In [1]: ```import re```

for union, we use | instead of + for epsilon, just use empty string

In [5]:
```python
# 1* (0+(1+epsilon))* -> all strings without bitstring 011
re.match(r'1*(0+(1|))*', '10')
```

Out[5]: `<re.Match object; span=(0, 2), match='10'>`

In [3]: ```re.match(r'1*(0+(1|))*', '')```

Out[3]: `<re.Match object; span=(0, 0), match=''>`

In [4]: ```re.match(r'1*(0+(1|))*', '011')```

Out[4]: `<re.Match object; span=(0, 2), match='01'>`

In [6]: ```re.match(r'1*(0+(1|))*$', '011')```

In [7]: ```re.match(r'1*(0+(1|))*$', '011') is None```

Out[7]: `True`

In [8]: ```re.match(r'1*(0+(1|))*$', '00000011111110101') is None```

Out[8]: `True`

In [9]: ```jeffe = list(open('jeffe.sty'))```

In [10]: ```jeffe```

Out[10]:
```
['% =====================-*- LaTeX -*-=====================\n',
 '%\n',
 '%   jeffe.sty -- macros I use everywhere\n',
 '%\n',
 '%   Jeff Erickson (jeffe@cs.uiuc.edu)\n',
 '%   Last modified 10 April 2015\n',
 '%   This is free; caveat emptor!\n',
 '% =======================================================\n',
 '\\RequirePackage{latexsym,amsmath,amssymb}\n',
 '\\RequirePackage[dvipsnames,usenames]{color}\n',
 '%\\PassOptionsToPackage{hyphens}{url}\n',
 '\\RequirePackage{hyperref}\n',
 '\\hypersetup{colorlinks=true, urlcolor=Blue, citecolor=Green, link
```

```
color=BrickRed, breaklinks, unicode}\n',
 '\\RequirePackage{stmaryrd}\n',
 '%\\RequirePackage[l2tabu, orthodox]{nag}\n',
 '%\\RequirePackage[mathlines, pagewise]{lineno}\n',
 '\n',
 '% Fix incompaitibility between {nag} and {babel}\n',
 '% original is \\renewcommand\\thenag@c{\\roman{nag@c}}\n',
 '%\\renewcommand\\thenag@c{\\romannumeral\\c@nag@c}\n',
 '\n',
 '\\urlstyle{same}\t\t% dammit\n',
 '\n',
 '\\hyphenation{co-or-din-ate co-or-din-ates half-plane half-space s
tereo-iso-mers stereo-iso-mer Round-table homol-ogous homol-ogy poly
-hedron poly-hedra homeo-morphic homeo-morph-ism}\n',
 '\n',
 '\\pdfstringdefDisableCommands{\\let\\boldmath\\relax} % allow \\bo
ldmath in section titles\n',
 '\n',
 '% ------------------------------------------------------------------
------\n',
 '%  Common Latin abbreviations, only one of which is actually koshe
r\n',
 '% ------------------------------------------------------------------
------\n',
 '\n',
 '\\def\\etal{\\emph{et~al.}}\t\t\t% and others\n',
 '%\\def\\ie{\\emph{i.e.}}\t\t\t% that is\n',
 '\\def\\ie{\\textcolor{red}{that is}}\n',
 '%\\def\\eg{\\emph{e.g.}}\t\t\t% for example\n',
 '\\def\\eg{\\textcolor{red}{for example}}\n',
 '\n',
 '% ------------------------------------------------------------------
------\n',
 '%  Simple math stuff\n',
 '% ------------------------------------------------------------------
------\n',
 '\n',
 '% ---- SYMBOLS ----\n',
 "\\let\\e\\varepsilon             % a ``real'' epsilon — better y
et, just use Unicode ε.\n",
 '%\n',
 '%  I give up.  These are in the wrong font, but my kludged version
s \n',
 '%  LOOK like kludges, especially \\Z, \\Q, and \\C.\n',
 '%\n',
 '\\def\\Real{\\mathbb{R}}\n',
 '\\def\\Proj{\\mathbb{P}}\n',
 '\\def\\Hyper{\\mathbb{H}}\n',
 '\\def\\Integer{\\mathbb{Z}}\n',
 '\\def\\Natural{\\mathbb{N}}\n',
```

```
'\\def\\Complex{\\mathbb{C}}\n',
'\\def\\Rational{\\mathbb{Q}}\n',
'\n',
'\\let\\N\\Natural\n',
'\\let\\Q\\Rational\n',
'\\let\\R\\Real\n',
'\\let\\Z\\Integer\n',
'\\def\\Rd{\\Real^d}\n',
'\\def\\RP{\\Real\\Proj}\n',
'\\def\\CP{\\Complex\\Proj}\n',
'\n',
'% ---- OPERATORS (requires amsmath) ----\n',
'\\def\\aff{\\operatorname{aff}}\t\t\n',
'\\def\\area{\\operatorname{area}}\n',
'\\def\\argmax{\\operatornamewithlimits{arg\\,max}}\n',
'\\def\\argmin{\\operatornamewithlimits{arg\\,min}}\n',
'\\def\\Aut{\\operatorname{Aut}}\t\t% Automorphism group\n',
'\\def\\card{\\operatorname{card}}\t% cardinality, deprecated for \
\abs\n',
'\\def\\conv{\\operatorname{conv}}\t\n',
'\\def\\diam{\\operatorname{diam}}\t\n',
'\\def\\E{\\operatorname{E}}\t\t% Expectation: $\\E[X]$ (like \\Pr)
\n',
'\\def\\EE{\\operatornamewithlimits{E}}\n',
'\\def\\Hom{\\operatorname{Hom}}\t% Homomorphism group\n',
'\\def\\id{\\operatorname{id}}\t\t% identity\n',
'\\def\\im{\\operatorname{im}}\t\t% image\n',
'\\def\\lcm{\\operatorname{lcm}}\n',
'\\def\\lfs{\\operatorname{lfs}}\t\t% local feature size\n',
'\\def\\poly{\\operatorname{poly}}\n',
'\\def\\polylog{\\operatorname{polylog}}\n',
'\\def\\rank{\\operatorname{rank}}\n',
'\\def\\rel{\\operatorname{rel\\,}}\t\t% relative (interior, bounda
ry, etc.)\n',
'\\def\\sgn{\\operatorname{sgn}}\n',
'\\def\\vol{\\operatorname{vol}}\t\t% volume\n',
'\n',
'\\def\\fp#1{^{\\underline{#1}}}\t\t% falling powers: $n\\fp{d}$\n'
,
'\\def\\rp#1{^{\\overline{#1}}}\t\t% rising powers:  $n\\rp{d}$\n',
'\n',
'% --- Darts and fences ---\n',
'\n',
'% less nice replacements for stmaryrd characters\n',
'\\@ifundefined{shortrightarrow}{\\let\\shortrightarrow\\rightarrow
}{}\n',
'\\@ifundefined{shortleftarrow}{\\let\\shortleftarrow\\leftarrow}{}
\n',
'\\@ifundefined{shortuparrow}{\\let\\shortuparrow\\uparrow}{}\n',
'\\@ifundefined{shortdownarrow}{\\let\\shortdownarrow\\downarrow}{}
```

```
 \n',
  '\n',


'\\def\\shortleftrightarrow{{\\rlap{$\\mathord\\shortleftarrow$}\\,\
\\mathord\\shortrightarrow}}\n',
  '\\def\\arcto{\\mathord\\shortrightarrow}\n',
  '\\def\\arcfrom{\\mathord\\shortleftarrow}\n',
  '\\def\\arc#1#2{#1\\arcto#2}\n',
  '\\def\\cra#1#2{#1\\mathord\\shortleftarrow#2}\n',
  '\\def\\biarc#1#2{#1\\mathord\\shortleftrightarrow#2}\n',
  '\\def\\fence#1#2{#1\\mathord\\shortuparrow#2}\n',
  '\\def\\ecnef#1#2{#1\\mathord\\shortdownarrow#2}\n',
  '\n',
  '% --- Cheap displaystyle operators ---\n',
  '\\def\\Frac#1#2{{\\displaystyle\\frac{#1}{#2}}}\n',
  '\\def\\Sum{\\sum\\limits}\n',
  '\\def\\Prod{\\prod\\limits}\n',
  '\\def\\Union{\\bigcup\\limits}\n',
  '\\def\\Inter{\\bigcap\\limits}\n',
  '\\def\\Lor{\\bigvee\\limits}\n',
  '\\def\\Land{\\bigwedge\\limits}\n',
  '\\def\\Lim{\\lim\\limits}\n',
  '\\def\\Max{\\max\\limits}\n',
  '\\def\\Min{\\min\\limits}\n',
  '\n',
  '% ---- RELATORS ----\n',
  '\\def\\deq{\\stackrel{\\scriptscriptstyle\\triangle}{=}}\t% Use :=
instead.\n',
  '\\def\\into{\\DOTSB\\hookrightarrow}\t\t\t% injection = one-to-one
\n',
  '\\def\\onto{\\DOTSB\\twoheadrightarrow}\t\t% surjection\n',
  '\\def\\unto{\\DOTSB\\lhook\\joinrel\\twoheadrightarrow} % bijectio
n ("Do unto others...")\n',
  '\\def\\from{\\leftarrow}\n',
  '\\def\\tofrom{\\leftrightarrow}\n',
  '\\def\\mapsfrom{\\mathrel{\\reflectbox{$\\mapsto$}}}\n',
  '\\def\\longmapsfrom{\\mathrel{\\reflectbox{$\\longmapsto$}}}\n',
  '\n',
  '% ---- DELIMITER PAIRS ----\n',
  '\\def\\floor#1{\\lfloor #1 \\rfloor}\n',
  '\\def\\ceil#1{\\lceil #1 \\rceil}\n',
  '\\def\\seq#1{\\langle #1 \\rangle}\n',
  '\\def\\set#1{\\{ #1 \\}}\n',
  '\\def\\abs#1{\\mathopen| #1 \\mathclose|}\t\t% use instead of $|x|
$ \n',
  '\\def\\norm#1{\\mathopen\\| #1 \\mathclose\\|}\t% use instead of $
\\|x\\|$ \n',
  '\\def\\indic#1{\\big[#1\\big]}\t\t\t% indicator variable; Iverson
notation\n',
  '\t\t\t\t\t\t\t% e.g., Kronecker delta = [x=0]\n',
```

```
  '\n',
  '% --- Self-scaling delmiter pairs ---\n',
  '\\def\\Floor#1{\\left\\lfloor #1 \\right\\rfloor}\n',
  '\\def\\Ceil#1{\\left\\lceil #1 \\right\\rceil}\n',
  '\\def\\Seq#1{\\left\\langle #1 \\right\\rangle}\n',
  '\\def\\Set#1{\\left\\{ #1 \\right\\}}\n',
  '\\def\\Abs#1{\\left| #1 \\right|}\n',
  '\\def\\Norm#1{\\left\\| #1 \\right\\|}\n',
  '\\def\\Paren#1{\\left( #1 \\right)}\t\t% need better macro name!\n
',
  '\\def\\Brack#1{\\left[ #1 \\right]}\t\t% need better macro name!\n
',
  '\\def\\Indic#1{\\left[ #1 \\right]}\t\t% indicator variable; Ivers
on notation\n',
  '\n',
  '%\n',
  '%  Macros to typeset sets like {foo|bar} with all three delimiters
\n',
  '%  correctly scaled to fit.  What I *really* want is a \\middle ma
cro\n',
  '%  that acts just like \\left and \\right.  Grumble.\n',
  '%\n',

  '\\def\\Bigbar#1{\\mathrel{\\left|\\vphantom{#1}\\right.\\n@space}}\
n',
  '\\def\\Setbar#1#2{\\Set{#1 \\Bigbar{#1 #2} #2}}\n',
  '\\def\\Seqbar#1#2{\\Seq{#1 \\Bigbar{#1 #2} #2}}\n',
  '\\def\\Brackbar#1#2{\\Brack{#1 \\Bigbar{#1 #2} #2}}\n',
  '\n',
  '%  Math mode fbox\n',
  '\\def\\mfbox#1{\\mathchoice{{\\fbox{\\ensuremath{\\displaystyle #1
}}}}\n',
  '\t\t\t{{\\fbox{\\ensuremath{\\textstyle #1}}}}\n',
  '\t\t\t{{\\fbox{\\ensuremath{\\scriptstyle #1}}}}\n',
  '\t\t\t{{\\fbox{\\ensuremath{\\scriptscriptstyle #1}}}}}\n',
  '\n',
  '% ---- "ACCENTS" ----\n',
  '%   NB: Commands equivalent to \\lrarrowfill and \\overlrarrow are
\n',
  '%       already defined in amstex!\n',
  '\\def\\lrarrowfill{$\\m@th\\mathord\\leftarrow\\mkern-6mu%\n',
  '  \\cleaders\\hbox{$\\mkern-2mu\\mathord-\\mkern-2mu$}\\hfill\n',
  '  \\mkern-6mu\\mathord\\rightarrow$}\n',
  '\\def\\overlrarrow#1{\\vbox{\\ialign{##\\crcr\n',
  '     \\lrarrowfill\\crcr\\noalign{\\kern-\\p@\\nointerlineskip}\n
',
  '     $\\hfil\\displaystyle{#1}\\hfil$\\crcr}}}\n',
  '\n',

  '\\def\\Line#1{\\!\\overlrarrow{\\vphantom{t}\\smash{\\,#1\\,}}\\!}\
```

```
n',
 '\\def\\Ray#1{\\overrightarrow{\\vphantom{t}#1\\,}\\\!}\n',
 '\\def\\Seg#1{\\overline{\\vphantom{t}#1}}\n',
 '\n',
 '% ---- TEXT STYLES ----\n',
 '\\def\\mathsc#1{\\text{\\textsc{#1}}}\n',
 '\\def\\mathbs#1{\\text{\\boldmath\\ensuremath{#1}}}\n',
 '\\def\\EMPH#1{\\textbf{\\emph{\\boldmath #1}}}\n',
 '\n',
 '% ------------------------------------------------------------
------\n',
 '%  \\begin{bigabstract}...\\end{bigabstract}\n',
 '%  For use in documents with title pages.  Use normal-sized text i
n\n',
 '%  the abstract!\n',
 '% ------------------------------------------------------------
------\n',
 '\\newenvironment{bigabstract}%\n',

'{\\begin{center}\\large\\textbf{\\abstractname}\\end{center}\\begin
{quotation}}%\n',
 '{\\end{quotation}}\n',
 '\n',
 '% ------------------------------------------------------------
------\n',
 '%  Make captions smaller than the text, make their titles bold.\n'
,
 '%  Arguments:   #1 == figure name: "Figure 5"\n',
 '%               #2 == caption: "Papers by \\Erdos, 1900--2000 (pro
jected)"\n',
 '%  Less space after floats and before caption, since captions are
smaller\n',
 '% ------------------------------------------------------------
------\n',
 '\\@ifundefined{abovecaptionskip}{\\newlength\\abovecaptionskip}\n'
,
 '\\long\\def\\@makecaption#1#2{\n',
 '   \\vskip \\abovecaptionskip\n',
 '   \\setbox\\@tempboxa\\hbox{{\\sffamily\\footnotesize \\textbf{#1
.} #2}}\n',
 '   \\ifdim \\wd\\@tempboxa >\\hsize        \t\t\t% if more than o
ne line,\n',
 '       {\\sffamily\\footnotesize \\textbf{#1.} #2\\par}\t\t%     t
ypeset normally\n',
 '     \\else                             \t\t\t% else\n',
 '       \\hbox to\\hsize{\\hfil\\box\\@tempboxa\\hfil}\t%     cente
r\n',
 '   \\fi}\n',
 '\\dbltextfloatsep 18pt plus 2pt minus 4pt\t% was 20pt plus 2pt min
us 4pt\n',
```

```
  '\\textfloatsep 18pt plus 2pt minus 4pt\t\t% was 20pt plus 2pt minu
s 4pt\n',
  '\\abovecaptionskip 6pt\t\t\t\t% was 10pt\n',
  '\n',
  '% ----------------------------------------------------------------
------\n',
  '%  Revised theorem environment:\n',
  '%  Add a period after the theorem number, and make theorems slante
d\n',
  '%  instead of italic to help distinguish text from math.  (But XCh
arter\n',
  '%  makes slanted = italic!) Use \\boldmath in theorem label in cas
e\n',
  '%  it includes math.\n',
  '% ----------------------------------------------------------------
------\n',
  '\\def\\@opargbegintheorem#1#2#3{\\trivlist\n',
  '\t\\item[\\hskip\\labelsep{\\bfseries\\boldmath #1\\ #2\\ (#3).}]\
\slshape}\n',
  '\\def\\@begintheorem#1#2{\\trivlist\n',
  '\t\\item[\\hskip\\labelsep{\\bfseries\\boldmath #1\\ #2.}]\\slshap
e}\n',
  '\n',
  '% ----------------------------------------------------------------
------\n',
  '%  \\newproof{type}{text}(style)[post]:\n',
  '%  Define a new type of unnumbered "theorem" environment.  The las
t\n',
  '%  two arguments are optional; most environments will not use them
.\n',
  '%\n',
  '%  To change label style, put new style command in label:\n',
  '%        \\newproof{comment}{\\textsf{Comment}}\n',
  '% ----------------------------------------------------------------
------\n',
  '\\def\\newproof#1#2{\\@ifnextchar({\\@snproof{#1}{#2}}{\\@snproof{
#1}{#2}()}}\n',
  '\\def\\@snproof#1#2(#3){\\@ifnextchar[{\\@xnproof{#1}{#2}{#3}}\n',
  '                                    {\\@xnproof{#1}{#2}{#3}[]}}\n',
  '\n',
  '\\def\\@xnproof#1#2#3[#4]{%\\expandafter\\@ifdefinable\\csname #1\
\endcsname\n',
  '{\\global\\@namedef{#1}{\\@prf{#2}{#3}}\\global\\@namedef{end#1}{\
\@endprf{#4}}}}\n',
  '\n',
  '\\def\\@prf#1#2{\\@ifnextchar[{\\@xprf{#1}{#2}}{\\@yprf{#1}{#2}}}\
n',
  '\\def\\@xprf#1#2[#3]{\\@yprf{#1\\ (#3)}{#2}}\n',

  '\\def\\@yprf#1#2{\\begin{trivlist}\\item[\\hskip\\labelsep{\\bfseri
```

```
es\\boldmath #1:}]#2}\n',
  '\n',
  '\\def\\@endprf#1{#1\\end{trivlist}}\n',
  '\n',
  '%\n',
  '%  Standard proof envrionment: last line has a halmos at the right
margin.\n',
  '%  Insert \\qed to override default halmos placement.\n',
  '%  Incompatible with amsprf package!\n',
  '%\n',
  '\\newif\\ifneedqed\n',
  '\\global\\needqedfalse\n',
  '\\@ifundefined{square}{\\let\\square\\Box}{}\t% grumble latex2e \n
',
  '\\def\\QED{\\ensuremath{{\\square}}}\n',
  '\\def\\markatright#1{\\leavevmode\\unskip\\nobreak\\quad\\hspace*{
\\fill}{#1}}\n',

'\\def\\qed{\\ifneedqed\\markatright{\\QED}\\global\\needqedfalse\\e
lse\\null\\fi}\n',
  '\\newproof{proof}{Proof\\global\\needqedtrue}[\\qed]\n',
  '\\newproof{sketch}{Proof Sketch\\global\\needqedtrue}[\\qed]\n',
  '\n',
  '%\n',
  '%  Fake proof environment, for use with wrapfig and similar packag
es\n',
  '%\n',
  '\\newenvironment{rawproof}%\n',
  '   {\\begin{trivlist}\\item[\\hskip\\labelsep\\textbf{Proof:}\\glo
bal\\needqedtrue]}%\n',
  '   {\\qed\\end{trivlist}}\n',
  '\n',
  '%\n',
  '%  If the proof ends with a displayed equation, use \\aftermath ju
st\n',
  '%  before \\end{proof} to put the halmos in (sort of) the "right"
place.\n',
  '%\n',
  '\\def\\aftermath{\\par\\vspace{-\\belowdisplayskip}\\vspace{-\\bas
elineskip}}\n',
  '\n',
  '% ----------------------------------------------------------------
------\n',
  '%  One-shot theoremish environment.  For named things like "Zorn's
\n",
  '%  Lemma" or "The Death Leap Principle" or "The Zone Theorem".\n',
  '%  To get one-shot proofish environment, put \\normalfont inside.\
n',
  '%  New improved version stolen from Erik Demaine.\n',
  '% ----------------------------------------------------------------
```

```
------\n',
 '\\newenvironment{oneshot}[1]{\\\@begintheorem{#1}{\\unskip}}{\\\@end
theorem}\n',
 '\n',
 '\\newenvironment{proofof}[1]\n',
 '{\\begin{oneshot}{Proof of #1}\\normalfont\\global\\needqedtrue}\n
',
 '{\\qed\\end{oneshot}}\n',
 '\n',
 '% -------------------------------------------------------------
------\n',
 '%  Algorithm environment -- Normal text, with 2em indenting,\n',
 '%  surrounded by a box.  Really needs optional line numbering and\
n',
 '%  a better comment macro.  But bold keywords make the baby\n',
 "%  Jesus cry, so if you want them, you're on your own.\n",
 '% -------------------------------------------------------------
------\n',
 '\\def\\begin@lgo{\\begin{minipage}{1in}\\normalfont\\begin{tabbing
}\n',
 '          \\quad\\=\\qquad\\=\\qquad\\=\\qquad\\=\\qquad\\=\\qquad\\
=\\qquad\\=\\qquad\\=\\qquad\\=\\qquad\\=\\qquad\\=\\qquad\\=\\qquad
\\=\\kill}\n',
 '\\def\\end@lgo{\\end{tabbing}\\end{minipage}}\n',
 '\n',
 '\\newenvironment{algorithm}\n',
 '{\\begin{tabular}{|l|}\\hline\\begin@lgo}\n',
 '{\\end@lgo\\\\\\\hline\\end{tabular}}\n',
 '\n',
 '\\newenvironment{algo}\n',
 '{\\begin{center}\\small\\begin{algorithm}}\n',
 '{\\end{algorithm}\\end{center}}\n',
 '\n',
 '% Meh.\n',

'\\def\\Comment#1{\\textsf{\\textsl{$\\langle\\!\\langle$#1\\/$\\ran
gle\\!\\rangle$}}}\n',
 '\n',
 '%\n',
 '%  These only work with <1 line of text.  Use sparingly!!\n',
 '%  Better yet, use the soul package!\n',
 '%\n',

'\\def\\textul#1{\\ensuremath{\\underline{\\smash{\\text{#1}}\\vphan
tom{.}}}}\n',

'\\def\\strike#1{\\ensuremath{\\overline{\\smash{\\text{{#1}}\\vphan
tom{.}}}}}\n',
 '\n',
 '% ---------------------------------------------------------------
```

```
------\n',
 '%  Include a file verbatim.  Searches the TEXINPUTS path for the f
ile,\n',
 "%  even though that's probably not what you really want.  Stolen f
rom\n",
 "%  "verbatimfiles.sty" by Chris Rowley and others.  [Don't use the
ir \n",
 '%  \\vertbatimlisting macro; it has some bizarre side-effects!]\n'
,
 '% --------------------------------------------------------------
------\n',
 '\\def\\verbinput#1{\n',

'\\begingroup\\@verbatim\\frenchspacing\\@vobeyspaces\\input#1\\endg
roup\n',
 '}\n',
 '\n',
 '% --------------------------------------------------------------
------\n',
 '%  \\now  -- Current time in h:mm AM/PM format\n',
 "%  \\mdyy -- Today's date in m/d/yy format.  Forget Y2K; this is f
or humans!\n",
 '% --------------------------------------------------------------
------\n',
 '\\newcount\\timehh\\timehh=\\time\n',
 '\\divide\\timehh by 60\n',
 '\\newcount\\timemm\\timemm=\\time\n',
 '\\count255=\\timehh\n',
 '\\multiply\\count255 by -60\n',
 '\\advance\\timemm by \\count255\n',
 '\\newif\\iftimePM\n',
 '\\ifnum\\timehh>11 \\timePMtrue\\else\\timePMfalse\\fi\n',
 '\\ifnum\\timehh<1 \\advance\\timehh by 12\\fi\n',
 '\\ifnum\\timehh>12 \\advance\\timehh by -12\\fi\n',
 '\\def\\now{\\number\\timehh:\\ifnum\\timemm<10 0\\fi\\number\\time
mm\n',
 '          \\iftimePM pm\\else am\\fi}\n',
 '\\newcount\\mdYY\\mdYY=\\year\n',
 '\\count255=\\year\n',
 '\\divide\\count255 by 100\n',
 '\\multiply\\count255 by 100\n',
 '\\advance\\mdYY by -\\count255\n',
 '\\def\\mdyy{\\number\\month/\\number\\day/\\ifnum\\mdYY<10 0\\fi\\
number\\mdYY}\n',
 '\n',
 '% --------------------------------------------------------------
------\n',
 '%  Notes to myself.  The margin flags are broken, thanks to an\n',
 '%   incompatibility with the geometry package.\n',
 '% --------------------------------------------------------------
```

```
------\n',
 '\\def\\n@te#1{\\textsf{\\boldmath \\textbf{$\\langle\\!\\langle$#1
$\\rangle\\!\\rangle$}}\\leavevmode}\n',
 '\\def\\n@tew@rn{\\GenericWarning{}{AUTHOR WARNING: Unresolved \\pr
otect\\note}}\n',
 '\n',
 '\\def\\n@ten@te{\\marginpar\n',
 '\t[\\hfill\\llap{\\textcolor{red}{$\\rhd\\!\\!\\rhd\\!\\!\\rhd\\!\
\!\\rhd\\!\\!\\rhd$}}]\n',
 '\t{\\rlap{\\textcolor{red}{$\\lhd\\!\\!\\lhd\\!\\!\\lhd\\!\\!\\lhd
\\!\\!\\lhd$}}}}\n',
 '\n',
 '% Warning: The textcomp and mathdesign packages are incompatible!\
n',
 '%\\def\\n@tedingb@t{\\@ifundefined{textmusicalnote}\n',
 "%\t\t\t{$\\maltese$}\t\t\t% if you don't have textcomp\n",
 '%\t\t\t{\\textmusicalnote}}\t\t% if you do have textcomp\n',
 '\n',
 '%\\def\\n@tedingb@t{\\textcircled{\\tiny$\\maltese$}}\n',
 '%\\def\\n@tedingb@t{$\\bigstar$}\n',
 '\n',
 '%\\def\\note#1{\\textcolor{red}{\\n@tew@rn\\n@te{\\n@ten@te{\\n@te
dingb@t}#1}}}\n',
 '\\def\\note#1{\\textcolor{red}{\\n@tew@rn\\n@te{\\n@ten@te {#1}}}}
\n',
 '\n',
 '\\def\\sidenote#1{\\marginpar{\\tiny\\textsf{#1}}}\n',
 '\n',
 '\\setlength{\\marginparsep}{0.1in}\n',
 '\\setlength{\\marginparwidth}{\\paperwidth}\n',
 '\\addtolength{\\marginparwidth}{-\\oddsidemargin}\n',
 '\\addtolength{\\marginparwidth}{-\\textwidth}\n',
 '\\addtolength{\\marginparwidth}{-1.0\\marginparsep} \n',
 '\\addtolength{\\marginparwidth}{-1.0in}\n',
 '\n',
 '%------------------------------------------------------------
-----\n',
 '%  TODO sets enclosed text in a gray rectangle with a red border\n
',
 '%  with small sans-serif text.\n',
 '%------------------------------------------------------------
-----\n',
 '\\definecolor{TODOcolor}{cmyk}{0.05,0,0,0}\n',
 '\\definecolor{TODOtxtcolor}{cmyk}{0,1,1,0}\n',
 '\n',
 '\\newenvironment{TODO}\n',
 '    {\\fboxrule1.5pt\\begin{center}\n',
 '        \\marginpar{\\LARGE\\color{Red}$\\bigstar\\bigstar\\bigstar$}
\n',
 '        \\begin{lrbox}{\\@tempboxa}\n',
```

```
'    \\begin{minipage}{0.9\\columnwidth}\n',
'    \\small\\sffamily\\parindent1.5em\\color{TODOtxtcolor}}\n',
'  {\\end{minipage}\n',
'    \\end{lrbox}\n',
'    \\fcolorbox{TODOtxtcolor}{TODOcolor}{\\usebox{\\@tempboxa}}\\e
nd{center}}\n',
'\n',
'%-------------------------------------------------------------
-----\n',
'%  Bibliography aliases, so I can use mnemonic citation keys and\n
',
'%  geom.bib at the same time.  \\bibalias{foo}{bar} makes \\cite{f
oo}\n',
'%  act (almost) exactly like \\cite{bar}.  I don't actually use th
is.\n',
'%-------------------------------------------------------------
-----\n',
'\\def\\bibalias#1#2{%\n',
'    \\global\\@namedef{b@#1}{%\n',
'        {\\@ifundefined{b@#2}{\\textsf{?}}{}\\csname b@#2\\endcsna
me}}}\n',
'\n',
'%-------------------------------------------------------------
-----\n',
'%  Flag bad citations and references in the margin.  Dangerous if
you\n',
'%  have lots of undefined refs; use batchmode the first time.\n',
'%  Incompatible with some document classes.  I don't actually use
this.\n',
'%-------------------------------------------------------------
-----\n',
'\\DeclareOption{flagerrors}\n',
'{\n',
'\\def\\badcite{\\ifinner\\else\\n@ten@te{\\textcent}\\fi}\n',
'\n',
'\\def\\badref{\\ifinner\\else\\n@ten@te{$\\Join$}\\fi}\n',
'\n',
'\\def\\bibalias#1#2{%\n',
'    \\global\\@namedef{b@#1}{%\n',
'        {\\@ifundefined{b@#2}{\\textsf{>>#1??}}{}\\csname b@#2\\en
dcsname}}}\n',
'\n',
'\\def\\@citex[#1]#2{%\n',
'  \\let\\@citea\\@empty\n',
'  \\@cite{\\@for\\@citeb:=#2\\do\n',
'    {\\@citea\\def\\@citea{,\\penalty\\@m\\ }%\n',
'     \\edef\\@citeb{\\expandafter\\@firstofone\\@citeb\\@empty}%\n
',
'     \\if@filesw\\immediate\\write\\@auxout{\\string\\citation{\\@
citeb}}\\fi\n',
```

```
'         \\@ifundefined{b@\\@citeb}{\\mbox{\\reset@font\\sffamily>\\@c
iteb?}%\n',
'          \\badcite%\n',
'          \\G@refundefinedtrue%\n',
'          \\@latex@warning\n',
"            {Citation `\\@citeb' on page \\thepage \\space undefined}
}%\n",
'            {\\hbox{\\csname b@\\@citeb\\endcsname}}}}{#1}}\n',
'\n',
'\\def\\@setref#1#2#3{\n',
'   \\ifx#1\\relax\n',
'     \\protect\\G@refundefinedtrue\n',
'     \\badref\\mbox{\\reset@font\\sffamily >#3?}\n',
"     \\@latex@warning{Reference `#3' on page \\thepage \\space undef
ined}%\n",
'   \\else\n',
'     \\expandafter#2#1\\null\n',
'   \\fi}\n',
'}\n',
'\n',
'% ----------------------------------------------------------------
------\n',
'%  Draft notice.  Put \\DRAFT on the title page, in place of \\dat
e.\n',
'% ----------------------------------------------------------------
------\n',
'\\def\\draftnotice{Preliminary draft --- \\mdyy\\ --- Not for dist
ribution}\n',
'\n',
'\\def\\DRAFT{\n',
'\\date{\\fbox{\\textsf{\\textbf{\\draftnotice}}}}\n',

'\\def\\@oddfoot{\\footnotesize\\hss\\fbox{\\textbf{\\textsf{\\draft
notice}}}\\hss}\n',
'\\let\\@evenfoot\\@oddfoot\n',
'}\n',
'\n',
'%----------------------------------------------------------------
-----\n',
"% 'cramped' list style, stolen from Jeff Vitter.  Doesn't always w
ork.\n",
'%----------------------------------------------------------------
-----\n',
'\\def\\cramped\n',
'   {\\parskip\\@outerparskip\\@topsep\\parskip\\@topsepadd2pt\\item
sep0pt\n',
'}\n',
'\n',
'%----------------------------------------------------------------
-----\n',
```

```
 '%   More footnote symbols, please.\n',
 '%------------------------------------------------------------------
-----\n',
 '\\def\\@fnsymbol#1{\\ensuremath{\\ifcase#1\\or *\\or \\dagger\\or
\\ddagger\\or\n',
 '    \\mathsection\\or \\mathparagraph\\or \\|\\or **\\or \\dagger\\
dagger\n',
 '    \\or \\ddagger\\ddagger \\or \\mathsection\\mathsection \\or\n'
,
 '    \\mathparagraph\\mathparagraph \\else\\@ctrerr\\fi}}\n',
 '\n',
 '%------------------------------------------------------------------
-----\n',
 '%   TeXbook-style quotations\n',
 '%------------------------------------------------------------------
-----\n',
 '\\newenvironment{rightquote}[1]\n',
 '{\\flushright\\begin{minipage}{#1\\textwidth}\n',
 '\\parskip0pt\\footnotesize\\sffamily\\slshape}\n',
 '{\\end{minipage}\\par\\bigskip}\n',
 '\n',
 '\\def\\quotee#1{\\par\\vspace{0.5ex}\\begin{flushright}\\unskip\\te
xtup{--- #1}\\end{flushright}\\unskip}\n',
 '\n',
 '%------------------------------------------------------------------
-----\n',
 '%   Creative Commons license\n',
 '%------------------------------------------------------------------
-----\n',
 '\\def\\CCLicense#1{{\\vbox to 1ex{\\centering\\tiny\\sffamily\n',
 '\\textcopyright\\ Copyright \\number\\year\\ Jeff Erickson.\n',
 '\\\\\\\\\n',
 'This work is licensed under a Creative Commons License (\\url{http
://creativecommons.org/licenses/by-nc-sa/4.0/}).\n',
 '\\\\\\\\\n',
 'Free distribution is strongly encouraged; commercial distribution
is expressly forbidden.\n',
 '\\\\\\\\\n',
 'See {#1} for the most recent revision.\n',
 '\\vss}}}\n',
 '\n',
 '% -----------------------------------------------------------------
------\n',
 '%   Line numbers (be nice to the referee).  Add \\LineNumbers.\n',
 '% -----------------------------------------------------------------
------\n',
 '%\\ifx\\LineNumbers\\undefined\n',
 '%\t\\newcommand{\\InLineNumbers}[1]{}\n',
 '%\\else\n',
 '%\t\\newcommand{\\InLineNumbers}[1]{#1}\n',
```

```
                    '%\\fi\n',
                    '%\n',
                    '%\\InLineNumbers{\n',
                    '%\t\\linenumbers\n',

                '%\t\\renewcommand\\linenumberfont{\\normalfont\\tiny\\sffamily\\col
                or{Gray}}\n',
                    '%\t\\setlength\\linenumbersep{2em}\n',
                    '%\t\n',
                    '%\t% Make amsmath environments play well with lineno\n',
                    '%\t% Thanks to tex.stackexchange\n',
                    '%\t\\newcommand*\\patchAmsMathEnvironmentForLineno[1]{%\n',
                    '%\t \\expandafter\\let\\csname old#1\\expandafter\\endcsname\\csna
                me #1\\endcsname\n',
                    '%\t \\expandafter\\let\\csname oldend#1\\expandafter\\endcsname\\c
                sname end#1\\endcsname\n',
                    '%\t \\renewenvironment{#1}%\n',
                    '%\t {\\linenomath\\csname old#1\\endcsname}%\n',
                    '%\t {\\csname oldend#1\\endcsname\\endlinenomath}}% \n',
                    '%\t\\newcommand*\\patchBothAmsMathEnvironmentsForLineno[1]{%\n',
                    '%\t \\patchAmsMathEnvironmentForLineno{#1}%\n',
                    '%\t \\patchAmsMathEnvironmentForLineno{#1*}}%\n',
                    '%\t\\AtBeginDocument{%\n',
                    '%\t\\patchBothAmsMathEnvironmentsForLineno{equation}%\n',
                    '%\t\\patchBothAmsMathEnvironmentsForLineno{align}%\n',
                    '%\t\\patchBothAmsMathEnvironmentsForLineno{flalign}%\n',
                    '%\t\\patchBothAmsMathEnvironmentsForLineno{alignat}%\n',
                    '%\t\\patchBothAmsMathEnvironmentsForLineno{gather}%\n',
                    '%\t\\patchBothAmsMathEnvironmentsForLineno{multline}%\n',
                    '%\t}\n',
                    '%}\n',
                    '\n',
                    '% ----------------------------------------------------------------
                ------\n',
                    '\\ProcessOptions']
```

In [11]: `[l for l in jeffe if re.match(r'.*kludge', l)]`

Out[11]: ['% I give up. These are in the wrong font, but my kludged version
         s \n',
          '% LOOK like kludges, especially \\Z, \\Q, and \\C.\n']

In [12]: `# . == any character`

In [13]: `[l for l in jeffe if re.match(r'kludge', l)]`

Out[13]: []

In [15]: `[l for l in jeffe if re.match(r'%', l)]`

Out[15]: ['% ====================-*- LaTeX -*-=======================\n',
 '%\n',
 '%   jeffe.sty -- macros I use everywhere\n',
 '%\n',
 '%   Jeff Erickson (jeffe@cs.uiuc.edu)\n',
 '%   Last modified 10 April 2015\n',
 '%   This is free; caveat emptor!\n',
 '% ==\n',
 '%\\PassOptionsToPackage{hyphens}{url}\n',
 '%\\RequirePackage[l2tabu, orthodox]{nag}\n',
 '%\\RequirePackage[mathlines, pagewise]{lineno}\n',
 '% Fix incompaitibility between {nag} and {babel}\n',
 '% original is \\\\renewcommand\\\\thenag@c{\\\\roman{nag@c}}\n',
 '%\\renewcommand\\\\thenag@c{\\\\romannumeral\\\\c@nag@c}\n',
 '% ---
------\n',
 '% Common Latin abbreviations, only one of which is actually koshe
r\n',
 '% ---
------\n',
 '%\\def\\\\ie{\\\\emph{i.e.}}\t\t\t% that is\n',
 '%\\def\\\\eg{\\\\emph{e.g.}}\t\t\t% for example\n',
 '% ---
------\n',
 '% Simple math stuff\n',
 '% ---
------\n',
 '% ---- SYMBOLS ----\n',
 '%\n',
 '% I give up. These are in the wrong font, but my kludged version
s \n',
 '% LOOK like kludges, especially \\\\Z, \\\\Q, and \\\\C.\n',
 '%\n',
 '% ---- OPERATORS (requires amsmath) ----\n',
 '% --- Darts and fences ---\n',
 '% less nice replacements for stmaryrd characters\n',
 '% --- Cheap displaystyle operators ---\n',
 '% ---- RELATORS ----\n',
 '% ---- DELIMITER PAIRS ----\n',
 '% --- Self-scaling delmiter pairs ---\n',
 '%\n',
 '% Macros to typeset sets like {foo|bar} with all three delimiters
\n',
 '% correctly scaled to fit. What I *really* want is a \\\\middle ma
cro\n',
 '% that acts just like \\\\left and \\\\right. Grumble.\n',
 '%\n',

```
'%   Math mode fbox\n',
'% ---- "ACCENTS" ----\n',
'%    NB: Commands equivalent to \\lrarrowfill and \\overlrarrow are
\n',
'%         already defined in amstex!\n',
'% ---- TEXT STYLES ----\n',
'% --------------------------------------------------------------------
------\n',
'%   \\begin{bigabstract}...\\end{bigabstract}\n',
'%   For use in documents with title pages.  Use normal-sized text i
n\n',
'%   the abstract!\n',
'% --------------------------------------------------------------------
------\n',
'% --------------------------------------------------------------------
------\n',
'%   Make captions smaller than the text, make their titles bold.\n'
,
'%   Arguments:   #1 == figure name: "Figure 5"\n',
'%               #2 == caption: "Papers by \\Erdos, 1900--2000 (pro
jected)"\n',
'%   Less space after floats and before caption, since captions are
smaller\n',
'% --------------------------------------------------------------------
------\n',
'% --------------------------------------------------------------------
------\n',
'%   Revised theorem environment:\n',
'%   Add a period after the theorem number, and make theorems slante
d\n',
'%   instead of italic to help distinguish text from math.  (But XCh
arter\n',
'%   makes slanted = italic!) Use \\boldmath in theorem label in cas
e\n',
'%   it includes math.\n',
'% --------------------------------------------------------------------
------\n',
'% --------------------------------------------------------------------
------\n',
'%   \\newproof{type}{text}(style)[post]:\n',
'%   Define a new type of unnumbered "theorem" environment.  The las
t\n',
'%   two arguments are optional; most environments will not use them
.\n',
'%\n',
'%   To change label style, put new style command in label:\n',
'%         \\newproof{comment}{\\textsf{Comment}}\n',
'% --------------------------------------------------------------------
------\n',
'%\n',
```

```
 '%   Standard proof envrionment: last line has a halmos at the right
margin.\n',
 '%   Insert \\qed to override default halmos placement.\n',
 '%   Incompatible with amsprf package!\n',
 '%\n',
 '%\n',
 '%   Fake proof environment, for use with wrapfig and similar packag
es\n',
 '%\n',
 '%\n',
 '%   If the proof ends with a displayed equation, use \\aftermath ju
st\n',
 '%   before \\end{proof} to put the halmos in (sort of) the "right"
place.\n',
 '%\n',
 '%   ------------------------------------------------------------
------\n',
 "%   One-shot theoremish environment.  For named things like "Zorn's
\n",
 '%   Lemma" or "The Death Leap Principle" or "The Zone Theorem".\n',
 '%   To get one-shot proofish environment, put \\normalfont inside.\
n',
 '%   New improved version stolen from Erik Demaine.\n',
 '%   ------------------------------------------------------------
------\n',
 '%   ------------------------------------------------------------
------\n',
 '%   Algorithm environment -- Normal text, with 2em indenting,\n',
 '%   surrounded by a box.  Really needs optional line numbering and\
n',
 '%   a better comment macro.  But bold keywords make the baby\n',
 "%   Jesus cry, so if you want them, you're on your own.\n",
 '%   ------------------------------------------------------------
------\n',
 '% Meh.\n',
 '%\n',
 '%   These only work with <1 line of text.  Use sparingly!!\n',
 '%   Better yet, use the soul package!\n',
 '%\n',
 '%   ------------------------------------------------------------
------\n',
 '%   Include a file verbatim.  Searches the TEXINPUTS path for the f
ile,\n',
 "%   even though that's probably not what you really want.  Stolen f
rom\n",
 "%   "verbatimfiles.sty" by Chris Rowley and others.  [Don't use the
ir \n",
 '%   \\vertbatimlisting macro; it has some bizarre side-effects!]\n'
,
 '%   ------------------------------------------------------------
```

```
 ------\n',
  '% ---------------------------------------------------------------------
------\n',
  '%  \\now  -- Current time in h:mm AM/PM format\n',
  "%  \\mdyy -- Today's date in m/d/yy format.  Forget Y2K; this is f
or humans!\n",
  '% ---------------------------------------------------------------------
------\n',
  '% ---------------------------------------------------------------------
------\n',
  '%  Notes to myself.  The margin flags are broken, thanks to an\n',
  '%  incompatibility with the geometry package.\n',
  '% ---------------------------------------------------------------------
------\n',
  '% Warning: The textcomp and mathdesign packages are incompatible!\
n',
  '%\\def\\n@tedingb@t{\\\\@ifundefined{textmusicalnote}\n',
  "%\t\t\t{$\\maltese$}\t\t\t% if you don't have textcomp\n",
  '%\t\t\t{\\textmusicalnote}}\t\t% if you do have textcomp\n',
  '%\\def\\n@tedingb@t{\\textcircled{\\tiny$\\maltese$}}\n',
  '%\\def\\n@tedingb@t{$\\bigstar$}\n',
  '%\\def\\note#1{\\textcolor{red}{\\n@tew@rn\\n@te{\\n@ten@te{\\n@te
dingb@t}#1}}}\n',
  '%--------------------------------------------------------------------
-----\n',
  '%  TODO sets enclosed text in a gray rectangle with a red border\n
',
  '%  with small sans-serif text.\n',
  '%--------------------------------------------------------------------
-----\n',
  '%--------------------------------------------------------------------
-----\n',
  '%  Bibliography aliases, so I can use mnemonic citation keys and\n
',
  '%  geom.bib at the same time.  \\bibalias{foo}{bar} makes \\cite{f
oo}\n',
  '%  act (almost) exactly like \\cite{bar}.  I don't actually use th
is.\n',
  '%--------------------------------------------------------------------
-----\n',
  '%--------------------------------------------------------------------
-----\n',
  '%  Flag bad citations and references in the margin.  Dangerous if
you\n',
  '%  have lots of undefined refs; use batchmode the first time.\n',
  '%  Incompatible with some document classes.  I don't actually use
this.\n',
  '%--------------------------------------------------------------------
-----\n',
  '% ---------------------------------------------------------------------
```

```
------\n',
 '%  Draft notice.  Put \\DRAFT on the title page, in place of \\dat
e.\n',
 '% -----------------------------------------------------------------
------\n',
 '%-----------------------------------------------------------------
-----\n',
 "% 'cramped' list style, stolen from Jeff Vitter.  Doesn't always w
ork.\n",
 '%-----------------------------------------------------------------
-----\n',
 '%-----------------------------------------------------------------
-----\n',
 '%  More footnote symbols, please.\n',
 '%-----------------------------------------------------------------
-----\n',
 '%-----------------------------------------------------------------
-----\n',
 '%  TeXbook-style quotations\n',
 '%-----------------------------------------------------------------
-----\n',
 '%-----------------------------------------------------------------
-----\n',
 '%  Creative Commons license\n',
 '%-----------------------------------------------------------------
-----\n',
 '% -----------------------------------------------------------------
------\n',
 '%  Line numbers (be nice to the referee).  Add \\LineNumbers.\n',
 '% -----------------------------------------------------------------
------\n',
 '%\\ifx\\LineNumbers\\undefined\n',
 '%\t\\newcommand{\\InLineNumbers}[1]{}\n',
 '%\\else\n',
 '%\t\\newcommand{\\InLineNumbers}[1]{#1}\n',
 '%\\fi\n',
 '%\n',
 '%\\InLineNumbers{\n',
 '%\t\\linenumbers\n',
 '%\t\\renewcommand\\linenumberfont{\\normalfont\\tiny\\sffamily\\col
or{Gray}}\n',
 '%\t\\setlength\\linenumbersep{2em}\n',
 '%\t\n',
 '%\t% Make amsmath environments play well with lineno\n',
 '%\t% Thanks to tex.stackexchange\n',
 '%\t\\newcommand*\\patchAmsMathEnvironmentForLineno[1]{%\n',
 '%\t \\expandafter\\let\\csname old#1\\expandafter\\endcsname\\csna
me #1\\endcsname\n',
 '%\t \\expandafter\\let\\csname oldend#1\\expandafter\\endcsname\\c
```

```
           sname end#1\\endcsname\n',
            '%\t \\renewenvironment{#1}%\n',
            '%\t {\\linenomath\\csname old#1\\endcsname}%\n',
            '%\t {\\csname oldend#1\\endcsname\\endlinenomath}}% \n',
            '%\t\\newcommand*\\patchBothAmsMathEnvironmentsForLineno[1]{%\n',
            '%\t \\patchAmsMathEnvironmentForLineno{#1}%\n',
            '%\t \\patchAmsMathEnvironmentForLineno{#1*}}%\n',
            '%\t\\AtBeginDocument{%\n',
            '%\t\\patchBothAmsMathEnvironmentsForLineno{equation}%\n',
            '%\t\\patchBothAmsMathEnvironmentsForLineno{align}%\n',
            '%\t\\patchBothAmsMathEnvironmentsForLineno{flalign}%\n',
            '%\t\\patchBothAmsMathEnvironmentsForLineno{alignat}%\n',
            '%\t\\patchBothAmsMathEnvironmentsForLineno{gather}%\n',
            '%\t\\patchBothAmsMathEnvironmentsForLineno{multline}%\n',
            '%\t}\n',
            '%}\n',
            '% ----------------------------------------------------------------
           ------\n']
```

```
In [16]: [l for l in jeffe if re.match(r'% ---- .* ----$', l)]
```

```
Out[16]: ['% ---- SYMBOLS ----\n',
          '% ---- OPERATORS (requires amsmath) ----\n',
          '% ---- RELATORS ----\n',
          '% ---- DELIMITER PAIRS ----\n',
          '% ---- "ACCENTS" ----\n',
          '% ---- TEXT STYLES ----\n']
```

```
In [17]: re.match(r'.*=.*', 'x=y')
```

```
Out[17]: <re.Match object; span=(0, 3), match='x=y'>
```

```
In [18]: re.match(r'.*=.*', '374')
```

```
In [19]: re.match(r'.*.*=.*', 'x=y')
```

```
Out[19]: <re.Match object; span=(0, 3), match='x=y'>
```

```
In [22]: re.match(r'.*.*.*.*=.*$', '374=algorithms and models of computation')
```

```
Out[22]: <re.Match object; span=(0, 40), match='374=algorithms and models of
         computation'>
```

```
In [23]: s = 'x=' + "blah"*2000
```

```
In [24]: s
```

```
Out[24]: 'x=blahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
```

```
lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
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lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
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lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
```

lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
lahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahblahb
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```

In [29]: `re.match(r'.*=.*$', s)`

Out[29]: `<re.Match object; span=(0, 8002), match='x=blahblahblahblahblahblahb`
`lahblahblahblahblahbla>`

In [28]: `re.match(r'.*.*=.*$', s)`

Out[28]: `<re.Match object; span=(0, 8002), match='x=blahblahblahblahblahblahb`
`lahblahblahblahblahbla>`

In [30]: `re.match(r'.*.*.*=.*$', s)`

Out[30]: `<re.Match object; span=(0, 8002), match='x=blahblahblahblahblahblahb`
`lahblahblahblahblahbla>`

In [31]:
```python
def oddlength(s):
    """ return true if s has an odd length """
    n = 0 # initialize length to 0
    for c in s:
        n = n + 1
    return (n % 2) == 1
```

In [32]: `oddlength("")`

Out[32]: `False`

In [33]: `oddlength("374")`

Out[33]: `True`

```
In [34]:  oddlength("nikita")
```

Out[34]: False

```
In [35]:  import math
          def oddlength(s):
              """ return true if s has an odd length """
              n = 1 # initialize 2^length to
              for c in s:
                  n = n*2
                  print(n)
              return (int(math.log(n,2)) % 2) == 1
```

```
In [36]:  oddlength("nikita")
```

```
          2
          4
          8
          16
          32
          64
```

Out[36]: False

```
In [37]:  oddlength("dsafadsfjaskl;ewrhewq;hrtqwel;krjkjwejrekw;jrklw;ejr")
```

```
          2
          4
          8
          16
          32
          64
          128
          256
          512
          1024
          2048
          4096
          8192
          16384
          32768
          65536
          131072
          262144
          524288
          1048576
          2097152
          4194304
          8388608
```

```
16777216
33554432
67108864
134217728
268435456
536870912
1073741824
2147483648
4294967296
8589934592
17179869184
34359738368
68719476736
137438953472
274877906944
549755813888
1099511627776
2199023255552
4398046511104
8796093022208
17592186044416
35184372088832
70368744177664
140737488355328
281474976710656
562949953421312
1125899906842624
2251799813685248
4503599627370496
```

Out[37]: False

In [38]:
```python
def oddlength(s):
    """ return true if s has an odd length """
    parity = 0 # initialize parity to 0
    for c in s:
        parity = (1-parity)
    return parity == 1
```

In [39]: `oddlength('')`

Out[39]: False

In [40]: `oddlength('374')`

Out[40]: True