

## Documentation

The nb2tex project aims to write a converter that takes Mathematica notebooks and converts them into latex files.

Text cells with tag “tex” becaome verbatim tex output. They may include anything texish — like formulas  $1 + 1 = 2$ , or anything else.

Untagged cells are ignored; for example, the following one should not appear in the latex result:

Cells with tag “pdf” are converted into numbered pdf files in a pdf-subfolder (default name: same as the notebook’s name; in this case, “Sample”). The latex produced is `\nbpdfType{Sample/nnn.pdf}`, where `Type` is the type of the current cell (`Text`, `Input`, `Output`, `Echo`, etc.), and `nnn` is the number of the current pdf file.

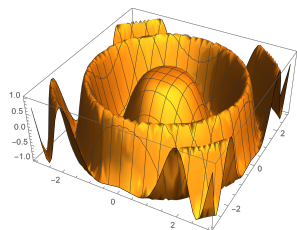
For example:

```
binom = Echo[(a + b)32] // Expand
```

```
(a + b)32
a32 + 32 a31 b + 496 a30 b2 + 4960 a29 b3 + 35 960 a28 b4 + 201 376 a27 b5 +
906 192 a26 b6 + 3 365 856 a25 b7 + 10 518 300 a24 b8 + 28 048 800 a23 b9 +
64 512 240 a22 b10 + 129 024 480 a21 b11 + 225 792 840 a20 b12 + 347 373 600 a19 b13 +
471 435 600 a18 b14 + 565 722 720 a17 b15 + 601 080 390 a16 b16 + 565 722 720 a15 b17 +
471 435 600 a14 b18 + 347 373 600 a13 b19 + 225 792 840 a12 b20 + 129 024 480 a11 b21 +
64 512 240 a10 b22 + 28 048 800 a9 b23 + 10 518 300 a8 b24 + 3 365 856 a7 b25 +
906 192 a6 b26 + 201 376 a5 b27 + 35 960 a4 b28 + 4960 a3 b29 + 496 a2 b30 + 32 a b31 + b32
```

If a tag is of the form “pdfXXX”, the string XXX gets added to the `\nbpdf` command, so it becomes `\nbpdfXXXType`. This is useful for graphics inclusions, for example, where a useful tag would be “pdfgraph”:

```
plot = Plot3D[Cos[x2 + y2], {x, -3, 3}, {y, -3, 3}]
```



Invoking nb2tex (suffixes are automatically added and should not be included):

```
nb2tex[nb_String, opts___Rule];
nb2tex[nb_String, tex_String, opts___Rule];
```

Valid options include:

- “PDFFolder” -> foldername (a string).
- “PDFWidth” -> width (in inches).

Text cells with tag “exec” get executed using `ToExpression` at the time of their processing, with no output produced. This is useful for setting / re-setting options within the notebook itself. For example, a text cell with tag `exec` and content `nb2tex$PDFWidth=10` will allow very wide outputs:

```
binom
```

$$a^{32} + 32 a^{31} b + 496 a^{30} b^2 + 4960 a^{29} b^3 + 35960 a^{28} b^4 + 201376 a^{27} b^5 + 906192 a^{26} b^6 + 3365856 a^{25} b^7 + 10518300 a^{24} b^8 + 28048800 a^{23} b^9 + 64512240 a^{22} b^{10} + 129024480 a^{21} b^{11} + 225792840 a^{20} b^{12} + 347373600 a^{19} b^{13} + 471435600 a^{18} b^{14} + 601080390 a^{17} b^{15} + 565722720 a^{16} b^{16} + 471435600 a^{15} b^{17} + 347373600 a^{14} b^{18} + 225792840 a^{13} b^{19} + 129024480 a^{12} b^{20} + 64512240 a^{11} b^{21} + 28048800 a^{10} b^{22} + 10518300 a^9 b^{23} + 3365856 a^8 b^{24} + 906192 a^7 b^{25} + 201376 a^6 b^{26} + 35960 a^5 b^{27} + 4960 a^4 b^{28} + 496 a^3 b^{29} + 496 a^2 b^{30} + 32 a b^{31} + a^{32}$$

## Implementation

```
SetOptions[$FrontEndSession, PrintingStyleEnvironment -> "Working"];
nb2tex[nb_String, opts___Rule] := nb2tex[nb, nb, opts];
nb2tex[nb_String, tex_String, opts___Rule] := Module[
  {notebook, PDFCounter = 0, lines, type, tag, pdfname, cell, c, cl,
   PDFFolder = PDFFolder /. {opts} /. PDFFolder -> nb},
  nb2tex$PDFWidth = PDFWidth /. {opts} /. PDFWidth -> 6.5;
  notebook = NotebookGet[NotebookOpen@FileNameJoin[{Directory[], nb <> ".nb"}]];
  If[FileType[PDFFolder] === None, CreateDirectory[PDFFolder]];
  DeleteFile /@ FileNames["*.pdf", PDFFolder];
  lines = Table[
    type = cell[[2]];
    tag = CellTags /. Cases[cell, _Rule] /. CellTags -> "";
    Which[
      type == "Text" ^ tag == "tex", StringReplace[cell[[1]], {"'" -> "'", "\"" -> "\""}],
      StringMatchQ[tag, "pdf" ~~ ___], {
        pdfname = PDFFolder <> "/" <> ToString[++PDFCounter] <> ".pdf";
        Export[pdfname, Join[cell, Cell[PageWidth -> 80 nb2tex$PDFWidth / 0.75]]];
        cl = "c:\\drorbn\\bin\\cpdf.exe -scale-page \"0.75 0.75\" " <>
          pdfname <> " -o " <> pdfname;
        Close@OpenRead["!" <> cl];
        StringReplace[
          "\\noindent\\nbpdfXXXType{pdfname}",
          {"XXX" -> StringDrop[tag, 3], "Type" -> type, "pdfname" -> pdfname}
        ]
      },
    ],
  type == "Text" ^ tag == "exec", ToExpression[cell[[1]]]; "",
  True, ""
],
{cell, Cases[notebook, c_Cell /; Length[c] >= 2(*^FreeQ[c, _Cell, {1, \infty}])*},
 \infty]
];
lines = StringJoin@@ Riffle[DeleteCases[lines, ""], "\n\n"];
WriteString[tex <> ".tex", lines]; Close[tex <> ".tex"]; ]
```

## Run

```
SetDirectory["C:\\drorbn\\AcademicPensieve\\Projects\\nb2tex"];
nb2tex["nb2tex", PDFFolder -> "Snips"];
Run@"C:\\Program Files\\MiKTeX 2.9\\miktex\\bin\\x64\\pdflatex.exe\" nb2tex.tex"
```