

jodliterate Group

John D. Baker

<https://github.com/bakerjd99/jacks/blob/master/jodliterate/jodliterate.ijs>

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jodliterate Overview

jodliterate is a J utility script that generates [literate](#) documents directly from [JOD dictionary](#) groups.

See the following for details:

1. Using jodliterate notebook. <https://github.com/bakerjd99/jacks/blob/master/jodliterate/Using%20jodliterate.ipynb>
2. Using jodliterate PDF. <https://github.com/bakerjd99/jacks/blob/master/jodliterate/UsingJodliterate.pdf>

jodliterate Interface

THISPANDOC	[26]	<i>full pandoc path - use (pandoc) if on shell path</i>
formifacetex	[34]	<i>formats hyperlinked and highlighted interface words</i>
grplit	[38]	<i>make latex for group (y)</i>
ifacesection	[42]	<i>interface section summary string</i>
ifc	[43]	<i>format interface comment text</i>
setjodliterate	[59]	<i>prepare LaTeX processing - sets out directory writes preamble</i>
uwllatexfrwords	[62]	<i>unwrapped latex from words: uwllatexfrwords ;:'we wrap ugly'</i>
wordlit	[63]	<i>make latex from word list (y)</i>

jodliterate and JOD

jodliterate makes some assumptions about the J code and document text it processes. It assumes:

1. All source code is stored in JOD dictionaries.

2. jodliterate document fragments are either:

- Markdown group long documents: `2 9 disp 'groupname'`
- L^AT_EX suffixed macros: `4 disp 'groupname','_oview_tex'`

Running jodliterate

jodliterate runs on Windows, Linux and Mac versions of J.¹

To use jodliterate you must:

1. Install JOD. JOD is a J addon. It is usually installed with [pacman](#).
2. Install JODSOURCE. JODSOURCE is also a J addon. Install it with [pacman](#). It contains the JOD dictionaries required to build JOD. JODSOURCE also contains jodliterate.
3. Install a current version of [pandoc](#). pandoc version 2.9.1.1 and beyond supports J syntax highlighting. Prior versions required modification. The following blog posts provide more information:
 - (a) [More J Pandoc Syntax HighLighting](https://analyzethedatanotthedrive1.org/2020/02/19/more-j-pandoc-syntax-highlighting/) <https://analyzethedatanotthedrive1.org/2020/02/19/more-j-pandoc-syntax-highlighting/>
 - (b) [Pandoc based J Syntax Highlighting](https://analyzethedatanotthedrive1.org/2012/09/20/pandoc-based-j-syntax-highlighting/) <https://analyzethedatanotthedrive1.org/2012/09/20/pandoc-based-j-syntax-highlighting/>
 - (c) [Semi-Literate JOD](https://analyzethedatanotthedrive1.org/2012/10/01/semi-literate-jod/). <https://analyzethedatanotthedrive1.org/2012/10/01/semi-literate-jod/>
4. Build jodliterate. jodliterate is a J group. JOD makes J scripts from groups. To make jodliterate do:

```
require 'general/jod'
od ;:'joddev jod utils' [ 3 od ''
mls 'jodliterate'
```

¹jodliterate will run on J 8.01 and beyond.

5. Open the JOD dictionaries containing the group you want to document.

```
od ;:'joddev jod utils' [ 3 od ''
```

6. Load jodliterate. After making jodliterate it can be loaded like any J script.

```
load 'jodliterate'
```

7. Set a working directory. jodliterate generates L^AT_EX files. All such files are written to the directory specified by setjodliterate.

```
setjodliterate '' NB. current JOD put dictionary document directory
```

```
setjodliterate 'c:\temp' NB. windows
```

```
setjodliterate '/home/john/temp' NB. linux
```

8. Set optional author(s) with dyadic setjodliterate.

```
'Batman' setjodliterate 'c:\batcave' NB. set LaTeX author(s) text and directory
```

9. Run grplit on the group you want to document. grplit generates L^AT_EX files in the working directory. The root L^AT_EX file is given the group name.

```
grplit 'jodliterate' NB. makes jodliterate.tex
```

10. Use L^AT_EX to compile the files generated by grplit.

A batch bat script is written to the setjodliterate directory that shows the sequence of L^AT_EX compilation commands.

Files may be processed with pdf_latex, xelatex or lualatex. Your choice will be dictated by the presence of Unicode characters. For more details see the preamble file JODLiteratePreamble.tex in the working directory.

There are some \LaTeX settings you may want to adjust.

1. Edit `JODLiteratePreamble.tex` to change the number of index columns. The default is three but this may result in very long names running together. To decrease or increase index columns change:

```
\begin{multicols}{3}[\section*{\indexname}]
```

2. `jodliterate` wraps long source code lines. Wrapping is controlled by `WRAPLIMIT`. The default is 110 characters. Change this value if you change font or page size. Wrapped lines are preceded with the string `WRAPLEAD` with default `>.>.`
3. `jodliterate` may incorrectly highlight *wrapped* boxed J nouns that contain mixtures of strings and other other types. This also holds for wrapped nonnouns that contain long embedded strings. The verb `uwlaterfrwords`, see page 62, can be used to generate *unwrapped* \LaTeX for such words that can be manually wrapped and inserted in the files generated by `jodliterate`. Try as we might some manual editing is always necessary with \LaTeX .

jodliterate Source Code

```
NB.*jodliterate s-- generates literate source code documents directly from JOD groups.
NB.
NB. verbatim: see the following blog posts and github files
NB.
NB. https://analyzethedatanotthedrivel.org/2012/10/01/semi-literate-jod/
NB. https://analyzethedatanotthedrivel.org/2020/02/19/more-j-pandoc-syntax-highlighting/
NB. https://github.com/bakerjd99/jacks/blob/master/jodliterate/UsingJodliterate.pdf
NB. https://github.com/bakerjd99/jacks/blob/master/jodliterate/Using%20jodliterate.ipynb
NB.
NB. interface word(s):
NB. -----
NB.  THISPANDOC      - full pandoc path - use (pandoc) if on shell path
NB.  formifacetest   - formats hyperlinked and highlighted interface words
NB.  grplit           - make latex for group (y)
NB.  ifacesection     - interface section summary string
NB.  ifc              - format interface comment text
NB.  setjodliterate   - prepare LaTeX processing - sets out directory writes preamble
NB.  uwlatexfrwords   - unwrapped latex from words: uwlatexfrwords ;:'we wrap ugly'
NB.  wordlit          - make latex from word list (y)
NB.
NB. author:  John D. Baker
NB. created: 2012oct01
NB. -----
NB. 12oct03 (x) grplit argument added to suppress root tex overwrites
NB. 12oct04 group IFACEWORDSgroupname hyperlinked
```

NB. 12oct05 replaced `::` parsing with `(wfl)` - handles bad `j` code
NB. 12oct08 added error handling - replaced `(write)` with `(writeas)`
NB. 12oct11 adjusted LaTeX preamble - changing monofonts
NB. 12oct12 added `(sbtokens)` - useful for analyzing code text
NB. 12oct17 added `(wrapvrblong)` - long source lines now wrapped
NB. 13dec29 added to `(jacks)` GitHub repository
NB. 20may07 adjusted word formation `(wfl)` for J 9.01
NB. 20may08 updated for current `(pandoc)` versions
NB. 20jun07 added `(formifacutex)` to interface words
NB. 20nov01 added graphics and inclusions subdirectory to preamble
NB. 20nov01 `\begin{document}` moved to root file for OverLeaf.com
NB. 20nov04 `(setjodliterate)` cleaner script, author(s), email added
NB. 20nov12 `(ppcodelatex)` added to adjust coloring of wrapped lines
NB. 20dec01 `(uwlatexfrwords)` added
NB. 21dec21 `(JLCLEANTEXunix, JLBUILDTExunix, JLSHELLEXT)` added

```
coclass 'ajodliterate'  
coinset 'ijod'
```

NB. **dependents*

NB. declared global here to avoid confusing LaTeX names with J names
NB. `(*)=: JLTITLETEX JLOVIEWTEX JLBUILDTEx JLGRPLITTEX JLWORDLITTEX`
NB. `(*)=: JODLiteratePreamble JLCLEANTEX JLSHELLEXT JLBUILDTExunix`
NB. `(*)=: JLCLEANTEXunix JLBUILDTExwin JLCLEANTEXwin`

NB. Roger Hui's word formation state machine - similiar to `::` but
NB. parses text with LFs, retains whitespace and handles open quotes.

```

NB.
NB. verbatim: note difference
NB.
NB.      wfl'+/ i. 23 5, ''OPEN QUOTE'
NB.      ;:'+/ i. 23 5, ''OPEN QUOTE'

NB. hide script locals !(*)=. mfl sfl
mfl=. 256$0                                NB. X other
mfl=. 1 (9,a.i.' ')                        }mfl NB. S whitespace (space and horizontal tab)
mfl=. 2 (,(a.i.'Aa')+/i.26) }mfl NB. A A-Z a-z excluding N B
mfl=. 3 (a.i.'N')                          }mfl NB. N the letter N
mfl=. 4 (a.i.'B')                          }mfl NB. B the letter B
mfl=. 5 (a.i.'0123456789_') }mfl NB. 9 digits and _
mfl=. 6 (a.i.'.')                          }mfl NB. D .
mfl=. 7 (a.i.':')                          }mfl NB. C :
mfl=. 8 (a.i.'''')                        }mfl NB. Q quote
mfl=. 9 (13)                              }mfl NB. CR
mfl=. 10 (10)                             }mfl NB. LF

sfl=. _2]\ "1 }. ". ;. _2 (0 : 0)
' X      S      A      N      B      9      D      C      Q      CR      LF  ' ]0
1 1 12 1 2 1 3 1 2 1 6 1 1 1 1 1 7 1 10 1 1 1 NB. 0 initial
1 2 12 2 2 2 3 2 2 2 6 2 1 0 1 0 7 2 10 2 1 2 NB. 1 other
1 2 12 2 2 0 2 0 2 0 2 0 1 0 1 0 7 2 10 2 1 2 NB. 2 alp/num
1 2 12 2 2 0 2 0 4 0 2 0 1 0 1 0 7 2 10 2 1 2 NB. 3 N
1 2 12 2 2 0 2 0 2 0 2 0 5 0 1 0 7 2 10 2 1 2 NB. 4 NB
9 0 9 0 9 0 9 0 9 0 9 0 1 0 1 0 9 0 10 2 1 2 NB. 5 NB.

```



```
1 4 13 0 6 0 6 0 6 0 6 0 6 0 1 0 7 4 10 2 1 2 NB. 6 num
7 0 7 0 7 0 7 0 7 0 7 0 7 0 7 0 8 0 10 2 1 2 NB. 7 '
1 2 11 2 2 2 3 2 2 2 6 2 1 2 1 2 7 0 10 2 1 2 NB. 8 ''
9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 10 2 1 2 NB. 9 comment
1 2 11 2 2 2 4 2 2 2 6 2 1 2 1 2 7 2 10 2 11 0 NB. 10 CR
1 2 11 2 2 2 4 2 2 2 6 2 1 2 1 2 7 2 10 2 1 2 NB. 11 CRLF
1 2 12 0 2 2 3 2 2 2 6 0 1 2 1 2 7 2 10 2 1 2 NB. 12 space
1 2 13 0 2 2 3 2 2 2 6 0 1 2 1 2 7 2 10 2 1 2 NB. 13 space after num
```

)

NB. word formation for lines

```
wfl=: (0;sfl;mfl) & ;:
```

```
JLDIRECTORY=: ''
```

```
JLSHELLEXT=: ;IFWIN{;:'sh bat'
```

NB. wrapped line prefix

```
WRAPLEAD=: '>..>'
```

NB. pandoc transformed wrapped line lead token

```
ALERTTOKWRAP=: '\AlertTok{' ,WRAPLEAD, '}'
```

*NB.*enddependents*

NB. shell scripts that erase/build LaTeX files

```
NB.<<~~~~ { .sh }
```

```
JLBUILDTExunix=: 0 : 0
```

```
# sequence of latex commands that generate PDF
# assumes latex exes are on the working path
lualatex ~#~group~#~
makeindex ~#~group~#~
lualatex ~#~group~#~
lualatex ~#~group~#~
)
```

```
JLCLEANTEXunix=: 0 : 0
```

```
# remove latex/tex temp files
rm *.aux
rm *.bbl
rm *.dvi
rm *.ps
rm *.idx
rm *.out
rm *.log
rm *.toc
rm *.lof
rm *.lol
rm *.lot
rm *.ind
rm *.ilg
rm *.blg
```

```
rm *.gz
)
NB.>>~~~~

NB.<<~~~~ { .bat }
JLBUILDTExwin=: 0 : 0

rem sequence of latex commands that generate PDF
rem assumes latex exes are on the working path
setlocal
cd /d %~dp0
lualatex ~#~group~#~
makeindex ~#~group~#~
lualatex ~#~group~#~
lualatex ~#~group~#~
endlocal
)

JLCLEANTEXwin=: 0 : 0

rem remove latex/tex temp files
del *.aux
del *.bbl
del *.dvi
del *.ps
del *.idx
```

```
del *.out
del *.log
del *.toc
del *.lof
del *.lol
del *.lot
del *.ind
del *.ilg
del *.blg
del *.gz
del *.gz(busy)
)
NB.>>~~~~
```

```
(3 : 0)''
if.    IFWIN  do.
  JLCLEANTEX=: JLCLEANTEXwin
  JLBUILDTTEX=: JLBUILDTTEXwin
elseif. IFUNIX do.
  JLCLEANTEX=: JLCLEANTEXunix
  JLBUILDTTEX=: JLBUILDTTEXunix
elseif.do.
  smoutput 'JLCLEANTEX/JLBUILDTTEX scripts not set'
end.
)
```

```
NB.<<~~~~ { .latex }

NB. group title and author - standard \maketitle
JLTITLETEX=: 0 : 0

% latex author, title, optional url and hash
\author{~#~author~#~ %\\
%\\
%\small \url{~#~ijsurl~#~} \\
%\footnotesize \texttt{SHA-256: ~#~sha256~#~} \normalsize
}
\title{\texttt{~#~group~#~} Group}
)

NB. group overview header
JLOVIEWTEX=: 0 : 0

% this jodliterate overview
\section{\texttt{~#~group~#~} Overview}
)

NB. group root tex - columns may need adjusting
JLGRPLITTEX=: 0 : 0

% Main jodliterate (grplit) latex file. (grplit) generates "group"
% named versions of this file for each JOD group it processes.
```

```
\input{JODLiteratePreamble.tex}

\begin{document}

\input{~#~group~#~title.tex}
\maketitle
\tableofcontents

\newpage
% commands for adjusting distance
% between columns and inserting a rule
%\setlength{\columnsep}{3em}
%\setlength{\columnseprule}{0.5pt}
%\twocolumn
\input{~#~group~#~oview.tex}

\newpage
%\onecolumn
\input{~#~group~#~code.tex}

\newpage
\phantomsection
\addcontentsline{toc}{section}{\texttt{=:} Index}
\printindex

\end{document}
)
```

NB. word lit root tex

JLWORDLITTEX=: 0 : 0

% Main jodliterate (wordlit) latex file.

\input{JODLiteratePreamble.tex}

\begin{document}

\newpage

% commands for adjusting distance

% between columns and inserting a rule

%\setlength{\columnsep}{3em}

%\setlength{\columnseprule}{0.5pt}

%\twocolumn

%\onecolumn

\input{~#~texname~#~code.tex}

\newpage

\phantomsection

\addcontentsline{toc}{section}{\texttt{=:} Index}

\printindex

\end{document}

)

NB. main jodliterate LaTeX preamble

JODLiteratePreamble=: 0 : 0

% jodliterate latex preamble.

%

% This file is a highly customized version of the preamble

% material generated by pandoc's -s option when producing

% .tex output. pandoc highlighting is overridden and

% the standard index is redefined.

\documentclass[12pt]{article}

\usepackage[landscape]{geometry}

\usepackage[headings]{fullpage}

\usepackage{lmodern}

\usepackage{amssymb,amsmath}

\usepackage{ifxetex,ifluatex}

% provides \textsubscript

\usepackage{fixltx2e}

% graphics inclusions

\usepackage{graphicx,subfigure}

\graphicspath{{./inclusions/}}


```
% use microtype if available
\IfFileExists{microtype.sty}{\usepackage{microtype}}{}
\ifnum 0\ifxetex 1\fi\ifluatex 1\fi=0 % if pdftex
  \usepackage[utf8]{inputenc}
\else % if luatex or xelatex
  \usepackage{fontspec}
  \ifxetex
    \usepackage{xltxtra,xunicode}
  \fi
  \defaultfontfeatures{Mapping=tex-text,Scale=MatchLowercase}
  % replace EUROUC with unicode euro character
  % if you need this character - the presence of
  % this single character in the preamble forces use of xelatex, lualated
  %\newcommand{\euro}{EUROUC}
  % can set other monospace fonts if they're available
  % I rather like Source Code Pro see:
  % http://blogs.adobe.com/typblography/2012/09/source-code-pro.html
  %\setmonofont{FreeMono}
  %\setmonofont{Source Code Pro}
\fi

% Redefine labelwidth for lists; otherwise, the enumerate package will cause
% markers to extend beyond the left margin.
\makeatletter\AtBeginDocument{%
  \renewcommand{\@listi}
    {\setlength{\labelwidth}{4em}}
```

```
} \makeatother
\usepackage{enumerate}

% tightlist command for list spacing
\providecommand{\tightlist}{%
  \setlength{\itemsep}{0pt}\setlength{\parskip}{0pt}}

% build document index
\usepackage{makeidx}

% colors
\usepackage{color}
\definecolor{shadecolor}{RGB}{248,248,248}
% j control structures
\definecolor{keywcolor}{rgb}{0.13,0.29,0.53}
% j explicit arguments x y m n u v
\definecolor{datacolor}{rgb}{0.13,0.29,0.53}
% j numbers - all types see j.xml
\definecolor{decvcolor}{rgb}{0.00,0.00,0.81}
\definecolor{basencolor}{rgb}{0.00,0.00,0.81}
\definecolor{floatcolor}{rgb}{0.00,0.00,0.81}
% j local assignments
\definecolor{charcolor}{rgb}{0.31,0.60,0.02}
\definecolor{stringcolor}{rgb}{0.31,0.60,0.02}
\definecolor{commentcolor}{rgb}{0.56,0.35,0.01}
% primitive adverbs and conjunctions
%\definecolor{othercolor}{rgb}{0.56,0.35,0.01}
```

```
\definecolor{othercolor}{RGB}{0,0,255}
% global assignments
\definecolor{alertcolor}{rgb}{0.94,0.16,0.16}
% primitive J verbs and noun names
\definecolor{funccolor}{rgb}{0.00,0.00,0.00}

\usepackage{fancyvrb}
\DefineShortVerb[commandchars=\\\{\}\]{\|}
\DefineVerbatimEnvironment{Highlighting}{Verbatim}{commandchars=\\\{\}\}
% Add ',fontsize=\small' for more characters per line

% pandoc generated syntax coloring commands - names
% are fixed in generated code but definitions may
% be set to any valid text formatting command
\usepackage{framed}
\newenvironment{Shaded}{}{}
\newcommand{\KeywordTok}[1]{\textcolor{keywcolor}{\textbf{#1}}}
% works better with Source Code Pro
%\newcommand{\KeywordTok}[1]{\textcolor{keywcolor}{#1}}
\newcommand{\DataTypeTok}[1]{\textcolor{datacolor}{#1}}
%\newcommand{\DecValTok}[1]{\textcolor{decvcolor}{#1}}
\newcommand{\DecValTok}[1]{#1}
\newcommand{\BaseNTok}[1]{\textcolor{basencolor}{#1}}
\newcommand{\FloatTok}[1]{\textcolor{floatcolor}{#1}}
\newcommand{\CharTok}[1]{\textcolor{charcolor}{\textbf{#1}}}
\newcommand{\StringTok}[1]{\textcolor{stringcolor}{#1}}
\newcommand{\CommentTok}[1]{\textcolor{commentcolor}{\textit{#1}}}
```

```
\newcommand{\OtherTok}[1]{\textcolor{othercolor}{\{#1\}}}  
\newcommand{\AlertTok}[1]{\textcolor{alertcolor}{\textbf{\{#1\}}}}  
\newcommand{\FunctionTok}[1]{\textcolor{funccolor}{\{#1\}}}  
\newcommand{\FunctionTok}[1]{\{#1\}}  
\newcommand{\RegionMarkerTok}[1]{\{#1\}}  
\newcommand{\ErrorTok}[1]{\textbf{\{#1\}}}  
\newcommand{\NormalTok}[1]{\{#1\}}  
  
% JOD oriented auxiliary commands for post processing pandoc generated latex  
\newenvironment{JODGroupHeader}{}{}  
\newenvironment{JODPostProcessor}{}{}  
  
\usepackage{fancyhdr}  
\pagestyle{fancy}  
  
% date each page  
\rfoot{\emph{\today}}  
  
\ifxetex  
  \usepackage[setpagesize=false, % page size defined by xetex  
             unicode=false,      % unicode breaks when used with xetex  
             xetex]{hyperref}  
\else  
  \usepackage[unicode=true]{hyperref}  
\fi  
  
\hypersetup{breaklinks=true,
```

```
        bookmarks=true,
        pdfauthor={},
        pdftitle={},
        colorlinks=true,
        urlcolor=blue,
        linkcolor=magenta,
        pdfborder={0 0 0}}
\setlength{\parindent}{0pt}
\setlength{\parskip}{6pt plus 2pt minus 1pt}
\setlength{\emergencystretch}{3em} % prevent overfull lines
\setcounter{secnumdepth}{0}

% reset latex index to use three columns - default is two
% which results in lots of wasted page space in landscape
% NOTE: adjust if index names run together
% from: http://www.latex-community.org/viewtopic.php?f=4&t=1735
\usepackage{multicol}
\makeatletter
\renewenvironment{theindex}
{
  \if@twocolumn
    \@restonecolfalse
  \else
    \@restonecoltrue
  \fi
  \setlength{\columnseprule}{0pt}
  \setlength{\columnsep}{35pt}
  % change 3 to desired number of index columns
}
```

```
\begin{multicols}{3}[\section*{\indexname}]
\markboth{\MakeUppercase\indexname}%
          {\MakeUppercase\indexname}%
\thispagestyle{plain}
\setlength{\parindent}{0pt}
\setlength{\parskip}{0pt plus 0.3pt}
\relax
\let\item\@idxitem}%
{\end{multicols}\if@restonecol\onecolumn\else\clearpage\fi}
\makeatother

\makeindex

)
NB.>>~~~~~

NB.*end-header

NB. pandoc LaTeX alert token prefix
ALERTTOKPFX=: '\AlertTok{'

NB. string marking start of LaTeX indexed word - see FAKETOKENS
BEGININDEX=: '\KeywordTok{=:=:=:}'

NB. marks start of JOD group header in pandoc latex
BEGINJODHEADER=: '\begin{JODGroupHeader}'
```

NB. marks start of JOD group postprocessor in pandoc latex

BEGINJODPOSTP=: '\begin{JODPostProcessor}'

NB. marks the start of J script text that is not J

BEGINNOTJ=: 'NB.<<~~~~'

NB. pandoc LaTeX comment token prefix

COMMENTTOKPFX=: '\CommentTok{'

NB. carriage return character

CR=: 13{a.

NB. default pandoc install location

DEFAULTPANDOC=: '"C:\Program Files\Pandoc\pandoc"'

NB. string marking end of LaTeX indexed word - see FAKETOKENS

ENDINDEX=: '\KeywordTok{=..=..}'

NB. marks end of JOD group header in pandoc latex

ENDJODHEADER=: '\end{JODGroupHeader}'

NB. marks end of JOD group postprocessor in pandoc latex

ENDJODPOSTP=: '\end{JODPostProcessor}'

NB. marks the end of J script text that is not J

ENDNOTJ=: 'NB.>>~~~~'

NB. 2 and 3 j (wfl) tokens - the trailing blank of (;1{FAKETOKENS) matters!

```
FAKETOKENS=: <;._1 ' |=::=::|=..=.. '
```

NB. interface word list name prefix

```
IFACEWORDSPFX=: 'IFACEWORDS'
```

NB. interface words for (jodliterate) group

```
IFACEWORDSjodliterate=: <;._1 ' THISPANDOC formifacetex grplit ifacesection ifc setjodliterate uwlatexfrwor  
>..>ds wordlit'
```

NB. interface words \pageref \label prefix

```
IFCPFX=: 'ifc:'
```

NB. jodliterate author - inserted in latex \author{}

```
JLAUTHOR=: 'John D. Baker'
```

NB. suffix of jodliterate code file

```
JLCODEFILE=: 'code.tex'
```

NB. default LaTeX \author{ ... } text

```
JLDEFAULTAUTHORS=: ''
```

NB. markdown text string that marks where generated group interface inserted

```
JLINSERTIFACEMD=: '~{~{insert_interface_md_}~}'
```


NB. suffix of jodliterate overview file

JLOVIEWFILE=: 'overview.tex'

NB. name suffix of markdown overview text

JLOVIEWSUFFIX=: '_overview_tex'

NB. suffix of jodliterate title file

JLTITLEFILE=: 'title.tex'

NB. temporary latex file

LATEXTMP=: 'jltemp.tex'

NB. line feed character

LF=: 10{a.

NB. regex for start of long LaTeX encoded J (0 : 0) strings

LONGCHRBEGPAT=: '\DecValTok\{0\}[]*\RegionMarkerTok\{:[]*0[\)]*\}'

NB. regex for end of long LaTeX encoded J (0 : 0) strings

LONGCHRENDPAT=: '^RegionMarkerTok{[]*\)[]*}\$'

NB. marks start of J code for pandoc -- requires pandoc with j syntax coloring

MARKDOWNHEAD=: '~~~~ { .j }'

NB. marks end J code for pandoc

MARKDOWNTAIL=: '~~~~'

NB. temporary markdown file

MARKDOWNTMP=: 'jltemp.markdown'

NB. regex matching pandoc LaTeX token commands

PANDOCTOKPAT=: '\\[[:alpha:]]*Tok{'

NB. root words for (jodliterate) group

ROOTWORDSjodliterate=: <;._1 ' DEFAULTPANDOC IFACEWORDSjodliterate JLBUILDTEXunix JLBUILDTEXwin JLCLEANTEXu
>..>nix JLCLEANTEXwin ROOTWORDSjodliterate grplit jodliterateVMD setjodliterate uwlatexfrwords wordlit'

NB. pandoc LaTeX string token prefix

STRINGTTOKPFX=: '\\StringTok{'

NB. pandoc transformed LaTeX single quote

TEXTQUOTESINGLE=: '\\textquotesingle{'

NB. full pandoc path - use (pandoc) if on shell path

THISPANDOC=: '"C:\\Program Files\\Pandoc\\pandoc"'

NB. interface word _ character replacement

UBARSUB=: '_:'

NB. white space characters

WHITESPACE=: 10 13 9 32{a.

NB. maximum number of code listing characters - adjust for given LaTeX pagesize

WRAPLIMIT=: 110

NB. invalid j string starting wrapped line - exclude '=' - trailing blank matters

WRAPPREFIX=: ')=.)=. '

NB. pandoc LaTeX fragment from (WRAPPREFIX) - these strings must correspond

WRAPPREFIXTEX=: '\RegionMarkerTok{}}\KeywordTok{=.}\RegionMarkerTok{}}\KeywordTok{=.}'

NB. jodliterate version make and date

jodliterateVMD=: '0.9.98';15;'20 Dec 2021 15:45:51 MT'

NB. retains string after first occurrence of (x)

afterstr=:] }.~ #@[+ 1&(i.~)@([E.])

NB. trims all leading and trailing blanks

alltrim=:] #~ [: -. [: (*./\ . +. */.\) ' '&=

NB. retains string before first occurrence of (x)

beforestr=:] {.~ 1&(i.~)@([E.])

betweenstrs=: 4 : 0

*NB.*betweenstrs v-- select sublists between nonnested delimiters*

NB. discarding delimiters.

NB.

```
NB. dyad:  blcl =. (clStart;clEnd) betweenstrs cl
NB.        blnl =. (nlStart;nlEnd) betweenstrs nl
NB.
NB.  ('start';'end') betweenstrs 'start yada yada end boo hoo start ahh end'
NB.
NB.  NB. also applies to numeric delimiters
NB.  (1 1;2 2) betweenstrs 1 1 66 666 2 2 7 87 1 1 0 2 2

's e'=. x
llst=. ((-#s) (|.!.0) s E. y) +. e E. y
mask=. ~:/\ llst
(mask#llst) <;.1 mask#y
)

NB. boxes open nouns
boxopen=: <^(L. = 0:)

changestr=: 4 : 0

NB.*changestr v-- replaces substrings - see long documentation.
NB.
NB. dyad:  clReps changestr cl
NB.
NB.  NB. first character delimits replacements
NB.  '/change/becomes/me/ehh' changestr 'blah blah ...'

pairs=. 2 {. "(1) _2 [\ <;._1 x      NB. change table
```

```

cnt=_1 [ lim=. # pairs
while. lim > cnt=.:cnt do.      NB. process each change pair
  't c'=. cnt { pairs          NB. /target/change
  if. +./b=. t E. y do.        NB. next if no target
    r=. I. b                   NB. target starts
    'l q'=. #&> cnt { pairs    NB. lengths
    p=. r + 0,+/\(<:# r)$ d=. q - 1 NB. change starts
    s=. * d                    NB. reduce < and > to =
    if. s = _1 do.
      b=. 1 #~ # b
      b=. ((l * # r)$ 1 0 #~ q,l-q) (,r +/ i. l)} b
      y=. b # y
      if. q = 0 do. continue. end. NB. next for deletions
    elseif. s = 1 do.
      y=. y #~ >: d r} b      NB. first target char replicated
    end.
    y=. (c $~ q *# r) (,p +/i. q)} y NB. insert replacements
  end.
end. y                          NB. altered string
)

```

```

charsub=: 4 : 0

```

```

NB.*charsub v-- single character pair replacements.

```

```

NB.

```

```

NB. dyad: clPairs charsub cu

```

```

NB.

```

```

NB.   '-_ $ ' charsub '$123 -456 -789'

```

```
'f t'=. ((#x)$0 1)<@,&a./.x
t {~ f i. y
)
```

NB. character table to newline delimited list

```
ctl=: }.@(@1&(,"1)@(-.@(*./\."1@(&' ' @])))) # ,@((10{a.)&(,"1)@]))
```

```
cutnestidx=: 4 : 0
```

*NB.*cutnestidx v-- cut list into nested runs and other.*

NB.

NB. Nested runs are delimited by begin and end tags. This verb is

NB. oriented toward XML parsing where typical begin end tags are

NB. and tags with attributes like: <hoo boy="2">

NB. </hoo>

NB.

NB. This verb can process numeric lists but care must be taken to

NB. insure the pad item (1{.0\$y) does not match begin and end

NB. values.

NB.

NB. dyad: (ilIdx ;< blcl) =. (clStart;clEnd) cutnestidx cl

NB. (ilIdx ;< blnl) =. (nlStart;nlEnd) cutnestidx nl

NB.

NB. xml=. 'yada onesub one boo'

NB. ('<ol';'') cutnestidx xml

NB.

NB. 88 99 cutnestidx (i.5),88,(10?10),99 88 5 5 5 5 5 99

```

if. #y do.
  's e'=. ,&.> x      NB. start end lists
  ut=. 1{.0$y          NB. padding
  assert. -.s -: e     NB. they must differ
  assert. -. (s -:ut) +. e -:ut
  sp=. s E. ut=.y,ut   NB. start mask

  NB. quit if no delimiters
  if. -.1 e. sp do. (i.0);<<y return. end.

  ep=. e E. ut        NB. end mask
  assert. (+/sp) = +/ep  NB. basic balance
  dp=. sp + - ep      NB. start end marks
  assert. 0 *./ . <: +/\ dp  NB. nested balance
  ep=. I. _1=dp [ sp=. I. 1=dp  NB. start end indexes
  ut=. +/\dp -. 0      NB. scanned marks
  dp=. /:~ sp,ep      NB. all indexes
  sp=. (firstones 1<:ut)#dp  NB. starts of nested
  ep=. (#e)+(0=ut)#dp  NB. starts of other
  dp=. /:~ ~.0,sp,ep  NB. cut starts
  ut=. }: 1 dp} (>:#y)#0  NB. cut mask
  (dp i. sp);<ut <;.1 y  NB. nest indexes cut list
else.
  (i.0);<<y          NB. empty arg result
end.

```

```
)

cutpatidx=: 4 : 0

NB. *cutpatidx v-- cut character list into begin/end patterns and non-pattern.
NB.
NB. dyad: (ilIdx ;< blcl) =. (clBeginpat;clEndpat) cutpatidx cl
NB.
NB. (;:'<>') cutpatidx 'no matches'
NB. ('begin[ ]*';'end') cutpatidx ' begin end begin end begin end'
NB. ('\{([ yad012]*';'\)\}') cutpatidx 'boo hoo {( yada yada yada )} {( 1 0 22222 )}'
NB.
NB. NB. starts without ends
NB. (;:'@;') cutpatidx '@@@;@@@@@;@;'

NB. require 'regex' !(*)=. rxmatches rxmatch
if. #y do.
  's e'=. ,&.> x NB. start/end patterns

  NB. quit if no start patterns
  if. 0=#h=. s rxmatches y do. (i.0);<<y return. end.

  sp=. srxm h NB. start positions

  NB. first end pattern within started
  ep=. srxm (1 sp} 0 #~ #y) e&rxmatch;.1 y

  NB. remove starts without end patterns
```

```

NB. HARDCODE: _1 is the (rmatch) for not found
if. 0=#cp=. (ep ~: _1) # sp ,. ep do. (i.0);<<y return. end.

cp=. +/\&. |: cp NB. convert ends to (y) indexes

NB. cut list into start/end pattern and non-pattern
sp=. (0={.,cp) }. 0,,cp
idx=. (sp i. {"1 cp) -. #sp
idx;<(1 sp} 0 #~ #y) <;.1 y
else.
  (i.0);<<y NB. empty arg result
end.
)

NB. double quotes - doubles internal " quotes like (quote)
dbquote=: '""&,@(&'""')@(#~ >:@(=&'""'))

NB. quote unquoted strings containing blanks: dbquoteuq 'c:\blanks in\paths bitch'
dbquoteuq=: ]`dbquote@.([: -. '""'&-:@({: , {.) *.' ' e. ])

NB. boxes UTF8 names
fboxname=: ([: < 8 u: >) ::]

NB. erase files - cl / blcl of path file names
ferase=: 1!:55 ::(_1:)@(fboxname&>)@boxopen

NB. 1 if file exists 0 otherwise
fexist=: 1:@(1!:4) ::0:@(fboxname&>)@boxopen

```

NB. 0's all but first 1 in runs of 1's - like (firstone) but differs for nulls
firstones=: > (0: , }:)

formifacetex=: 3 : 0

*NB.*formifacetex v-- formats hyperlinked and highlighted interface words.*

NB.

NB. monad: cl =. formifacetex blclIwords

NB.

NB. NB. inteface latex

NB. formifacetex IFACEWORDSjodliterate

NB. require 'jod' !()=. get*

head=. '\begin{Shaded}',LF,'\begin{Highlighting}[]',LF

tail=. '\end{Highlighting}',LF,'\end{Shaded}',LF

ctok=. '\CommentTok{'

ntok=. '\NormalTok{'

href=. '\hyperlink{'

NB. using [] brackets for page references

pgrefhd=. '[\pageref{',IFCPFX

pgreftl=. '}] '

NB. fetch current short descriptions !()=. WORD_ajod_ EXPLAIN_ajod_*

'rc tab'=. (WORD_ajod_,EXPLAIN_ajod_) get y

words=. 0 {"1 tab

desc=. 1 {"1 tab

NB. page references

NB. set hyperlinks on words - colors on comments

```
desc=. (<ctok) ,&.> (alltrim&.> desc) ,&.> '}'
```

```
head, tex, tail
```

*NB.*formtexindexes v-- format latex index commands from global marks.*

NB. monad: blcl =. formtexindexes blclMarked

```
inames=. ;@('{ }'&betweenstrs)&.> (-#ENDINDEX) }.&.> (#BEGININDEX) }.&.> y
```

NB. find any indirect ()=: and multiple '': assignments

```
'pma pia'=. I.&.> <"1 ' ')" =/ {:@(-.&' ')&> inames
```

NB. form latex index commands

```
indexes=. (<'AlertTok{=:}\index{' ,&.> inames ,&.> (<'@\texttt{' ,&.> inames ,&.> <'>}
```

```
NB. replace indirect and multiple assignments with fixed proxies
indexes=. ((#pma) # <'\AlertTok{=:}\index{00multiple@\texttt{'...'=:}}') pma} indexes
indexes=. ((#pia) # <'\AlertTok{=:}\index{01indirect@\texttt{(...)=:}}') pia} indexes

NB. adjust j locative chars _ they give latex indexing grief
NB. later versions of pandoc handle this case
NB. if. #pos=. I. '_' &e.& > indexes do.
NB. indexes=. ('#_#\_ ' &changelstr&.> pos{indexes) pos} indexes
NB. end.

indexes
)

NB. size of file in bytes
fsize=: 1!:4 ::(_1:)@fboxname&>@boxopen

NB. opens and catenates boxed lists on the last axis
fuserows=: >@((>@[ , "1 >@])/)

gbodylatex=: 3 : 0

NB.*gbodylatex v-- group body latex.
NB.
NB. monad: clTex =. gbodylatex clGroupname

if. #mtxt=. markdfrgroup y do. latexfrmarkd mtxt else. '' end.
)
```

```
gheadlatex=: 3 : 0
```

```
NB.*gheadlatex v-- group header latex.
```

```
NB.
```

```
NB. monad: clTex =. gheadlatex clGroupname
```

```
if. #mtxt=. markdfrghead y do.
```

```
    BEGINJODHEADER,LF,(tlf latexfrmarkd mtxt),ENDJODHEADER,2#LF
```

```
else.
```

```
    ''
```

```
end.
```

```
)
```

```
gpostlatex=: 3 : 0
```

```
NB.*gpostlatex v-- group post processor latex.
```

```
NB.
```

```
NB. monad: clTex =. gpostlatex clGroupname
```

```
if. #mtxt=. markdfrgpost y do.
```

```
    BEGINJODPOSTP,LF,(tlf latexfrmarkd mtxt),ENDJODPOSTP
```

```
else.
```

```
    ''
```

```
end.
```

```
)
```

```
grouplatex=: 3 : 0
```

```
NB.*grouplatex v-- group latex with pandoc syntax highlighting.
NB.
NB. monad: clTex =. grouplatex clGroupname
NB.
NB. NB. requires open JOD dictionary with a 'jod' group
NB. gtex=. grouplatex 'jod'
NB.
NB. dyad: clTex =. paIndex grouplatex clGroupname
NB.
NB. 0 grouplatex 'jod' NB. do not replace marks with index

1 grouplatex y
:
NB. require 'jod' !(*)=. badrc_ajod_ grp jderr_ajod_
if. badrc_ajod_ gnames=. grp y do. gnames return. end.

ltx=. x indexwraplatex (gheadlatex ; gbodylatex ; gpostlatex) y
ppcodelatex '\section{\texttt{'',(alltrim y),' } Source Code}',LF,LF,ltx
)

grplit=: 3 : 0

NB.*grplit v-- make latex for group (y).
NB.
NB. monad: (paRc ; blclTeXfiles) =. grplit clGroupname
NB.
NB. grplit 'jodliterate' NB. document self
NB.
```

```
NB. dyad: (paRc ; blclTeXfiles) =. paOw grplit glGroupname
NB.
NB. NB. do not overwrite root tex - allows for latex tweaking
NB. 0 grplit 'jodliterate'

1 grplit y
:
NB. require 'jod' !(*)=. badrc_ajod_ get grp jderr_ajod_ ok_ajod_
try.

if. 3~:(4!0) <'badrc_ajod_' do. 0; '!error: jod is not loaded' return. end.
if. 0=#JLDIRECTORY do. 0; '!error: working directory is not set' return. end.

NB. group must exist
if. badrc_ajod_ glist=. GROUP_ajod_ grp group=. y -. ' ' do. glist return. end.

NB. default overview
ohd=. ('/~#~group~#~/',alltrim y) changestr JLOVIEWTEX [ gdoc=. ''
iwords=. ifacewords group

NB. overviews are either markdown/latex group long documents or stored LaTeX macros
if. badrc_ajod_ gdoc=. MACRO_ajod_ get group, JLOVIEWSUFFIX do.
  NB. no stored LaTeX generate LaTeX from group document markdown/latex
  if. badrc_ajod_ gdoc=. (GROUP_ajod_,DOCUMENT_ajod_) get group do. gdoc return. end.
  if. #gdoc=. ;{:,>1{gdoc do.
    NB. insert interface md based on IFACEWORDSgroup
    if. +./JLINSERTIFACEMD E. gdoc do.
```

```
    gdoc=. group setifacesummary gdoc
  end.
  gdoc=. latexfrmarkd gdoc
  ifstr=. ifacesection group
  if. (+./ifstr E. gdoc) *. (<IFACEWORDSPFX,group) e. glist do.
    gdoc=. iwords setifacelinks ifstr;gdoc
  end.
end.
else.
  NB. stored macro LaTeX - no adjustments
  gdoc=. ;{:,>1{gdoc
end.

NB. root .tex file - gets group name
wdir=. JLDIRECTORY
jlroot=. wdir,group,'.tex'
if. chroot=. x -: 1 do.
  root=. ('/~#~group~#~/',group) changestr JLGRPLITTEX
  (toJ root) writeas jlroot
end.

NB. author title .tex file
tittex=. JLTITLETEX seturlsha256 y
agstrs=. '/~#~author~#~/',(alltrim JLAUTHOR),'/~#~group~#~/',alltrim y
(toJ agstrs changestr tittex) writeas jltitle=. wdir,group,JLTITLEFILE

NB. group overview .tex file
```



```
ohd=. ohd,LF,gdoc
(toJ ohd) writeas jloview=. wdir,group,JLOVIEWFILE

NB. group build batch script - latex utils that compile generated files
jlbuildtex=. ('/~#~group~#~/',alltrim y) changestr JLBUILDTEX
(toJ jlbuildtex) writeas jlbuildbat=. wdir,group,',' ,JLSHELLEXT

NB. group source code .tex - return file names
gltx=. grouplatex group
gltx=. iwords setifacetargs gltx
(toJ gltx) writeas jlcode=. wdir,group,JLCODEFILE
ok_ajod_ (-.chroot) }. jlroot;jlttitle;jloview;jlcode;jlbuildbat

catchd.
  0;!'error: (grplit) failure - last J error ->';13!:12 ''
end.
)

ifacemarkd=: 3 : 0

NB.*ifacemarkd v-- generate word interface markdown section.
NB.
NB. monad: clMd =. ifacemarkd clGroupName
NB.
NB. ifacemarkd 'jodliterate'

LF,'~~~~{ .j }',LF,(2 ifc y),LF,'~~~~',LF
)
```

```
ifacesection=: 3 : 0
```

```
NB.*ifacesection v-- interface section summary string.
```

```
NB.
```

```
NB. This verb produces the interface section summary string. For
```

```
NB. (jodliterate) to include an updated hyperlinked interface
```

```
NB. summary it must find this string in generated latex. Edit
```

```
NB. this verb if you change the section layout.
```

```
NB.
```

```
NB. monad: cl =. ifacesection clGroupname
```

```
'\subsection{\texttt{' ,y,'} Interface}'
```

```
)
```

```
ifacewords=: 3 : 0
```

```
NB.*ifacewords v-- return interface word list.
```

```
NB.
```

```
NB. Assume the interface is out of date fetch current definition
```

```
NB. from dictionary. We need the value not the storage
```

```
NB. representation so define it in the JOD scratch object.
```

```
NB.
```

```
NB. monad: blcl =. ifacewords clGroupname
```

```
NB. require 'jod' !(*)=. get
```

```
iname=. (IFACEWORDSPFX,y) -. ' '
```

```
(;SO__JODobj) get iname
```

```
iname=. iname, '__SO__JODobj'
```

```
words=. ". iname
words [ (4!:55) <iname
)

ifc=: 3 : 0

NB.*ifc v-- format interface comment text.
NB.
NB. Looks up interface words of a group and formats text for
NB. insertion into group headers and postprocessors.
NB.
NB. monad:  ifc clGroupName
NB. dyad:   iaOption ifc clGroupName

1 ifc y
:
NB. require 'jod' !(*)=. badrc_ajod_ get jderr_ajod_ badcl_ajod_ badil_ajod_
if. badcl_ajod_ y do. jderr_ajod_ 'invalid group name' return.
else.
  iface=. 'IFACEWORDS',alltrim y
end.

x=. {. ,x [ msg=. 'invalid ifc options'
if. badil_ajod_ x do. jderr_ajod_ msg return. end.
if. -.x e. i.3 do. jderr_ajod_ msg return. end.

NB. set comment style (header, postprocessor)
cpx=. ; x { (<'NB. ';' - '),(<'NB. ';' NB. '),<'';' NB. '
```

```
NB. define interface list in jod scratch locale
NB. !(*)=. SO__JODobj erase__SO__JODobj locsfx_ajod_ nl__SO__JODobj
if. badrc_ajod_ rc=. (;SO__JODobj) get iface do. rc return.
elseif. ilist=. ".iface , ;locsfx_ajod_ ;SO__JODobj
        erase__SO__JODobj nl__SO__JODobj i. 4
        badrc_ajod_ rc=. 0 8 get /:~ ~.ilist do. rc return.
elseif. 0=#txt=. >1{rc do. jderr_ajod_ 'no interface words' return.
elseif.do.
    ctl fuserows >&.> <"1 |: ((#txt)#,:cpx) ,&.> txt
end.
)

indexgrouptex=: 3 : 0

NB.*indexgrouptex v-- insert index commands in pandoc highlight group latex.
NB.
NB. dyad: cl =. clGroupName indexgrouptex clTex

'pos ltx'=. (BEGININDEX;ENDINDEX) cutnestidx y
if. #pos do. ; (formtexindexes pos{ltx} pos} ltx else. y end.
)

indexwraplatex=: 4 : 0

NB.*indexwraplatex v-- insert index commands and handle spurious blanks.
NB.
```

```
NB. dyad: clLatex =. paIndex indexwraplatex clLatex

ltx=. ]`indexgrouptex@.(1 -: x) ; tlf&.> y -. a:

NB. wrap prefix final LaTeX
wpfx=. '\AlertTok{' ,WRAPLEAD, '}'

NB. convert wrap marks to LaTeX fragments - handle trailing blank first
ltx=. ('#',WRAPPREFIXTEX,' ', '#',wpfx) changestr ltx
ltx=. ('#',WRAPPREFIXTEX,'#',wpfx) changestr ltx

NB. remove spurious normal token blanks
sprb=. wpfx, '\NormalTok{'
(' ',sprb,' #',sprb) changestr ltx
)

NB. standarizes J path delimiter to unix/linux forward slash
jpathsep=: '/'&(('\ ' I.@:= ]))

jtokenize=: 3 : 0

NB.*jtokenize v-- tokenizes j text with (wfl).
NB.
NB. Similar to (;:@.>)@(<;.2) but preserves whitespace and is
NB. able to parse invalid j text containing open quotes. When an
NB. open quote is encountered it is treated like an unterminated
NB. string.
```

```
NB.
NB. monad: bblcl =. jtokenize clJtext
NB.
NB.   jtokenize 5!:5 <'jtokenize'

ct=. wfl y,LF
(ct -:&> <,LF) <|.2 ct
)

latexfrmarkd=: 3 : 0

NB.*latexfrmarkd v-- latex from markdown using pandoc.
NB.
NB. monad: clTex =. latexfrmarkd clMarkdown

NB. require 'task' !(*)=. shell
if. #y do.
  ferase mrktmp=. JLDIRECTORY,MARKDOWNTMP
  ferase ltxtmp=. JLDIRECTORY,LATEXTMP
  (toJ y) writeas mrktmp
  NB. highlighting style is overridden in latex preamble
  shell THISPANDOC,' --highlight-style=tango ',(dbquoteuq mrktmp),' -o ',dbquoteuq ltxtmp
  assert. 0 < fsize ltxtmp
  tex=. read ltxtmp
  tex [ ferase ltxtmp [ ferase mrktmp
else.
  y
```

```
end.
)

long0d0latex=: 3 : 0

NB.*long0d0latex v-- adjust long 0 : 0 encoded LaTeX.
NB.
NB. monad: clNewTeX =. long0d0latex clTeX

NB. exclude first line from token replacements
(LF beforestr y),LF,(STRINGTTOKPFX;ALERTTOKPFX) replacetoks LF afterstr y
)

markdfrghead=: 3 : 0

NB.*markdfrghead v-- markdown text from group header.
NB.
NB. monad: cl =. markdfrghead clGroupname
NB.
NB. txt=. markdfrghead 'jod'
NB. (toHOST txt) write 'c:/temp/jodhdr.markdown'

NB. require 'jod' !(*)=. badrc_ajod_ get HEADEND_ajodmake_ GROUP_ajod_
if. badrc_ajod_ hdr=. GROUP_ajod_ get y do. hdr return. end.
if. 0=#hdr=. ;1{,>1{hdr do. '' return. end.
hdr=. hdr,LF,HEADEND_ajodmake_
```

NB. handle any non j code regions

```
'idx chd'=. (BEGINNOTJ;ENDNOTJ) cutnestidx hdr
```

```
if. #idx do.
```

```
    psj=. idx -.~ i.#chd
```

```
    chd=. (markgnonj&.> idx{chd) idx} chd
```

```
    chd=. (markgassign&.> psj{chd) psj} chd
```

```
    hdr=. ;chd
```

```
else.
```

```
    hdr=. markgassign hdr
```

```
end.
```

```
if. #hdr do. markdj hdr else. '' end.
```

```
)
```

```
markdfrgpost=: 3 : 0
```

*NB.*markdfrgpost v-- markdown from group post processor.*

NB.

NB. monad: clMarkdown =. markdfrgpost clGroupname

NB. require 'jod' !()=. get MACRO_ajod_*

```
'rc post'=. 2 {. MACRO_ajod_ get 'POST_',y -.' '
```

```
if. rc do. markdj markgassign ; {: , post else. '' end.
```

```
)
```

```
markdfrgroup=: 3 : 0
```



```
NB.*markdfrgroup v-- markdown text from group.
NB.
NB. monad: cl =. markdfrgrp clGroupname
NB.
NB.   mtxt=. markdfrgroup 'jod'
NB.   (toHOST mtxt) write 'c:/temp/jcode.markdown'

NB. require 'jod' !(*)=. badrc_ajod_ get gdeps grp
if. badrc_ajod_ gnl=. grp y   do. gnl return. end.
if. badrc_ajod_ gdp=. gdeps y do. gdp return. end.
if. #gnl=. (gnl -. gdp) -. a: do. markdfrwords gnl else. '' end.
)
```

```
markdfrwords=: 3 : 0
```

```
NB.*markdfrwords v-- markdown text from word list.
NB.
NB. This verb takes a blcl of JOD word names and returns a UTF-8
NB. encoded cl of word source code in markdown format. Markdown
NB. is a simple but versatile text markup format that is almost
NB. ideal for documenting program source code, see:
NB.
NB. http://daringfireball.net/projects/markdown/
NB.
NB. monad: clMarkdown =. markdfrwords blclWords
NB.
NB.   markdfrwords ;:'go ahead mark us up'
NB.
```

```
NB.  NB. markdown text from JOD group words
NB.  mtxt=. markdfrwords }. grp 'jod'
NB.
NB.  dyad: clMarkdown =. paWrap markdfrwords blclWords
NB.
NB.  mtxt=. 0 markdfrwords }. grp 'jod'  NB. suppress wrapping

1 markdfrwords y
:
NB. require 'jod' !(*)=. WORD_ajod_ NVTABLE_ajod_ badrc_ajod_ get wttxt__MK__JODobj
if. badrc_ajod_ src=. (WORD_ajod_,NVTABLE_ajod_) get y do. src return. end.

NB. commented source code (name,source) table.
if. badrc_ajod_ src=. 0 0 1 wttxt__MK__JODobj >1{src do. src
else.
  src=. x&markgassign&.> {:"1 >1{src
  NB. similar to (markdj) but faster here
  utf8 ; (<LF,MARKDOWNHEAD,LF) ,&.> src ,&.> <LF,MARKDOWNTAIL,LF
end.
)

markdj=: 3 : 0

NB.*markdj v-- mark j code for markdown.
NB.
NB. monad: clM =. markdj clJ
```

```
utf8 (LF,MARKDOWNHEAD,LF),(tlf y),MARKDOWNTAIL,LF
)
```

```
markgassign=: 3 : 0
```

```
NB.*markgassign v-- mark j code for latex indexing.
```

```
NB.
```

```
NB. This verb tokenizes j code and replaces all global  
NB. assignments with syntactically incorrect j strings that will  
NB. be transformed by pandoc into easily located latex strings  
NB. that will then be converted by a post pandoc processor into  
NB. valid latex index commands. This works because regex based  
NB. pandoc coloring does not "understand" j's parsing rules.
```

```
NB.
```

```
NB. monad: cl =. markgassign clJcode
```

```
NB.
```

```
NB. jcode=. 'markgassign=: ' , 5!:5 <'markgassign'
```

```
NB. markgassign jcode
```

```
NB.
```

```
NB. dyad: cl =. paWrap markgassign clJcode
```

```
NB.
```

```
NB. 0 markgassign jcode NB. suppress long line wrapping
```

```
1 markgassign y
```

```
:
```

```
if. 0=#jcode=. y -. CR do. y return. end.
```

```
if. 1-:x do. jcode=. WRAPLIMIT wrapvrblong jcode end.
```

```
jtokens=. jtokenize jcode
```

```
NB. only interested in global assignment lines
if. #gix=. I. ; (<'=:') e. L: 1 jtokens do.
  jgl=. gix{jtokens
  jshp=. $jat=. >jgl
  jix=. I. jat = <'=: ' [ jat=. ,jat
  NB. extract global assignments
  NB. ignoring interleaving blanks
  jat2=. (jat -.&.> ' ') -. a:
  anames=. (<:I.(<'=:') -:&> jat2){jat2
  NB. (0{FAKETOKENS) and (1{FAKETOKENS) are invalid in j
  faketoks=. (0{FAKETOKENS) ,&.> anames ,&.> 1{FAKETOKENS
  jat=. <"1 jshp $ faketoks jix} jat
  jat=. (#&> jgl) {.&.> jat
  NB. adjust last LF
  (-LF={:y) }. ;;jat gix} jtokens
else.
  y
end.
)
```

```
markgnonj=: 3 : 0
```

```
NB.*markgnonj v-- mark non j code region global assignments.
NB.
NB. Non J code is often inserted in J scripts as character nouns
NB. using explicit multi-line '0 : 0' definitions. This verb
NB. marks the assigned noun name. Only '=: 0 : 0' will be found
```

```
NB. and marked.
NB.
NB. verbatim:
NB.
NB. IamFound =: 0 : 0
NB. .... non j code ...
NB. )
NB.
NB. monad: cl =. markgnonj clNonj

ct=. <|.2 tlf y
mrk=. '=:0:0'
pos=. I. mrk&-:&> (-#mrk)&{.&.> ct -.&.> <WHITESPACE
ct=. ;(LF ,&.>~ markgassign&.> pos{ct) pos} ct
(-LF={:y) }. ct
)

patpartstr=: 4 : 0

NB.*patpartstr v-- split list into sublists of pattern and non-pattern.
NB.
NB. dyad: (ilIdx ;< blcl) =. clPattern patpartstr clStr
NB.
NB. 'hoo' patpartstr 'hooohoo'
NB. 'ab.c' patpartstr 'abh c yada yada abNcabuc boo freaking hoo'
NB. 'nada' patpartstr 'nothing to match'
NB.
NB. NB. result pattern indexes and split list
```

```
NB.   'idx subtrs'=. 'yo[a-z]*' patpartstr 'yo yohomeboy no no yoman'
NB.   idx{subtrs NB. patterns
```

```
NB. require 'regex' !(*)=. rxmatches
```

```
if. #pat=. , "2 x rxmatches y do.
  mask=. (#y)#0
  starts=. 0 {"1 pat
  ends=. starts + <: 1 {"1 pat
  m1=. 1 (0,starts)} mask
  m2=. _1 (|.!. 0) 1 ends} mask
  m2=. m1 +. m2
  mask=. 1 starts} mask
  idx=. (m2 {.;.1 mask) # i. +/m2
  idx;< m2 <;.1 y
else.
  (i.0);<<y
end.
)
```

```
ppcodelatex=: 3 : 0
```

```
NB.*ppcodelatex v-- post process generated source code latex.
```

```
NB.
```

```
NB. This verb applies final adjustments to generated LaTeX source
```

```
NB. code In particular it alters the syntax coloring of long J (0
```

```
NB. : 0) character nouns, long wrapped quoted 'long ....' strings
```

```
NB. and wrapped comment lines.
```

```
NB.
```

```
NB. monad: clNewTeX =. ppcodelatex clTeX

NB. adjust any 0 : 0 text
'idx strs'=. (LONGCHRBEGPAT;LONGCHRENDPAT) cutpatidx y
if. #idx do.
    lg0strs=. long0d0latex&.> idx{strs
    y=. ;lg0strs idx} strs
end.

NB. adjust any wrapped alert lines
if. ALERTTOKWRAP +./@E. y do.

    NB. all code lines and start/end table of wraps
    wrgx=. wraprgidx +./@(ALERTTOKWRAP&E.)&> rlms=. <|.2 tlf y

    NB. classify wrapped lines: comment, quoted string
    cm=. {.&> (COMMENTTOKPFX,'NB.')&E. &> (0 {"1 wrgx){rlms
    qm=. *./"1 +./@(TEXTQUOTESINGLE&E.) &> wrgx{rlms

    NB. comments override quotes and normals
    if. +./cm do.
        cx=. cm wraplix wrgx
        rlms=. ((COMMENTTOKPFX;ALERTTOKPFX)&replacetoks&.> cx{rlms) cx} rlms
        if. *./cm do. ;rlms return. end.
    end.

    NB. quoted text - works for simple forms
```

```
NB. a general solution requires re-pandoc'ing
NB. line breaking nouns - especially complex
NB. boxed arrays that mix strings and other types
if. +./qm=.0 (I. cm)} qm do.
    qx=. qm wraplix wrgx
    y=. ;(wrapQtlatex&.> qx{rlns) qx} rlms
end.

end.

y NB. adjusted latex
)

NB. reads a file as a list of bytes
read=: 1!:1&([`<@.(32&>@{3!:0)))

replacetoks=: 4 : 0

NB.*replacetoks v-- set all but (;1{x) pandoc tokens to (;0{x)
NB. tokens.
NB.
NB. dyad: clNewTex =. (clStringTok ; clAlertTok) replacetoks clTex
NB.
NB. ('\StringTok{';'\AlertTok{') replacetoks 'this is \atestTok{ bitch \NormalTok{ \99999Tok{'
NB. ('\StringTok{';'\AlertTok{') replacetoks 'no matches hombre'
NB. ('\StringTok{';'\AlertTok{') replacetoks ''
```



```
'idx strs'=. PANDOC TOKPAT patpartstr y

NB. all non (1{x}) tokens to (0{x}) tokens
if. 0=#idx do. y else. ;(0{x}) (idx #~ (1{x}) ~: idx{strs}) str end.
)

NB. trim right (trailing) blanks
rtrim=: ] #~ [: -. [: *./\ . ' ' " _ = ]

setifacelinks=: 4 : 0

NB.*setifacelinks v-- set hyperref links in any overview
NB. interface words section.
NB.
NB. dyad: cl =. blcliwords setifacelinks (clIfstr ; clTex)

'ifstr tex'=. y
rmrk=. '\end{Shaded}'
head=. ifstr&beforestr tex
tail=. ifstr&afterstr tex

if. +./rmrk E. tail do.
    ifbk=. formifacetex x
    tail=. rmrk&afterstr tail
    head,ifstr,(2#LF),ifbk,tail
else.
    tex
```

```
end.
)

setifacesummary=: 4 : 0

NB.*setifacesummary v-- replace markdown interface summary tag with text.
NB.
NB. dyad: cl =. clGname setifacesummary clMd

(JLINSERTIFACEMD beforestr y),(ifacemarkd x),JLINSERTIFACEMD afterstr y
)

setifacetargs=: 4 : 0

NB.*setifacetargs v-- set hyperlink targets in group latex.
NB.
NB. dyad: cl =. blclIwords setifacetargs clTex

NB. replace troublesome _ in names
hlwords=. UBARSUB&charsub&.> x

NB. any _ chars are expanded to \_ at this stage
wnames=. '#_#\_ '&changestr &.> x
targs=. (<'\NormalTok{') ,&.> wnames ,&.> <'}\AlertTok{=:}\index'

labels=. (<'}\AlertTok{=:}\phantomsection\label{' ,IFCPFX),&.> hlwords ,&.> <'}\index'
rstrs=. (<'\hypertarget{') ,&.> hlwords ,&.> (<'}\NormalTok{') ,&.> wnames ,&.> labels
```

NB. delimiter character cannot be in text

```
assert. -.'#' e. ;targs,rstrs
```

```
chgs=. ;'##' ,&.> targs ,. rstrs  
chgs changestr y  
)
```

```
setjodliterate=: 3 : 0
```

*NB.*setjodliterate v-- prepare LaTeX processing - sets out directory writes preamble.*

NB.

NB. monad: (paRc ; clDir) =. setjodliterate clWorkingDir | zl

NB.

NB. NB. use the current JOD put dictionary document directory

NB. setjodliterate ''

NB.

NB. setjodliterate 'c:\temp' NB. windows

NB. setjodliterate '/home/john/temp' NB. linux

NB.

NB. dyad: (paRc ; clDir) =. clAuthor setjodliterate clWorkingDir | zl

NB.

NB. NB. set LaTeX \author{...} text

NB. 'Bob Squarepants (\texttt{pinapple@undersea.org})' setjodliterate ''

NB. 'Batman (\texttt{dn@jl.com}), Dr. Who (\texttt{who@univ.edu})' setjodliterate ''

NB. 'First Author \ Lowly Minion' setjodliterate ''

```
JLDEFAULTAUTHORS setjodliterate y
```

```
:
try.

if. 3~:(4!:0) <'badrc_ajod_' do. 0;'!error: jod is not loaded' return. end.
if. 0 = #DPATH__ST__JODobj do. 0;'!error: no open jod dictionaries' return. end.

NB. if the path is empty use the current put dictionary document directory !(*)=. dob
if. 0 e. $y do. y=. DOC__dob [ dob=. {:{.DPATH__ST__JODobj end.

JLAUTHOR_ajodliterate_=: x

NB. profile (*)=. IFWIN
JLDIRECTORY_ajodliterate_=: jpathsep`winpathsep@.(IFWIN) tslash2 y

NB. write main latex preamble and cleaner iff missing
preamble=. 'JODLiteratePreamble.tex'
cleaner=. '00cleantex.',JLSHELLEXT
if. -.fexist JLDIRECTORY,preamble do.
  (toJ JODLiteratePreamble) writeas JLDIRECTORY,preamble
end.
if. -.fexist JLDIRECTORY,cleaner do.
  (toJ JLCLEANTEX) writeas JLDIRECTORY,cleaner
end.
1;JLDIRECTORY

catchd.
  0;'!error: (setjodliterate) failure - last J error ->';13!:12 ''
```

```
end.
)

seturlsha256=: 4 : 0

NB. *seturlsha256 v-- set url and sha-256 hash in (x).
NB.
NB. If a word has an associated '_dateurlhash' set the url and
NB. hash in (x).
NB.
NB. dyad: clTex =. clTex seturlsha256 clname
NB.
NB. JLTITLETEX seturlsha256 'jodliterate'

NB. require 'jod' !(*)=. get

NB. load any hash date url noun into the JOD scratch object
if. badrc_ajod_ (;SO__JODobj) get hdu=. (alltrim y), '_hashdateurl' do. x
else.
  NB. set the hash and url
  'hash url'=. 0 2{".hdu=. hdu, '__SO__JODobj'
  pav=. 254{a. NB. use an unlikely delimiter
  tex=. (pav, '~#~ijsurl~#~', pav, url, pav, '~#~sha256~#~', pav, hash) changestr x [ (4!:55) <hdu
  NB. uncomment %\ - leave % - geared for JLTITLETEX
  tex=. '#%\#\' changestr tex
end.
)
```

NB. start indexes from (rxmatches): srxm 's' rxmatches 'start me up silly'
srxm=: {."1@,"2

NB. appends trailing line feed character if necessary
tlf=:] , ((10{a.})"_ = {:) }. (10{a.})"_

NB. converts character strings to J delimiter LF
toJ=: ((10{a.}) I.@(e.&(13{a.}))@] })@:(#~ -.@((13 10{a.})&E.@,))

NB. appends trailing / iff last character is not \ or /
tslash2=: ([: - '\/' e.~ {:) }. '/' ,~]

NB. character list to UTF-8
utf8=: 8&u:

NB. unwrapped latex from words: uwlatexfrwords ;:'we wrap ugly'
uwlatexfrwords=: [: latexfrmarkd 0 markdfrwords]

NB. standardizes path delimiter to windows back \ slash
winpathsep=: '\ '&(('/' I.@:=])) }

wordlatex=: 3 : 0

*NB.*wordlatex v-- LaTeX from word list.*

NB.

NB. monad: clLatex =. wordlatex blclWords

```
NB. require 'jod' !(*) badcl_ajod_
if. badcl_ajod_ mtxt=. markdfrwords y do. mtxt return.
elseif. #mtxt do. 1 indexwraplatex <latexfrmard mtxt
elseif.do. ''
end.
)

wordlit=: 3 : 0

NB.*wordlit v-- make latex from word list (y).
NB.
NB. monad: (paRc ; blclTeXfiles) =. wordlit blclWords
NB.
NB. wordlit 'jodliterate'
NB.
NB. dyad: (paRc ; blclTeXfiles) =. paDw wordlit blclWords
NB.
NB. NB. do not overwrite root tex - allows for latex tweaking
NB. 0 wordlit 'jodliterate'

1 wordlit y
:
NB. require 'jod' !(*)=. badrc_ajod_ badcl_ajod_ checknames_ajod_
try.

if. 3~:(4!:0) <'badrc_ajod_' do. 0;'!error: jod is not loaded' return. end.
if. 0=#JLDIRECTORY do. 0;'!error: working directory is not set' return. end.
```

NB. only valid jod names

```
if. badrc_ajod_ wlist=. checknames_ajod_ y do. wlist return. end.
```

NB. use first name on word list for tex file names

```
texname=. ;0{wlist=. }.wlist
```

NB. make latex

```
if. badcl_ajod_ wltx=. wordlatex wlist do. wltx return. end.
```

NB. root .tex file

```
wdir=. JLDIRECTORY
```

```
jlroot=. wdir,texname, '.tex'
```

```
if. chroot=. x -: 1 do.
```

```
    root=. ('/~#~texname~#~/',texname) changestr JLWORDLITTEX
```

```
    (toJ root) writeas jlroot
```

```
end.
```

NB. group build batch script - latex utils that compile generated files

```
jlbuildtex=. ('/~#~group~#~/',texname) changestr JLBUILDTTEX
```

```
(toJ jlbuildtex) writeas jlbuildbat=. wdir,texname, '.',JLSHELLEXT
```

NB. source code .tex - return file names

```
wltx=. ppcodelatex wltx
```

```
(toJ wltx) writeas jlcode=. wdir,texname,JLCODEFILE
```

```
ok_ajod_ (-.chroot) }. jlroot;jlcode;jlbuildbat
```



```
catchd.  
  0;!'!error: (wordlit) failure - last J error ->';13!:12 ''  
end.  
)  
  
wrapQtlatex=: 3 : 0  
  
NB.*wrapQtlatex v-- adjust wrapped quoted string LaTeX.  
NB.  
NB. monad: clNewTeX =. wrapQtlatex clTex  
  
NB. require 'regex' !(*)=. rxmatches  
  
NB. assignment latex  
alx=. '\AlertTok{=:}' [ klx=. '\KeywordTok{=.'}'  
  
if. +./ (alx;klx) +./@E.&> < y do.  
  
  NB. last token in string before quote after assignment  
  NB. hack to handle forms like: text=. <;._1 ' you parsing me'  
  if. #ltp=. }.srxm PANDOC TokPAT rxmatches TEXTQUOTESINGLE beforestr y do.  
    hd=. ltp {. y [ ltp=. _1{ltp  
    hd,(STRINGTTOKPFX;ALERTTOKPFX) replacetoks ltp}.y  
  else.  
    (alx beforestr y),alx,(STRINGTTOKPFX;ALERTTOKPFX) replacetoks alx afterstr y  
  end.  
else.
```

```
(STRINGTOKPFX;ALERTTOKPFX) replacetoks y
end.
)
```

```
NB. expand start/end indexes in wrap table: 1 0 1 wraplix >2 5;7 8;13 27
wraplix=: [: ; (0 { "1 #) +&.> [: i.&.> [: >: [: -/"1 [: |."1 #
```

```
wraprgidx=: 3 : 0
```

```
NB.*wraprgidx v-- start/end indexes of wrapped line regions.
NB.
NB. monad: it =. wraprgidx pl
```

```
b=. firststones y
r=. 0 -.&.>~ (b <.;.1 y) *&.> b <.;.1 i.#y
(<:@{.&> r) ,. {:&> r
)
```

```
wrapvrblong=: 3 : 0
```

```
NB.*wrapvrblong v-- wraps verbatim text lines with length > (x).
NB.
NB. Wraps lines with length > (x) and prefixes each wrapped line
NB. with the syntactically invalid j string ')=.)=.' (WRAPPREFIX)
NB. This string is transformed by pandoc into an easily found
NB. sequence of LaTeX commands.
NB.
```

```
NB. monad:  cl =. wrapvrblong clTxt
NB. dyad:   cl =. iaLength wrapvrblong clTxt

WRAPLIMIT wrapvrblong y
:
NB. always trim trailing blanks
ct=. <@rtrim;._2 tlf y -. CR

NB. only wrap lines exceeding limit
if. #pos=. I. x < #&> ct do.
  wlen=. x-#WRAPLEAD
  wt=. (-wlen) (<\)&.> pos{ct
  slen=. 1&,@:<:@#&.> wt
  NB. lead wrapped lines with prefix
  wt=. (slen #&.> <(<''),<LF,WRAPPREFIX) ,.&.> wt
  wt=. a: -.~ L: 1 ,.&.> wt
  NB. last wrapped line LF terminated
  wt=. wt , L: 1 <LF
  nwpos=. (i.#ct) -. pos
  ct=. ((nwpos{ct) ,.&.> LF) nwpos} ct
  ;;wt pos} <"0 ct
else.
  (-LF~:{:y) }. ; ct ,.&.> LF
end.
)

NB. write file as list of bytes - throws unambiguous error on failure
writeas=: (1!:2 ]`<@.(32&>@ (3!:0))) ::([: 'cannot write file'&(13!:8) 1:)
```

NB.POST_jodliterate post processor (-.)=:

```
smoutput IFACE=: (0 : 0)
NB. (jodliterate) interface word(s):
NB. -----
NB. THISPANDOC      NB. full pandoc path - use (pandoc) if on shell path
NB. formifacetex    NB. formats hyperlinked and highlighted interface words
NB. grplit          NB. make latex for group (y)
NB. ifacesection    NB. interface section summary string
NB. ifc             NB. format interface comment text
NB. setjodliterate  NB. prepare LaTeX processing - sets out directory writes preamble
NB. uwlatexfrwords  NB. unwrapped latex from words: uwlatexfrwords ;:'we wrap ugly'
NB. wordlit         NB. make latex from word list (y)
)

cocurrent 'base'
coinsert 'ajodliterate'

(3 : 0) ''
try.
NB. use any pandoc set in the JOD profile for this machine
if. wex_ajod_ < 'PREFERREDPANDOC_ajod_' do. THISPANDOC_ajodliterate=: PREFERREDPANDOC_ajod_ end.
if. +./@('pandoc'&E.) panver=. ;0{ <;._2 tlf (shell THISPANDOC_ajodliterate_,' --version') -. CR do.
    smoutput 'NOTE: adjust pandoc path if current version ('panver,') is not >= 2.9.1.1'
end.
catch.
```

```
    smoutput 'ERROR: pandoc not set - adjust THISPANDOC_ajodliterate_'  
end.  
)
```

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