scripts/Gplot_3d.ps1" #1}
    \includegraphics[width=0.4\textwidth]{./gnuoutput/Function_output_3d.pdf}
}
\newcommand{\GplotzNew}[1]{%
    \stepcounter{gnu@plot@pic@counter}
    \sys_shell_now:n {sed~ -i~ "34s|f(x,~ y)~ =~ .*|f(x,~ y)~ =~ #1|"~
        ↪ ./Scripts/Gplot_3d.gp}
    \sys_shell_now:n {gnuplot~ ./Scripts/Gplot_3d.gp}
    % picture rename
    \renewcommand{\gnu@picture@fullname}{%
        Function_output_3d_\the\value{gnu@plot@pic@counter}.pdf
    }
    \cs_generate_variant:Nn \sys_shell_mv:nn {nx}
    \sys_shell_mv:nx {./Function_output_3d.pdf}{./gnuoutput/\gnu@picture@fullname}
    \includegraphics[width=0.45\textwidth]{./gnuoutput/\gnu@picture@fullname}
}

%% 2.Example
\begin{center}
    \GplotzNew{x+100y}
    \GplotzNew{x**2-y**2-1000}
\end{center}
```





4 ParamPlot

ParamPlot is Defined as post: Becareful the `\[.*\]` in `sed` command , it will cause `\GenericError` Error. So don't use the following cmd:

```
\immediate\write18{sed -i "27s|set yr \[.*\]|set yr [#1]|" ./Scripts/Gplot_2d.gp}
```

use `[#2]` to add the `[]`, instead of in the `sed` cmd...

```
% 3.param_plot
\newcommand{\GPplotz}[2][-4:4]{%
    \stepcounter{gnu@plot@pic@counter}
    \sys_shell_now:n {sed~ -i~ "42s|splot~ .*|splot~ #2|"~ ./Scripts/GPplot.gp}
    \sys_shell_now:n {sed~ -i~ "36s|set~ zr~ .*|set~ zr~ [#1]|"~ ./Scripts/GPplot.gp}
    \sys_shell_now:n {gnuplot~ ./Scripts/GPplot.gp}
    % picture rename
    \renewcommand{\gnu@picture@fullname}{%
        Param_Function_output_\the\value{gnu@plot@pic@counter}.pdf
    }
    \cs_generate_variant:Nn \sys_shell_mv:nn {nx}
    \sys_shell_mv:nx {./Param_Function_output.pdf}{./gnuoutput/\gnu@picture@fullname}
    \includegraphics[width=0.45\textwidth]{./gnuoutput/\gnu@picture@fullname}
}

%% Example
\begin{center}
    \GPplotz[0:2]{1*cos(u)*cos(v), 2*cos(u)*sin(v), sin(u)}
    \GPplotz[-4.5:4.5]{4*cos(u)*cos(v), 4*cos(u)*sin(v), 4*sin(u)}
\end{center}
```