KeT Cindy
Unification of Dynamic Geometry and High-Quality Printing

Setsuo Takato
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Many mathematics teachers at collegiate level use printed materials.

Almost all of them use \LaTeX.

\LaTeX can make beautiful scientific formulas.

However, \LaTeX itself is somewhat short to dealing with graphics.
Use of TiKZ

- A few teachers use TiKZ to make figures.
- But it is difficult for ordinary teachers to use it, due to the steep learning curve.
- Moreover, the scripts are not only difficult to write but also difficult to read.
An simple example

\[ y = \sin x \]
\[ y = x \]
Poor readability of TiKZ

\begin{TiKZpicture}
  \draw[->, ultra thick, opacity=0.7] (0,2) -- (16,2) node[right] \{$x\$};
  \draw[->, ultra thick, opacity=0.7] (8,0) -- (8,4) node[above] \{$y\$};
  \draw[domain=-7.5:7.5, xshift=8cm, yshift=2cm, very thick, samples=80]
    plot[id=sin] function{\sin(x)} node[above right] \{$y=\sin x\$};
  \draw[domain=-2:2, xshift=8cm, yshift=2cm, very thick, samples=80]
    plot[id=x] function{x} node[above right] \{$y=x\$};
  \node [xshift=8cm, yshift=2cm] (O) at (0,0) [label=225:$O$] {};
  \foreach \x in {-6,-4,-2,2,4,6}
    \fill [radius=1.5pt, xshift=8cm, yshift=2cm] (\x, 0)
    circle node[below] \{$\x$\};
  \foreach \y in {-1,1}
    \fill [radius=1.5pt, xshift=8cm, yshift=2cm] (0, \y)
    circle node[left] \{$\y$\};
\end{TiKZpicture}
Fhead="sin";
Texparent="";
Ketinit();
Setax([7,"se"]);
Plotdata("1","\sin(x)","x");
Lineplot("1",[[0,0],[1,1]]);
Expr(["A","e","y=\sin x","B","e","y=x"]);
Windispg();
Outline of KeTCindy

- We have developed KeETpic as a tool to generate and insert figures into materials.
- Cinderella is a DGS package developed by Gebert and Kortenkamp.
- We had been exploring the possibility of using Cinderella.
- The first version of KeTCindy was released on September, 2014.
Outline of KeTCindy

- Cinderella works as a GUI of KeTCindy.
- CindyScript is the programming language of Cinderella.
- It distinguishes Cinderella from other DGSs.
- KeTCindy is a macro package of CindyScript.
Flow Chart of KeTCindy

KeTCindy

Cinderella

Scilab source

PDF

Plotdata

LaTeX main

LaTeX data

Exekc
How to Install

- **KeTCindy** uses several free softwares.
  Cinderella, Scilab, LATEX, PDF viewer
- All installings are easy.
- We have made a package of LATEX system to be handled easily.
- You can download a package of installers and KeTCindy libraries from
  ketpic.com -> Dropbox - KetInstall
How to Install

InstallforMac

InstallforWin

ketcindycontents

>ketcindy
Screens of Cinderella / KeTCindy

```plaintext
Fhead="figsin";
 Texparent="materialssin";
 Ketinit();

Changework(gethome()+
"/Dropbox/2016ketpic/0711ICMS/demo/2
ketcindy");

Setax([7,"se"]);

Plotdata("1","sin(x","x");
 Lineplot("1",[[0,0],[1,1]]);

//Expr(["A","e","y=\sin x","B","e","y=x"]);

Windisp();
```

KeTCindy workshop 09/09/2016 CADGME
First Demo of KeTCindy
Executing Shell(Batch) File

- When pressing **Texview** button, a scilab source file and kc.sh are generated.
- When pressing **Exekc** button, kc.sh is executed in Terminal.
- The java program which executes kc.sh/kc.bat plays an important role.
<table>
<thead>
<tr>
<th>s1</th>
<th>Geometric Figure</th>
<th>s8</th>
<th>Calling R</th>
</tr>
</thead>
<tbody>
<tr>
<td>s2</td>
<td>Graph of Function</td>
<td>s9</td>
<td>Surface</td>
</tr>
<tr>
<td>s3</td>
<td>Making Table</td>
<td>s10</td>
<td>Calling Maxima</td>
</tr>
<tr>
<td>s4</td>
<td>Bézier Curve</td>
<td>s11</td>
<td>Calling Asir</td>
</tr>
<tr>
<td>s5</td>
<td>3D Figure</td>
<td>s12</td>
<td>Calling Fricas</td>
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<tr>
<td>s6</td>
<td>Animation</td>
<td>s13</td>
<td>Calling Mesthlab</td>
</tr>
<tr>
<td>s7</td>
<td>Slide for Presentation</td>
<td></td>
<td>kepic,ketlayer,ketslide</td>
</tr>
</tbody>
</table>