

i2latex(1)

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1 Introduction

1.1 NAME

`i2latex` — `i(1)` to *LaTeX* converter

1.2 SYNOPSIS

```
i2latex [ -u ] [ -h ] [ -? ] [ -- ] [ inputFile ]
```

1.3 DESCRIPTION

The `i2latex(1)` utility reads the `inputFile` (or standard input if none is given) and produces on standard output the *LaTeX* equivalent of its input. The output-format is not standard *LaTeX*, but a set of commands and environments (see chapters 2, 3 and 4), which form an adaption layer and need to be defined before the output can be processed by utilities like `latex(1)` or `pdflatex(1)`. Thanks to this adaption layer, the following flexibility is achieved:

- single-byte encoded input can be mapped to virtually any character set (*ISO-8859-1*, *ISO-8859-5*, *ISO-8859-7*, etc.)
- the textual input content can be mapped to virtually any *LaTeX* output layout (article, beamer, etc.)

Inconsistencies within numbering and reference entities are treated as errors. The `i2latex(1)` utility thus exits before producing any output if it detects:

- numbering entities in number anchor mode that are not unique (see chapter 3.3).
- numbering entities in default mode that cannot be resolved (see chapter 3.8).
- reference declarations in fixed-width or italic font anchor mode that are not unique (see chapters 3.4. and 3.5).

1.4 OPTIONS

`-u` The input is interpreted as being *UTF-8* encoded and the output is *UTF-8* encoded. Without option `-u`, the input is interpreted as being single-byte encoded (*ISO-8859-1*, *ISO-8859-5*, *ISO-8859-7*, etc.) and the output is single-byte encoded.

`-h` Give a bit of help about the command line arguments and options.

`-?` See option `-h`.

`--` Indicate end of options.

1.5 EXIT STATUS

The `i2latex(1)` utility exits with value 0 if the processing was successful. The occurrence of an error is indicated by an exit value 1 and an error message on standard error.

1.6 KNOWN BUGS

There are no known bugs.

1.7 OPEN ISSUES

There are no open issues.

1.8 AVAILABILITY

This document is part of the `i` project which is available on-line at the following site:
<http://i2i.sourceforge.net>.

1.9 AUTHOR

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1.10 SEE ALSO

`i(1)`, `i2i(1)`, `inbr(1)`, `i2man(1)`, `i2html(1)`, `html2i(1)` `latex(1)`, `pdflatex(1)`

2 Items

2.1 Heading items

The `i2latex(1)` utility processes heading items according to the following list:

- `I_ITEM_H1` items are converted to `\isecion` commands.
- `I_ITEM_H2` items are converted to `\isubsection` commands.
- `I_ITEM_H3` items are converted to `\isubsubsection` commands.
- `I_ITEM_H4` items are converted to `\iparagraph` commands.
- `I_ITEM_H5` items are converted to `\isubparagraph` commands.

The `textHeading` argument contains the textual content of the heading item without the `I_TOK_H1`, `I_TOK_H2`, `I_TOK_H3` or `I_TOK_H4` token. The `refKey` argument is explained in chapter 3.3.

2.1.1 Syntax

```
\isecion{refKey}{textHeading}  
\isubsection{refKey}{textHeading}  
\isubsubsection{refKey}{textHeading}  
\iparagraph{refKey}{textHeading}  
\isubparagraph{textHeading}
```

Refer to chapter 5.4 for an example of how the above commands can be implemented.

2.1.2 Example (`i2latex(1)` input)

```
#1 Heading one  
#1.1 Heading two  
#1.1.1 Heading three  
#1.1.1.1 Heading four  
Heading five
```

2.1.3 Example (`i2latex(1)` output)

```
\isecion{1}{Heading one}
\isubsection{1.1}{Heading two}
\isubsubsection{1.1.1}{Heading three}
\iparagraph{1.1.1.1}{Heading four}
\isubparagraph{Heading five}
```

2.2 Caption items

The `i2latex(1)` utility processes caption items according to the following list:

- `I_ITEM_HFIG` items are converted to `ifigure` environments.
- `I_ITEM_HTAB` items are converted to `\itablecaption` commands.

The `textCaption` argument contains the textual content of the caption item without the `I_TOK_HFIG` or `I_TOK_HTAB` tokens. The `refKey` argument is explained in chapter 3.3. Tables are covered in detail in chapter 4. Further details about figures can be found in chapters 2.8.10, 2.8.11, 2.11.1 and 2.11.2.

2.2.1 Syntax

```
\begin{ifigure}{refKey}{textCaption}...\end{ifigure}
\itablecaption{refKey}{textCaption}{...}{...}{...}
```

Refer to chapter 5.4 for an example of how the above command and environment can be implemented.

2.2.2 Example (`i2latex(1)` input)

```
#T1 Table caption
#F1 Figure caption
```

2.2.3 Example (`i2latex(1)` output)

```
\itablecaption{T1}{Table caption}{1}{\itableemptyhead}{\itableemptybody}
\begin{ifigure}{F1}{Figure caption}\end{ifigure}
```

2.3 Bibliography and equation items

The `i2latex(1)` utility processes bibliography and equation items according to the following list:

- `I_ITEM_HBIB` items are converted to `\ibiblio` commands.
- `I_ITEM_HEQU` items are converted to `iequation` environments.

The `textBibliography` argument contains the textual content of the bibliography item without the `I_TOK_HBIB` token. The `textEquation` argument contains the textual content of the equation item without the `I_TOK_HEQU` token. The `refKey` argument is explained in chapter 3.3. Further details about equations can be found in the chapters 2.11.3 and 2.11.4.

2.3.1 Syntax

```
\ibiblio{refKey}{textBibliography}
\begin{iequation}{refKey}{textEquation}...\end{iequation}
```

Refer to chapter 5.4 for an example of how the above command and environment can be implemented.

2.3.2 Example (`i2latex(1)` input)

```
#B1 Hemingway, Ernest: The old man and the sea. 1952.  
#B2 Orwell, George: Animal farm. 1945  
#E1 Equation
```

2.3.3 Example (`i2latex(1)` output)

```
\biblio{1}{Hemingway, Ernest: The old man and the sea. 1952.}  
\biblio{2}{Orwell, George: Animal farm. 1945}  
\begin{iequation}{E1}{Equation}\end{iequation}
```

2.4 Paragraph items

The `i2latex(1)` utility puts either an `\ipar` or `\ibreak` command at the begin of paragraph items. Under certain circumstances (e.g. after a list) the commands are suppressed.

2.4.1 Syntax

```
\ipar  
\ibreak
```

Refer to chapter 5.4 for an example of how the above commands can be implemented.

2.4.2 Example (`i2latex(1)` input)

```
First paragraph  
  Second paragraph  
  
Third paragraph
```

2.4.3 Example (`i2latex(1)` output)

```
First paragraph  
\ibreak Second paragraph  
\ipar{}Third paragraph
```

2.5 List items

The `i2latex(1)` utility puts subsequent list items in an `ilist` environment and separates them by `\iitem` or `\ibreak` commands. The outermost `ilist` environment can contain another `ilist` environment or an `ipre` environment. Refer to chapter 4 to find more information about the `\ivspacetop` and `\ivspacebottom` commands.

2.5.1 Syntax

```
\begin{ilist}\ivspacetop  
\iitem  
\ivspacebottom\end{ilist}
```

Refer to chapter 5.4 for an example of how the above command and environment can be implemented.

2.5.2 Example (`i2latex(1)` input)

```
- one
- two
- three
  four
  - five
  - six
- seven
  ; eight  nine
```

2.5.3 Example (`i2latex(1)` output)

```
\begin{ilist}\iitem{}one
\iitem{}two
\iitem{}three
\ibreak four
\begin{ilist}\iitem{}five
\iitem{}six\end{ilist}
\iitem{}seven
\begin{ipre}
eight  nine
\end{ipre}\end{ilist}
```

2.6 Quotation items

The `i2latex(1)` utility converts quotation items to `\iquote` commands. Refer to chapter 4 to find more information about the `\ivspacetop` and `\ivspacebottom` commands.

2.6.1 Syntax

```
\iquote{\ivspacetop textQuotation \ivspacebottom}
```

Refer to chapter 5.4 for an example of how the above commands can be implemented.

2.6.2 Example (`i2latex(1)` input)

```
Ernest Hemingway opened his book with the following words...
    He was an old man who fished alone in a skiff in the Gulf Stream
    and he had gone eighty-four days now without taking a fish.
```

2.6.3 Example (`i2latex(1)` output without option `-u`)

```
Ernest Hemingway opened his book with the following words...
\iquote{He was an old man who fished alone in a skiff in the Gulf Stream
and he had gone eighty\ibyte{45}four days now without taking a fish.}
```

2.6.4 Example (`i2latex(1)` output with option `-u`)

```
Ernest Hemingway opened his book with the following words...
\iquote{He was an old man who fished alone in a skiff in the Gulf Stream
and he had gone eighty{\idash}four days now without taking a fish.}
```

2.7 Pre-formatted items

The `i2latex(1)` utility converts pre-formatted items to `ipre` environments. The first space character of every line is suppressed.

2.7.1 Syntax

```
\begin{ipre}...\end{ipre}
```

Refer to chapter 5.4 for an example of how the above environment can be implemented.

2.7.2 Example (`i2latex(1)` input)

```
; for( i = 0; i < k; i++ ) {  
:   printf("i=%d\n", i);  
: }
```

2.7.3 Example (`i2latex(1)` output without option `-u`)

```
\begin{ipre}  
for( i = 0; i \ibyte{60} k; i++ ) \ibyte{123}  
  printf(\ibyte{34}i=\ibyte{37}d\ibyte{92}n\ibyte{34}, i);  
\ibyte{125}  
\end{ipre}
```

2.7.4 Example (`i2latex(1)` output with option `-u`)

```
\begin{ipre}  
for( i = 0; i {\textless} k; i++ ) \  
  printf({\idoublequote}i=\%d{\ibackslash}n{\idoublequote}, i);  
\}  
\end{ipre}
```

2.8 Picture items

The `i2latex(1)` utility puts picture items into `ipicture` environments. `ipicture` environments may be surrounded by an `ifigure` environment (see examples in chapters 2.8.10 and 2.8.11). Pictures may include the following elements:

- Text elements, which are converted to `\input`, `\ihyperlinkput` or `\ihyperrefput` commands by the `i2latex(1)` utility (see examples in chapters 2.8.2 and 2.8.3).
- Horizontal and vertical line elements, which are converted to `\ilinux` or `\iliney` commands by the `i2latex(1)` utility (see examples in chapters 2.8.4 and 2.8.5).
- Arrow elements, which are converted to `\ivector` commands by the `i2latex(1)` utility (see examples in chapters 2.8.6 and 2.8.7).
- Oval elements, which are converted to `\ioval` commands by the `i2latex(1)` utility (see examples in chapters 2.8.8 and 2.8.9).

The coordinates of each of the above elements are specified with respect to an origin at the lower-left corner of the `ipicture` environment. The horizontal units (`x` and `length` arguments) are measured in multiples of the width of a character. The vertical units (`y` and `length` arguments) are measured in multiples of the height of a character.

2.8.1 Syntax

```
\input{x}{y}{text}  
\ihyperlinkput{x}{y}{linkKey}{linkText}  
\ihyperrefput{x}{y}{refKey}{text}  
\ilinux{x}{y}{length}  
\iliney{x}{y}{length}  
\ivector{x}{y}{x slope}{y slope}  
\ioval{x}{y}{portion}
```

Refer to chapter 5.4 for an example of how the above commands can be implemented.

2.8.2 Text element example (`i2latex(1)` input)

```
'ab'  
, ab  
: AB
```

2.8.3 Text element example (`i2latex(1)` output)

```
\ihypertarget{6162}{\ifix{ab}}  
\ibreak  
\begin{ipicture}{2}{2}  
\ihyperlinkput{0}{1}{6162}{a}\ihyperlinkput{1}{1}{6162}{b}  
\iput{0}{0}{A}\iput{1}{0}{B}  
\end{ipicture}
```

2.8.4 Horizontal and vertical line element example (`i2latex(1)` input)

```
, +-----+  
: |       |  
: +-----+
```

2.8.5 Horizontal and vertical line element example (`i2latex(1)` output)

```
\begin{ipicture}{7}{3}  
\ilindex{0.5}{2.5}{6.0}  
\ilindex{0.5}{0.5}{6.0}  
\iliney{0.5}{0.5}{2.0}  
\iliney{6.5}{0.5}{2.0}  
\end{ipicture}
```

2.8.6 Arrow element example (`i2latex(1)` input)

```
, --> ^ |  
: <-- | |  
:      | v
```

2.8.7 Arrow element example (`i2latex(1)` output)

```
\begin{ipicture}{7}{3}  
\ilindex{0.0}{2.5}{3.0}\ivector{3.0}{2.5}{1}{0}  
\ilindex{0.0}{1.5}{3.0}\ivector{0.0}{1.5}{-1}{0}  
\iliney{4.5}{0.0}{3.0}\ivector{4.5}{3.0}{0}{1}  
\iliney{6.5}{0.0}{3.0}\ivector{6.5}{0.0}{0}{-1}  
\end{ipicture}
```

2.8.8 Oval element example (`i2latex(1)` input)

```
, /-----\  
: |       |  
: \-----/
```

2.8.9 Oval element example (`i2latex(1)` output)

```
\begin{ipicture}{7}{3}  
\ilindex{1.5}{2.5}{4.0}\ioval{1.5}{1.5}{1t}\ioval{5.5}{1.5}{tr}  
\ilindex{1.5}{0.5}{4.0}\ioval{1.5}{1.5}{1b}\ioval{5.5}{1.5}{br}  
\iliney{0.5}{1.5}{0.0}  
\iliney{6.5}{1.5}{0.0}  
\end{ipicture}
```

2.8.10 Figure example (`i2latex(1)` input)

```
#F1 Rectangle with an arrow
,      +-----+
: --->|      |
:      +-----+
```

2.8.11 Figure example (`i2latex(1)` output)

```
\begin{ifigure}{F1}{Rectangle with an arrow}
\begin{ipicture}{11}{3}
\ilinx{4.5}{2.5}{6.0}
\ilinx{0.0}{1.5}{4.5}\ivector{4.5}{1.5}{1}{0}
\ilinx{4.5}{0.5}{6.0}
\iliny{4.5}{0.5}{2.0}
\iliny{10.5}{0.5}{2.0}
\end{ipicture}\end{ifigure}
```

2.9 Latex items

Lines of latex items start with an `I_TOK_LATEX` token in `i(1)`. These tokens and the first space character of the second token on each line are suppressed in the `i2latex(1)` output. Apart from this, all new line and space characters are retained. The output of latex items does not start on a new line!

2.10 Man items

Man items are suppressed in the `i2latex(1)` output.

2.11 Interrupt items

Interrupt items are mainly used for incorporating pure *LaTeX* sequences into `i(1)`. The usual `i2latex(1)` output is suppressed and special measures are needed in order to get the output syntactically correct. Table 1 gives an overview of what is missing in the output if a particular item is interrupted. The chapters 2.11.1 to 2.11.4 provide examples of typical situations in which interrupt items are necessary.

Table 1: Missing output

<code>i(1)</code> item	Missing <code>i2latex(1)</code> output
<code>I_ITEM__BEGIN</code>	
<code>I_ITEM__LI1</code>	<code>\end{ilist}</code>
<code>I_ITEM__LI2</code>	<code>\end{ilist}\end{ilist}</code>
<code>I_ITEM__PAR</code>	
<code>I_ITEM__QUOTE</code>	<code>}</code>
<code>I_ITEM_H1</code>	<code>}</code>
<code>I_ITEM_H2</code>	<code>}</code>
<code>I_ITEM_H3</code>	<code>}</code>
<code>I_ITEM_H4</code>	<code>}</code>
<code>I_ITEM_H5</code>	<code>}</code>
<code>I_ITEM_HBIB</code>	<code>}</code>
<code>I_ITEM_HEQU</code>	<code>}\end{iequation}</code>
<code>I_ITEM_HFIG</code>	<code>}\end{ifigure}</code>
<code>I_ITEM_HTAB</code>	<code>}{1}{\itableemptyhead}{\itableemptybody}</code>

<code>i(1)</code> item	Missing <code>i2latex(1)</code> output
<code>I_ITEM_PIC</code>	<code>\end{ipicture}</code>
<code>I_ITEM_PRE</code>	<code>\end{ipre}</code>
<code>I_ITEM_PRE1</code>	<code>\end{ipre}\end{ilist}</code>
table	<code>}</code>

2.11.1 Graphic example (`i2latex(1)` input)

```
#F1 Photo
#I
#L }\includegraphics[scale=0.25]{photo.jpg}\end{ifigure}
#M [ photo.jpg ]
#M .fi
```

2.11.2 Graphic example (`i2latex(1)` output)

```
\begin{ifigure}{F1}{Photo}
\includegraphics[scale=0.25]{photo.jpg}
\end{ifigure}
```

2.11.3 Equation example (`i2latex(1)` input)

```
#E1
#I
#L }\frac{x+1}{x-1}\end{iequation}
#M
#M      x + 1
#M      -----
#M      x - 1
#M .fi
```

2.11.4 Equation example (`i2latex(1)` output)

```
\begin{iequation}{E1}{}\frac{x+1}{x-1}\end{iequation}
```

2.12 Footnotes

The `i2latex(1)` utility converts footnotes to `\ifootnote` commands.

2.12.1 Syntax

```
\ifootnote{...}
```

Refer to chapter 5.4 for an example of how the above command can be implemented.

2.12.2 Footnote example (`i2latex(1)` input)

```
      He was an old man who fished alone in a skiff in the Gulf
      Stream and he had gone eighty-four days now without taking
      a fish. #(opening of #B1#)
#B1 Hemingway, Ernest: The old man and the sea. 1952.
```

2.12.3 Footnote example (`i2latex(1)` output without option `-u`)

```
\quote{He was an old man who fished alone in a skiff in the Gulf
Stream and he had gone eighty\ibyte{45}four days now without taking
a fish.\protect\ifootnote{opening of \ibibliolink{1}}}
\ibiblio{1}{Hemingway, Ernest: The old man and the sea. 1952.}
```

2.12.4 Footnote example (`i2latex(1)` output with option `-u`)

```
\quote{He was an old man who fished alone in a skiff in the Gulf
Stream and he had gone eighty{\idash}four days now without taking
a fish.\protect\ifootnote{opening of \ibibliolink{1}}}
\ibiblio{1}{Hemingway, Ernest: The old man and the sea. 1952.}
```

3 Modes

Numerous characters play a special role in *LaTeX*. Furthermore, the `i2latex(1)` utility does not know the character's representation in the `i(1)` input (*UTF-8*, *ISO-8859-1*, *ISO-8859-5*, *ISO-8859-7*, etc.). Thus, the character mapping is organised in the following flexible manner:

- Single-byte encoded `i(1)` input (*ISO-8859-1*, *ISO-8859-5*, *ISO-8859-7*, etc.) is to be processed without option `-u` by the `i2latex(1)` utility. In the `i2latex(1)` output, the `\ibyte` command defines the character mapping. Table 2 shows the `i2latex(1)` output in relation to the `i(1)` input. Refer to chapter 5.5 for an example of how the `\ibyte` command can be implemented for *ISO-8859-1*.
- *UTF-8* encoded `i(1)` input is to be processed with option `-u` by the `i2latex(1)` utility. In the `i2latex(1)` output, the few commands of table 3 define the character mapping. Refer to chapter 5.6 for an example of how the commands of table 3 can be implemented.

Table 2: Byte adaption (single-byte encoding)

<code>i(1)</code> input		<code>i2latex(1)</code> output
Hex	<i>ISO-8859-1</i> representation	<i>LaTeX</i> command
0X01		<code>\ibyte{1}</code>
0X02		<code>\ibyte{2}</code>
0X03		<code>\ibyte{3}</code>
0X04		<code>\ibyte{4}</code>
0X05		<code>\ibyte{5}</code>
0X06		<code>\ibyte{6}</code>
0X07		<code>\ibyte{7}</code>
0X08		<code>\ibyte{8}</code>
0X09	tabulator	<code>\ibyte{9}</code>
0X0A	new line	
0X0B		<code>\ibyte{11}</code>
0X0C		<code>\ibyte{12}</code>
0X0D	carriage return	
0X0E		<code>\ibyte{14}</code>
0X0F		<code>\ibyte{15}</code>
0X10		<code>\ibyte{16}</code>
0X11		<code>\ibyte{17}</code>
0X12		<code>\ibyte{18}</code>

i(1) input		i2latex(1) output
Hex	ISO-8859-1 representation	LaTeX command
0X13		\ibyte{19}
0X14		\ibyte{20}
0X15		\ibyte{21}
0X16		\ibyte{22}
0X17		\ibyte{23}
0X18		\ibyte{24}
0X19		\ibyte{25}
0X1A		\ibyte{26}
0X1B		\ibyte{27}
0X1C		\ibyte{28}
0X1D		\ibyte{29}
0X1E		\ibyte{30}
0X1F		\ibyte{31}
0X20	space	
0X21	!	!
0X22	"	\ibyte{34}
0X23	#	\ibyte{35}
0X24	\$	\ibyte{36}
0X25	%	\ibyte{37}
0X26	&	\ibyte{38}
0X27	,	,
0X28	((
0X29))
0X2A	*	*
0X2B	+	+
0X2C	,	,
0X2D	-	\ibyte{45}
0X2E	.	.
0X2F	/	/
0X30	0	0
0X31	1	1
0X32	2	2
0X33	3	3
0X34	4	4
0X35	5	5
0X36	6	6
0X37	7	7
0X38	8	8
0X39	9	9
0X3A	:	:
0X3B	;	;
0X3C	<	\ibyte{60}
0X3D	=	=
0X3E	>	\ibyte{62}
0X3F	?	?
0X40	@	@
0X41	A	A

<i>i</i> (1) input		<i>i2latex</i> (1) output
Hex	<i>ISO-8859-1</i> representation	<i>LaTeX</i> command
0X42	B	B
0X43	C	C
0X44	D	D
0X45	E	E
0X46	F	F
0X47	G	G
0X48	H	H
0X49	I	I
0X4A	J	J
0X4B	K	K
0X4C	L	L
0X4D	M	M
0X4E	N	N
0X4F	O	O
0X50	P	P
0X51	Q	Q
0X52	R	R
0X53	S	S
0X54	T	T
0X55	U	U
0X56	V	V
0X57	W	W
0X58	X	X
0X59	Y	Y
0X5A	Z	Z
0X5B	[[
0X5C	\	<code>\byte{92}</code>
0X5D]]
0X5E	^	<code>\byte{94}</code>
0X5F	_	<code>\byte{95}</code>
0X60	‘	‘
0X61	a	a
0X62	b	b
0X63	c	c
0X64	d	d
0X65	e	e
0X66	f	f
0X67	g	g
0X68	h	h
0X69	i	i
0X6A	j	j
0X6B	k	k
0X6C	l	l
0X6D	m	m
0X6E	n	n
0X6F	o	o
0X70	p	p

<i>i</i> (1) input		<i>i2latex</i> (1) output
Hex	<i>ISO-8859-1</i> representation	<i>LaTeX</i> command
0X71	q	q
0X72	r	r
0X73	s	s
0X74	t	t
0X75	u	u
0X76	v	v
0X77	w	w
0X78	x	x
0X79	y	y
0X7A	z	z
0X7B	{	<code>\ibyte{123}</code>
0X7C		<code>\ibyte{124}</code>
0X7D	}	<code>\ibyte{125}</code>
0X7E	~	<code>\ibyte{126}</code>
0X7F		<code>\ibyte{127}</code>
0X80		<code>\ibyte{128}</code>
0X81		<code>\ibyte{129}</code>
0X82		<code>\ibyte{130}</code>
0X83		<code>\ibyte{131}</code>
0X84		<code>\ibyte{132}</code>
0X85		<code>\ibyte{133}</code>
0X86		<code>\ibyte{134}</code>
0X87		<code>\ibyte{135}</code>
0X88		<code>\ibyte{136}</code>
0X89		<code>\ibyte{137}</code>
0X8A		<code>\ibyte{138}</code>
0X8B		<code>\ibyte{139}</code>
0X8C		<code>\ibyte{140}</code>
0X8D		<code>\ibyte{141}</code>
0X8E		<code>\ibyte{142}</code>
0X8F		<code>\ibyte{143}</code>
0X90		<code>\ibyte{144}</code>
0X91		<code>\ibyte{145}</code>
0X92		<code>\ibyte{146}</code>
0X93		<code>\ibyte{147}</code>
0X94		<code>\ibyte{148}</code>
0X95		<code>\ibyte{149}</code>
0X96		<code>\ibyte{150}</code>
0X97		<code>\ibyte{151}</code>
0X98		<code>\ibyte{152}</code>
0X99		<code>\ibyte{153}</code>
0X9A		<code>\ibyte{154}</code>
0X9B		<code>\ibyte{155}</code>
0X9C		<code>\ibyte{156}</code>
0X9D		<code>\ibyte{157}</code>
0X9E		<code>\ibyte{158}</code>
0X9F		<code>\ibyte{159}</code>

i(1) input		i2latex(1) output
Hex	ISO-8859-1 representation	LaTeX command
0XA0		\by{160}
0XA1	i	\by{161}
0XA2	¢	\by{162}
0XA3	£	\by{163}
0XA4	¤	\by{164}
0XA5	¥	\by{165}
0XA6	¦	\by{166}
0XA7	§	\by{167}
0XA8	¨	\by{168}
0XA9	©	\by{169}
0XAA	ª	\by{170}
0XAB	«	\by{171}
0XAC	¬	\by{172}
0XAD		\by{173}
0XAE	®	\by{174}
0XAF	¯	\by{175}
0XB0	°	\by{176}
0XB1	º	\by{177}
0XB2	²	\by{178}
0XB3	³	\by{179}
0XB4	´	\by{180}
0XB5	µ	\by{181}
0XB6	¶	\by{182}
0XB7	·	\by{183}
0XB8	¸	\by{184}
0XB9	¹	\by{185}
0XBA	º	\by{186}
0XBB	»	\by{187}
0XBC	¼	\by{188}
0XBD	½	\by{189}
0XBE	¾	\by{190}
0XBF	¿	\by{191}
0XC0	À	\by{192}
0XC1	Á	\by{193}
0XC2	Â	\by{194}
0XC3	Ã	\by{195}
0XC4	Ä	\by{196}
0XC5	Å	\by{197}
0XC6	Æ	\by{198}
0XC7	Ç	\by{199}
0XC8	È	\by{200}
0XC9	É	\by{201}
0XCA	Ê	\by{202}
0XCB	Ë	\by{203}
0XCC	Ì	\by{204}
0XCD	Í	\by{205}
0XCE	Î	\by{206}

i(1) input		i2latex(1) output
Hex	<i>ISO-8859-1</i> representation	<i>LaTeX</i> command
0XCF	Ï	<code>\ibyte{207}</code>
0XD0	Ð	<code>\ibyte{208}</code>
0XD1	Ñ	<code>\ibyte{209}</code>
0XD2	Ò	<code>\ibyte{210}</code>
0XD3	Ó	<code>\ibyte{211}</code>
0XD4	Ô	<code>\ibyte{212}</code>
0XD5	Õ	<code>\ibyte{213}</code>
0XD6	Ö	<code>\ibyte{214}</code>
0XD7	×	<code>\ibyte{215}</code>
0XD8	Ø	<code>\ibyte{216}</code>
0XD9	Û	<code>\ibyte{217}</code>
0XDA	Ü	<code>\ibyte{218}</code>
0XDB	Û	<code>\ibyte{219}</code>
0XDC	Ü	<code>\ibyte{220}</code>
0XDD	Ý	<code>\ibyte{221}</code>
0XDE	þ	<code>\ibyte{222}</code>
0XDF	ß	<code>\ibyte{223}</code>
0XE0	à	<code>\ibyte{224}</code>
0XE1	á	<code>\ibyte{225}</code>
0XE2	â	<code>\ibyte{226}</code>
0XE3	ã	<code>\ibyte{227}</code>
0XE4	ä	<code>\ibyte{228}</code>
0XE5	å	<code>\ibyte{229}</code>
0XE6	æ	<code>\ibyte{230}</code>
0XE7	ç	<code>\ibyte{231}</code>
0XE8	è	<code>\ibyte{232}</code>
0XE9	é	<code>\ibyte{233}</code>
0XEA	ê	<code>\ibyte{234}</code>
0XEB	ë	<code>\ibyte{235}</code>
0XEC	ì	<code>\ibyte{236}</code>
0XED	í	<code>\ibyte{237}</code>
0XEE	î	<code>\ibyte{238}</code>
0XEF	ï	<code>\ibyte{239}</code>
0XF0	ð	<code>\ibyte{240}</code>
0XF1	ñ	<code>\ibyte{241}</code>
0XF2	ò	<code>\ibyte{242}</code>
0XF3	ó	<code>\ibyte{243}</code>
0XF4	ô	<code>\ibyte{244}</code>
0XF5	õ	<code>\ibyte{245}</code>
0XF6	ö	<code>\ibyte{246}</code>
0XF7	÷	<code>\ibyte{247}</code>
0XF8	ø	<code>\ibyte{248}</code>
0XF9	ù	<code>\ibyte{249}</code>
0XFA	ú	<code>\ibyte{250}</code>
0XFB	û	<code>\ibyte{251}</code>
0XFC	ü	<code>\ibyte{252}</code>
0XFD	ý	<code>\ibyte{253}</code>

<code>i(1)</code> input		<code>i2latex(1)</code> output
Hex	<i>ISO-8859-1</i> representation	<i>LaTeX</i> command
0XFE	þ	<code>\ibyte{254}</code>
0XFF	ÿ	<code>\ibyte{255}</code>

Table 3: Byte adaption (UTF-8 encoding)

<code>i(1)</code> input		<code>i2latex(1)</code> output
Hex	<i>UTF-8</i> representation	<i>LaTeX</i> command
0X22	"	<code>\idoublequote</code>
0X2D	-	<code>\idash</code>
0X2F	/	<code>\islash</code>
0X5C	\	<code>\ibackslash</code>
0X5F	_	<code>\iunderscore</code>
0X7C		<code>\ibar</code>

3.1 Latex mode

Bytes in latex mode are put out transparently by the `i2latex(1)` utility. The byte adaption described in table 2 is not carried out!

3.2 Man mode

Bytes in man mode are suppressed in the `i2latex(1)` output.

3.3 Number anchor mode

Bytes in number anchor mode are converted to `refKey` arguments by the `i2latex(1)` utility. The following commands and environments have a `refKey` argument, which is derived from bytes in number anchor mode:

- `\isection`
- `\isubsection`
- `\isubsubsection`
- `\iparagraph`
- `\itablecaption`
- `\ibiblio`
- `ifigure`
- `iequation`

The examples in table 4 show the relationship of `i(1)` input to `refKey` arguments.

Table 4: Numbering entity examples

Token	<code>i(1)</code> input	<code>refKey</code>
<code>I_TOK_H1</code>	<code>#1</code>	<code>1</code>
<code>I_TOK_H2</code>	<code>#1.1</code>	<code>1.1</code>
<code>I_TOK_H3</code>	<code>#1.1.1</code>	<code>1.1.1</code>
<code>I_TOK_H4</code>	<code>#1.1.1.1</code>	<code>1.1.1.1</code>
<code>I_TOK_HBIB</code>	<code>#B1</code>	<code>1</code>
<code>I_TOK_NBR_EQU</code>	<code>#E1</code>	<code>E1</code>
<code>I_TOK_NBR_FIG</code>	<code>#F1</code>	<code>F1</code>

Token	<code>i(1)</code> input	refKey
<code>I_TOK_HTAB</code>	<code>#T1</code>	T1

3.4 Fixed-width font anchor mode

The treatment of any byte in fixed-width font anchor mode depends on the item it is part of. If such bytes are in a numbered heading, caption, bibliography or equation item, the `i2latex(1)` utility converts them to the `\ifix` command. In all other instances, they are converted to the `\ihypertarget` command. The `linkKey` argument of the `\ihypertarget` command is derived from the `linkText` argument (it is its hexadecimal representation). All bytes in fixed-width font anchor mode are adapted according to Table 2.

3.4.1 Syntax

```
\ihypertarget{linkKey}{\ifix{linkText}}
```

Refer to chapter 5.4 for an example of how the above command can be implemented.

3.4.2 Example (`i2latex(1)` input)

```
#1 Heading 'ONE'
Heading 'TWO'
  Paragraph T'HRE'E
```

3.4.3 Example (`i2latex(1)` output)

```
\isection{1}{Heading \ifix{ONE}}
\isubparagraph{Heading \ihypertarget{54574f}{\ifix{TWO}}}{
Paragraph T\ihypertarget{485245}{\ifix{HRE}}E
```

3.5 Italic font anchor mode

The treatment of any byte in italic font anchor mode depends on the item it is part of. If such bytes are in a numbered heading, caption, bibliography or equation item, the `i2latex(1)` utility converts them to the `\iitalic` command. In all other instances, they are converted to the `\ihypertarget` command. The `linkKey` argument of the `\ihypertarget` command is derived from the `linkText` argument. All bytes in italic font anchor mode are adapted according to Table 2.

3.5.1 Syntax

```
\ihypertarget{linkKey}{\iitalic{linkText}}
```

Refer to chapter 5.4 for an example of how the above command can be implemented.

3.5.2 Example (`i2latex(1)` input)

```
#1 Heading 'one'
Heading 'two'
  Paragraph t'hre'e
```

3.5.3 Example (`i2latex(1)` output)

```
\isection{1}{Heading \iitalic{one}}
\isubparagraph{Heading \ihypertarget{74776f}{\iitalic{two}}}{
Paragraph t\ihypertarget{687265}{\iitalic{hre}}e
```

3.6 Fixed-width font mode

How the `i2latex(1)` utility treats bytes in fixed-width font mode depends on the following circumstances:

- They are converted to the `\ihyperref` command if they are equivalent to a byte sequence in fixed-width or italic font anchor mode that is part of a numbered heading, caption, bibliography or equation item.
- They are converted to the `\ihyperlink` command if they are equivalent to with a byte sequence in fixed-width or italic font anchor mode that is part of an unnumbered heading, paragraph, list or quotation item.
- They are converted to the `\ifix` command in all other situations.

All bytes in fixed-width font mode are adapted according to Table 2.

3.6.1 Syntax

```
\ifix{...}  
\ifix{... \ihyperlink{linkKey}{linkText}...}  
\ifix{... \ihyperref{refKey}{linkText}...}
```

Refer to chapter 5.4 for an example of how the above command can be implemented.

3.6.2 Example (`i2latex(1)` input)

```
#1 Heading 'ONE' 'one'  
Heading 'TWO' 'two'  
Paragraph T'HRE'E t'hre'e ('ONE', 'one', 'TWO', 'two' 'THREE'  
or 'three')
```

3.6.3 Example (`i2latex(1)` output)

```
\isection{1}{Heading \ifix{ONE} \iitalic{one}}  
\isubparagraph{Heading \ihypertarget{54574f}{\ifix{TWO}}  
\ihypertarget{74776f}{\iitalic{two}}}  
Paragraph T\ihypertarget{485245}{\ifix{HRE}}E  
t\ihypertarget{687265}{\iitalic{hre}}e (\ifix{\ihyperref{1}{ONE}},  
\ifix{\ihyperref{1}{one}}, \ifix{\ihyperlink{54574f}{TWO}},  
\ifix{\ihyperlink{74776f}{two}} \ifix{T\ihyperlink{485245}{HRE}E} or  
\ifix{t\ihyperlink{687265}{hre}e})
```

3.7 Italic font mode

How the `i2latex(1)` utility treats bytes in italic font mode depends on the following circumstances:

- They are converted to the `\ihyperref` command if they are equivalent to a byte sequence in fixed-width or italic font anchor mode that is part of a numbered heading, caption, bibliography or equation item.
- They are converted to the `\ihyperlink` command if they are equivalent to a byte sequence in fixed-width or italic font anchor mode that is part of an unnumbered heading, paragraph, list or quotation item.
- They are converted to the `\iitalic` command in all other situations.

All bytes in italic font mode are adapted according to Table 2.

3.7.1 Syntax

```
\iitalic{...}  
\iitalic{... \ihyperlink{linkKey}{linkText}...}  
\iitalic{... \ihyperref{refKey}{text}...}
```

Refer to chapter 5.4 for an example of how the above command can be implemented.

3.7.2 Example (`i2latex(1)` input)

```
#1 Heading 'ONE' 'one'
Heading 'TWO' 'two'
Paragraph T'HRE'E t'hre'e ('ONE', 'one', 'TWO', 'two' 'THREE'
or 'three')
```

3.7.3 Example (`i2latex(1)` output)

```
\isection{1}{Heading \ifix{ONE} \iitalic{one}}
\ subparagraph{Heading \ihypertarget{54574f}{\ifix{TWO}}
\ihypertarget{74776f}{\iitalic{two}}}
Paragraph T\ihypertarget{485245}{\ifix{HRE}}E
t\ihypertarget{687265}{\iitalic{hre}}e (\iitalic{\ihyperref{1}{ONE}},
\iitalic{\ihyperref{1}{one}}, \iitalic{\ihyperlink{54574f}{TWO}},
\iitalic{\ihyperlink{74776f}{two}} \iitalic{T\ihyperlink{485245}{HRE}E}
or \iitalic{t\ihyperlink{687265}{hre}e})
```

3.8 Default mode

How the `i2latex(1)` utility treats bytes in default mode depends on the following circumstances:

- They are converted to the `\iref` command if the byte sequence is equivalent to the numbering entity of a heading, caption or equation item.
- They are converted to the `\ibibliolink` command if the byte sequence is equivalent to the numbering entity of a bibliography item.

The relationship between the `refKey` argument and numbering entities is explained in chapter 3.3. All bytes in default mode are adapted according to Table 2.

3.8.1 Syntax

```
text\iref{refKey}text
text\ibibliolink{refKey}text
```

Refer to chapter 5.4 for an example of how the above command can be implemented.

3.8.2 Example (`i2latex(1)` input)

```
Refer to #1, #2, #2.1, #2.2, #B1 or #B2
#1 Heading
#2 Heading
#2.1 Heading
#2.2 Heading
#B1 Hemingway, Ernest: The old man and the sea. 1952.
#B2 Orwell, George: Animal farm. 1945
```

3.8.3 Example (`i2latex(1)` output)

```
Refer to \iref{1}, \iref{2}, \iref{2.1}, \iref{2.2}, \ibibliolink{1} or
\ibibliolink{2}
\isection{1}{Heading}
\isection{2}{Heading}
\subsection{2.1}{Heading}
\subsection{2.2}{Heading}
\ibiblio{1}{Hemingway, Ernest: The old man and the sea. 1952.}
\ibiblio{2}{Orwell, George: Animal farm. 1945}
```

4 Arrangement

4.1 One-dimensional arrangement

One-dimensionally arranged textual content can contain all kinds of items (see chapters 2.1 to 2.11) and footnotes (see chapter 2.12).

4.2 Two-dimensional arrangement (tables)

Two-dimensionally arranged textual content (tables) can only contain paragraph items, list items, quotation items and footnotes (see chapters 2.4, 2.5, 2.6 and 2.12).

The `i2latex(1)` utility converts tables without captions to the `\itablesimple` command and tables with a caption into the `\itablecaption` command. The `cols` argument contains as many 1 characters as there are columns. The `tableHead` argument contains all columns of the table head, or if there are none, the `\ihlineemptyhead` or `\itableemptyhead` command. The `tableBody` argument contains all columns of the table body or if there are none, the `\itableemptybody` command. Each column is converted to the `\icolumn` command. The `multiCols` argument specifies the column span. The `colWidth` argument specifies the column's width. Columns of the same row are separated by the `\iadd` command. Columns of different rows are separated by the `\ihlineone` or `\ihlinetwo` command.

The `\ivspacetop` command is added to the `ilist` environment or `\iquote` command if they start the content of the table column. The `\ivspacebottom` command is added to the `ilist` environment or `\iquote` command if they end the content of a table column. The two commands are needed to compensate for vertical space.

4.2.1 Syntax

```
\itablesimple{cols}{tableHead}{tableBody}
\itablecaption{refKey}{textCaption}{cols}{tableHead}{tableBody}
\itableemptyhead
\itableemptybody
\iadd
\ihlineone
\ihlinetwo
\ihlineemptyhead
\icolumn{multiCols}{colWidth}{...}
\ivspacetop
\ivspacebottom
```

4.2.2 Example of a table without a head (`i2latex(1)` input)

```
:=====:=====:=====
: one   : two   : three
:-----:-----:-----
: four  : five
```

4.2.3 Example of a table without a head (`i2latex(1)` output)

```
\itablesimple{111}{
\ihlineemptyhead}{\icolumn{1}{7}{one}
\iadd\icolumn{1}{6}{two}
\iadd\icolumn{1}{11}{three}
\ihlineone\icolumn{1}{7}{four}
\iadd\icolumn{2}{17}{five}
\ihlineone}
```

4.2.4 Example of a table with a head (`i2latex(1)` input)

```
:-----:-----:-----
: one   : two   : three
:=====:=====,=====
: four  : five
```

4.2.5 Example of a table with a head (`i2latex(1)` output)

```
\itablesimple{111}{
\ihlineone\icolumn{1}{7}{one}
\iadd\icolumn{1}{6}{two}
\iadd\icolumn{1}{11}{three}
\ihlinetwo}{\icolumn{1}{7}{four}
\iadd\icolumn{2}{17}{five}
\ihlineone}
```

4.2.6 Example of a table with various items (`i2latex(1)` input)

```
:-----:-----:-----
: one      : two : three
:=====:=====,=====
: pre      : PRE
: - list   :      quote
: - LIST   :
:-----:-----,-----
: - list   :      quote
: - LIST   : POST
: post     :
```

4.2.7 Example of a table with various items (`i2latex(1)` output)

```
\itablesimple{111}{
\ihlineone\icolumn{1}{12}{one}
\iadd\icolumn{1}{6}{two}
\iadd\icolumn{1}{11}{three}
\ihlinetwo}{\icolumn{1}{12}{pre
\begin{ilist}\iitem{}list
\iitem{}LIST\ivspacebottom{}\end{ilist}}
\iadd\icolumn{2}{17}{PRE
\iquote{quote\ivspacebottom{}}}
\ihlineone\icolumn{1}{12}{
\begin{ilist}\ivspacetop{}\iitem{}list
\iitem{}LIST\end{ilist}
post}
\iadd\icolumn{2}{17}{
\iquote{\ivspacetop{}quote}
POST}
\ihlineone}
```

5 File handling

Before the output of the `i2latex(1)` utility can be processed using utilities such as `latex(1)` or `pdflatex(1)` certain steps must be taken. This chapter proposes a number of different ways to adapt the output for processing.

Chapter 5.1 provides an example of how the adaption can be done in a separate file. The `main.tex` file is used for this purpose. It contains pure *LaTeX* source and includes

the output of the `i2latex(1)` utility in the form of the `foo1.tex` file. The `foo1` file is encoded according to *ISO-8859-1*. In order to generate the `main.pdf` file, the following commands need to be executed:

```
$ i2latex foo1 > foo1.tex
$ pdflatex main.tex
```

Chapter 5.2 shows how the adaption can be made directly in the `i(1)` source. The latex items in the `foo2` file contain everything which was in the `main.tex` file of the previous example. The four dots in the `foo2` file stand for the content of the `foo1` file. The `foo2` file is encoded according to *ISO-8859-1*. The advantage of this method compared to the previous one is that only one file is required. The disadvantage is that the file `foo2` is polluted with things irrelevant to the content. The following commands need to be executed in order to generate the `foo2.pdf` file (`main.pdf` of the previous example and `foo2.pdf` of this example are identical):

```
$ i2latex foo2 > foo2.tex
$ pdflatex foo2.tex
```

Chapter 5.3 shows how the `i2latex(1)` output of different `i(1)` sources can be assembled. The `main2.tex` file (pure *LaTeX*) includes `foo1.tex`, `foo3.tex` and `foo4.tex` which are independently generated output files of the `i2latex(1)` utility. The `foo1`, `foo2` and `foo4` files are encoded according to *ISO-8859-1*. The `\iprefix` command is used to avoid symbol clashes. The `iflag` counter is used to switch off anchors and footnotes in the table of contents (TOC), the list of tables (LOT) and the list of figures (LOF). In order to generate the `main2.pdf` file, the following commands need to be executed:

```
$ i2latex foo1 > foo1.tex
$ i2latex foo3 > foo3.tex
$ i2latex foo4 > foo4.tex
$ pdflatex main2.tex
```

Chapter 5.4 shows the `map.tex` file, which implements almost all commands that might appear in `i2latex(1)` output. The `map.tex` file is independent of whether the `i2latex(1)` output is generated with or without option `-u`.

Chapter 5.5 shows the `iso_8859_1.tex` file which implements the `\iubyte` command for *ISO-8859-1* encoded `i2latex(1)` output. The mapping of the `\iubyte` command is heavily inspired by tables 287 and 288 of [1]. The `\iubyte` command is only present in the `i2latex(1)` output if it is generated without option `-u`.

As soon as the `i2latex(1)` utility is executed with option `-u`, the output contains a few other commands instead of the `\iubyte` command. Chapter 5.6 provides an example of how the adaption can be done in this case. Apart from the encoding, it is identical to the example in chapter 5.1. The `main3.tex` file contains pure *LaTeX* source and includes the output of the `i2latex(1)` utility in the form of the `foo5.tex` file. The `foo5` file is *UTF-8* encoded. In order to generate the `main3.pdf` file, the following commands need to be executed:

```
$ i2latex -u foo5 > foo5.tex
$ pdflatex main3.tex
```


5.1 main.tex

```
\documentclass[11pt, a4paper]{article}
\usepackage{geometry}
\geometry{left=30mm,right=30mm,top=30mm,bottom=20mm}
\usepackage{float}
\usepackage[linktocpage,colorlinks,linkcolor=blue,%
            citecolor=blue,hyperfootnotes=false,%
            bookmarks=false]{hyperref}
\input{iso_8859_1.tex}
\input{map.tex}
\begin{document}
\title{foo1}
\author{nobody}
\maketitle
\sloppy
\input{foo1.tex}
\end{document}
```

5.2 foo2

```
#L \documentclass[11pt, a4paper]{article}
#L \usepackage{geometry}
#L \geometry{left=30mm,right=30mm,top=30mm,bottom=20mm}
#L \usepackage{float}
#L \usepackage[linktocpage,colorlinks,linkcolor=blue,%
#L             citecolor=blue]{hyperref}
#L \input{iso_8859_1.tex}
#L \input{map.tex}
#L \begin{document}
#L \title{foo2}
#L \author{nobody}
#L \maketitle
#L \sloppy
#L ...
#L \end{document}
```

5.3 main2.tex

```
\documentclass[11pt, a4paper]{article}
\usepackage{geometry}
\geometry{left=30mm,right=30mm,top=30mm,bottom=20mm}
\usepackage{float}
\usepackage[linktocpage,colorlinks,linkcolor=blue,%
            citecolor=blue,hyperfootnotes=false,%
            bookmarks=false]{hyperref}
\usepackage{graphicx}
\input{iso_8859_1.tex}
\input{map.tex}
\begin{document}
\title{foo1, foo3 and foo4}
\author{nobody}
\maketitle
\sloppy

\setcounter{iflag}{0}
\setcounter{tocdepth}{2}
\renewcommand{\contentsname}{TOC}    \tableofcontents
\renewcommand{\listtablename}{LOT}   \listoftables
\renewcommand{\listfigurename}{LOF} \listoffigures
\setcounter{iflag}{4}

\renewcommand{\iprefix}{1}
\input{foo1.tex}

\renewcommand{\iprefix}{3}
\input{foo3.tex}

\renewcommand{\iprefix}{4}
\input{foo4.tex}

\end{document}
```

5.4 map.tex

```
\newcommand{\iitalic}[1]{\emph{#1}}
\newcommand{\iitem}{\item}
\newcommand{\ipar}{\vspace{1ex}\par\noindent}
\newcommand{\ibreak}{\par}
\newcommand{\ivspacebottom}{\vspace{-\baselineskip}}
\newcommand{\ivspacetop}{\vspace{-\baselineskip}%
                        \vspace{-\topsep}%
                        \vspace{-\parskip}}
\newcommand{\icomact}{\setlength{\topsep}{0pt}%
                    \setlength{\parskip}{0pt}%
                    \setlength{\partopsep}{0pt}%
                    \setlength{\parsep}{0pt}%
                    \setlength{\itemsep}{0pt}}
\newenvironment{ilist}{\begin{list}{-}{\icomact}}{\end{list}}
\newcommand{\iquote}[1]{\begin{list}{}{%
                        \icomact%
                        \setlength{\topsep}{1ex}%
                        \setlength{\rightmargin}{\leftmargin}}%
                    \item\relax{#1}\end{list}}
```

```

\newcommand{\ifix}[1]{\texttt{#1}}
\usepackage{alltt}
\newenvironment{ipre}{\icompact\begin{alltt}%
                    \footnotesize\begin{samepage}}
                    {\end{samepage}\end{alltt}}

\newcounter{iflag}
\setcounter{iflag}{4}
\RequirePackage{ifthen}
\newcommand{\ifootnote }[1]{\ifcase\value{iflag}% 0: lot
                             \or{ }(##1)%       1: caption
                             \or{ }(##1)%       2: firsthead
                             \or{ }(##1)%       3: head
                             \else\footnote{##1}\fi}

\newcommand{\iprefix}{1}
\newcommand{\ihyperlink }[2]{\hyperlink{\iprefix:##1}{##2}}
\newcommand{\ihyperref }[2]{\hyperref[\iprefix:##1]{##2}}
\newcommand{\ihypertarget }[2]{\ifcase\value{iflag}% 0: lot
                                \or\raisebox{1.7ex}{\hypertarget{\iprefix:##1}{}}% 1: caption
                                \or\raisebox{1.7ex}{\hypertarget{\iprefix:##1}{}}% 2: firsthead
                                \or%                                                3: head
                                \else\raisebox{1.7ex}{\hypertarget{\iprefix:##1}{}}\fi#2}
\newcommand{\iref }[1]{\ref{\iprefix:##1}}
\newcommand{\isection }[2]{\section%
                             {\label{\iprefix:##1}##2\relax}}
\newcommand{\isubsection }[2]{\subsection%
                                {\label{\iprefix:##1}##2\relax}}
\newcommand{\isubsubsection}[2]{\subsubsection%
                                  {\label{\iprefix:##1}##2\relax}}
\newcommand{\iparagraph }[2]{\paragraph%
                              {\label{\iprefix:##1}##2\relax}}
\newcommand{\isubparagraph }[1]{\subparagraph*%
                                  {\hspace{-\parindent}##1}\relax\ }
\newcommand{\ibiblio }[2]{\isubparagraph%
                             {\ihypertarget{B##1}{##1}} #2}
\newcommand{\ibibliolink }[1]{\ihyperlink{B##1}{##1}}
\setcounter{secnumdepth}{4}
\newcommand{\itableemptyhead}{\ihlineone%
                               \icolumn{1}{72}{???}\ihlineone}
\newcommand{\itableemptybody}{\relax}
\newcommand{\iadd}{&}
\newcommand{\ihlineone}{\tabularnewline\hline}
\newcommand{\ihlinetwo}{\setcounter{iflag}{4}%
                        \tabularnewline\hline\hline}
\newcommand{\ihlineemptyhead}{\setcounter{iflag}{4}%
                              \tabularnewline\hline}

\usepackage{longtable,array}
\newcommand{\itablesimple}[3]{%
  \setlength{\hfuzz}{20mm}%
  \setcounter{iflag}{1}%
  \begin{longtable}[1]{##1}%
  \vspace{-7mm}%
  \setcounter{iflag}{2}##2\endfirsthead%
  \setcounter{iflag}{3}##2\endhead%
  ##3\end{longtable}%
  \setcounter{iflag}{4}%
  \setlength{\hfuzz}{0pt}%
  \section*{}%
  \vspace{-11mm}}

```

```

\newcommand{\itablecaption}[5]{%
  \setlength{\hfuzz}{20mm}%
  \setcounter{iflag}{1}%
  \begin{longtable}[1]{#3}%
  \caption{\label{\iprefix:#1}#2}%
  \setcounter{iflag}{2}#4\endfirsthead%
  \setcounter{iflag}{3}#4\endhead%
  #5\end{longtable}%
  \setcounter{iflag}{4}%
  \setlength{\hfuzz}{0pt}%
  \section*{}%
  \vspace{-11mm}}
\usepackage{calc}
\def\iunitwidth{4pt}
\newcommand{\icolumn}[3]{\multicolumn{#1}%
  {|\>\raggedright\footnotesize}p{\iunitwidth*#2-\iunitwidth}|}{#3}}
\newenvironment{iequation}[2]{\begin{equation}\label{\iprefix:#1}#2}
  {\end{equation}}
\newenvironment{ifigure}[2]{\begin{figure}[H]%
  \setcounter{iflag}{1}%
  \caption{\label{\iprefix:#1}#2}%
  \setcounter{iflag}{4}%
  \setlength{\hfuzz}{20mm}%
  \begin{center}}%
  {\end{center}%
  \setlength{\hfuzz}{0mm}%
  \end{figure}}
\def\iunitx{4pt}
\def\iunity{8pt}
\newlength{\x}\newlength{\y}\newlength{\len}
\makeatletter
\newenvironment*{ipicture}[2]{\setlength{\unitlength}{1pt}%
  \setlength{\x}{\iunitx*\real{#1}}%
  \setlength{\y}{\iunity*\real{#2}}%
  \par\noindent%
  \setlength{\hfuzz}{30mm}%
  \begin{footnotesize}%
  \begin{picture}(\strip@pt\x,\strip@pt\y)}%
  {\end{picture}}%
  \end{footnotesize}%
  \setlength{\hfuzz}{0pt}}
\newcommand{\iput}[3]{%
  \setlength{\x}{\iunitx*\real{#1}}%
  \setlength{\y}{\iunity*\real{#2}+\iunitx*\real{0.4}}%
  \put(\strip@pt\x,\strip@pt\y){\texttt{#3}}}
\newcommand{\ihyperlinkput}[4]{%
  \setlength{\x}{\iunitx*\real{#1}}%
  \setlength{\y}{\iunity*\real{#2}+\iunitx*\real{0.4}}%
  \put(\strip@pt\x,\strip@pt\y){\texttt{\ihyperlink{#3}{#4}}}}
\newcommand{\ihyperrefput}[4]{%
  \setlength{\x}{\iunitx*\real{#1}}%
  \setlength{\y}{\iunity*\real{#2}+\iunitx*\real{0.4}}%
  \put(\strip@pt\x,\strip@pt\y){\texttt{\ihyperref {#3}{#4}}}}
\newcommand{\ilinux}[3]{%
  \setlength{\x}{\iunitx*\real{#1}}%
  \setlength{\y}{\iunity*\real{#2}}%
  \setlength{\len}{\iunitx*\real{#3}}%
  \put(\strip@pt\x,\strip@pt\y){\line(1,0){\strip@pt\len}}}

```

```

\newcommand{\iliney}[3]{%
    \setlength{\x}{\iunitx*\real{#1}}%
    \setlength{\y}{\iunity*\real{#2}}%
    \setlength{\len}{\iunity*\real{#3}}%
    \put(\strip@pt\x,\strip@pt\y){\line(0,1){\strip@pt\len}}
\newcommand{\ivector}[4]{%
    \setlength{\x}{\iunitx*\real{#1}}%
    \setlength{\y}{\iunity*\real{#2}}%
    \put(\strip@pt\x,\strip@pt\y){\vector(#3,#4){0}}
\newcommand{\ioval}[3]{%
    \setlength{\x}{\iunitx*\real{#1}}%
    \setlength{\y}{\iunity*\real{#2}}%
    \put(\strip@pt\x,\strip@pt\y){%
        \setlength{\x}{\iunitx*2}%
        \setlength{\y}{\iunity*2}%
        \oval(\strip@pt\x,\strip@pt\y)[#3]}
\makeatother

```

5.5 iso_8859_1.tex

```

\usepackage[T1]{fontenc}
\usepackage{lmodern}
\usepackage{textcomp}
\newcommand{\ibyte}[1]{\ifcase#1
\frame{0x00}\or           % 0x00   0
\frame{0x01}\or           % 0x01   1
\frame{0x02}\or           % 0x02   2
\frame{0x03}\or           % 0x03   3
\frame{0x04}\or           % 0x04   4
\frame{0x05}\or           % 0x05   5
\frame{0x06}\or           % 0x06   6
\frame{0x07}\or           % 0x07   7
\frame{0x08}\or           % 0x08   8
\frame{0x09}\or           % 0x09   9
\frame{0x0A}\or           % 0x0A  10
\frame{0x0B}\or           % 0x0B  11
\frame{0x0C}\or           % 0x0C  12
\frame{0x0D}\or           % 0x0D  13
\frame{0x0E}\or           % 0x0E  14
\frame{0x0F}\or           % 0x0F  15
\frame{0x10}\or           % 0x10  16
\frame{0x11}\or           % 0x11  17
\frame{0x12}\or           % 0x12  18
\frame{0x13}\or           % 0x13  19
\frame{0x14}\or           % 0x14  20
\frame{0x15}\or           % 0x15  21
\frame{0x16}\or           % 0x16  22
\frame{0x17}\or           % 0x17  23
\frame{0x18}\or           % 0x18  24
\frame{0x19}\or           % 0x19  25
\frame{0x1A}\or           % 0x1A  26
\frame{0x1B}\or           % 0x1B  27
\frame{0x1C}\or           % 0x1C  28
\frame{0x1D}\or           % 0x1D  29
\frame{0x1E}\or           % 0x1E  30
\frame{0x1F}\or           % 0x1F  31

```

{ }\ !\br/>\textquotedblright\ \#\br/>\\$\br/>\%\br/>\&\br/>'\ +\ ,\ \textendash\ .\br/>/\br/>0\ 1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9\ :\br/>;\br/>\textless\ =\br/>\textgreater\ ?\ @\ A\ B\ C\ D\ E\ F\ G\ H\ I\ J\ K\ L\ M\ N\ O	or	% 0x20 32 space % 0x21 33 ! % 0x22 34 " % 0x23 35 # % 0x24 36 \$ % 0x25 37 % % 0x26 38 & % 0x27 39 ' % 0x28 40 (% 0x29 41) % 0x2A 42 * % 0x2B 43 + % 0x2C 44 , % 0x2D 45 - % 0x2E 46 . % 0x2F 47 / % 0x30 48 0 % 0x31 49 1 % 0x32 50 2 % 0x33 51 3 % 0x34 52 4 % 0x35 53 5 % 0x36 54 6 % 0x37 55 7 % 0x38 56 8 % 0x39 57 9 % 0x3A 58 : % 0x3B 59 ; % 0x3C 60 < % 0x3D 61 = % 0x3E 62 > % 0x3F 63 ? % 0x40 64 @ % 0x41 65 A % 0x42 66 B % 0x43 67 C % 0x44 68 D % 0x45 69 E % 0x46 70 F % 0x47 71 G % 0x48 72 H % 0x49 73 I % 0x4A 74 J % 0x4B 75 K % 0x4C 76 L % 0x4D 77 M % 0x4E 78 N % 0x4F 79 O
--	----	---

P\or	% 0x50	80	P
Q\or	% 0x51	81	Q
R\or	% 0x52	82	R
S\or	% 0x53	83	S
T\or	% 0x54	84	T
U\or	% 0x55	85	U
V\or	% 0x56	86	V
W\or	% 0x57	87	W
X\or	% 0x58	88	X
Y\or	% 0x59	89	Y
Z\or	% 0x5A	90	Z
[\or	% 0x5B	91	[
\textbackslash\or	% 0x5C	92	\
]\or	% 0x5D	93]
\^{ }\or	% 0x5E	94	^
\discretionary{_\textendash}{_}\or	% 0x5F	95	_
\' \or	% 0x60	96	'
a\or	% 0x61	97	a
b\or	% 0x62	98	b
c\or	% 0x63	99	c
d\or	% 0x64	100	d
e\or	% 0x65	101	e
f\or	% 0x66	102	f
g\or	% 0x67	103	g
h\or	% 0x68	104	h
i\or	% 0x69	105	i
j\or	% 0x6A	106	j
k\or	% 0x6B	107	k
l\or	% 0x6C	108	l
m\or	% 0x6D	109	m
n\or	% 0x6E	110	n
o\or	% 0x6F	111	o
p\or	% 0x70	112	p
q\or	% 0x71	113	q
r\or	% 0x72	114	r
s\or	% 0x73	115	s
t\or	% 0x74	116	t
u\or	% 0x75	117	u
v\or	% 0x76	118	v
w\or	% 0x77	119	w
x\or	% 0x78	120	x
y\or	% 0x79	121	y
z\or	% 0x7A	122	z
\{\or	% 0x7B	123	{
\textbar\or	% 0x7C	124	
\}\or	% 0x7D	125	}
\~{ }\or	% 0x7E	126	~
\frame{0x7F}\or	% 0x7F	127	del

<code>\frame{0x80}\or</code>	% 0x80 128
<code>\frame{0x81}\or</code>	% 0x81 129
<code>\frame{0x82}\or</code>	% 0x82 130
<code>\frame{0x83}\or</code>	% 0x83 131
<code>\frame{0x84}\or</code>	% 0x84 132
<code>\frame{0x85}\or</code>	% 0x85 133
<code>\frame{0x86}\or</code>	% 0x86 134
<code>\frame{0x87}\or</code>	% 0x87 135
<code>\frame{0x88}\or</code>	% 0x88 136
<code>\frame{0x89}\or</code>	% 0x89 137
<code>\frame{0x8A}\or</code>	% 0x8A 138
<code>\frame{0x8B}\or</code>	% 0x8B 139
<code>\frame{0x8C}\or</code>	% 0x8C 140
<code>\frame{0x8D}\or</code>	% 0x8D 141
<code>\frame{0x8E}\or</code>	% 0x8E 142
<code>\frame{0x8F}\or</code>	% 0x8F 143
<code>\frame{0x90}\or</code>	% 0x90 144
<code>\frame{0x91}\or</code>	% 0x91 145
<code>\frame{0x92}\or</code>	% 0x92 146
<code>\frame{0x93}\or</code>	% 0x93 147
<code>\frame{0x94}\or</code>	% 0x94 148
<code>\frame{0x95}\or</code>	% 0x95 149
<code>\frame{0x96}\or</code>	% 0x96 150
<code>\frame{0x97}\or</code>	% 0x97 151
<code>\frame{0x98}\or</code>	% 0x98 152
<code>\frame{0x99}\or</code>	% 0x99 153
<code>\frame{0x9A}\or</code>	% 0x9A 154
<code>\frame{0x9B}\or</code>	% 0x9B 155
<code>\frame{0x9C}\or</code>	% 0x9C 156
<code>\frame{0x9D}\or</code>	% 0x9D 157
<code>\frame{0x9E}\or</code>	% 0x9E 158
<code>\frame{0x9F}\or</code>	% 0x9F 159
<code>{ }\or</code>	% 0xA0 160 no-break space
<code>\textexclamdown\or</code>	% 0xA1 161 ¡
<code>\textcent\or</code>	% 0xA2 162 ¢
<code>\pounds\or</code>	% 0xA3 163 £
<code>\textcurrency\or</code>	% 0xA4 164 ¤
<code>\textyen\or</code>	% 0xA5 165 ¥
<code>\textbrokenbar\or</code>	% 0xA6 166 ¦
<code>\S\or</code>	% 0xA7 167 §
<code>\textasciidieresis\or</code>	% 0xA8 168 ¨
<code>\textcopyright\or</code>	% 0xA9 169 ©
<code>\textordfeminine\or</code>	% 0xAA 170 ª
<code>\guillemotleft\or</code>	% 0xAB 171 «
<code>\textlnot\or</code>	% 0xAC 172 ¬
<code>\textendash\or</code>	% 0xAD 173 soft hyphen
<code>\textregistered\or</code>	% 0xAE 174 ®
<code>\textasciimacron\or</code>	% 0xAF 175 ¯

<code>\textdegree\or</code>	% 0xB0 176 °
<code>\textdegree\or</code>	% 0xB1 177 °
<code>\texttwosuperior\or</code>	% 0xB2 178 ²
<code>\textthreesuperior\or</code>	% 0xB3 179 ³
<code>\textasciiacute\or</code>	% 0xB4 180 ´
<code>\textmu\or</code>	% 0xB5 181 µ
<code>\P\or</code>	% 0xB6 182 ¶
<code>\textperiodcentered\or</code>	% 0xB7 183 ·
<code>\c{ } \or</code>	% 0xB8 184 ,
<code>\textonesuperior\or</code>	% 0xB9 185 ¹
<code>\textordmasculine\or</code>	% 0xBA 186 º
<code>\guillemotright\or</code>	% 0xBB 187 »
<code>\textonequarter\or</code>	% 0xBC 188 ¼
<code>\textonehalf\or</code>	% 0xBD 189 ½
<code>\textthreequarters\or</code>	% 0xBE 190 ¾
<code>\textquestiondown\or</code>	% 0xBF 191 ¿
<code>\`{A}\or</code>	% 0xC0 192 À
<code>\'{A}\or</code>	% 0xC1 193 Á
<code>\^{A}\or</code>	% 0xC2 194 Â
<code>\~{A}\or</code>	% 0xC3 195 Ã
<code>\"{A}\or</code>	% 0xC4 196 Ä
<code>\AA\or</code>	% 0xC5 197 Å
<code>\AE\or</code>	% 0xC6 198 Æ
<code>\c{C}\or</code>	% 0xC7 199 Ç
<code>\`{E}\or</code>	% 0xC8 200 È
<code>\'{E}\or</code>	% 0xC9 201 É
<code>\^{E}\or</code>	% 0xCA 202 Ê
<code>\"{E}\or</code>	% 0xCB 203 Ë
<code>\`{I}\or</code>	% 0xCC 204 Ì
<code>\'{I}\or</code>	% 0xCD 205 Í
<code>\^{I}\or</code>	% 0xCE 206 Î
<code>\"{I}\or</code>	% 0xCF 207 Ï
<code>\DH\or</code>	% 0xD0 208 Ð
<code>\~{N}\or</code>	% 0xD1 209 Ñ
<code>\`{O}\or</code>	% 0xD2 210 Ò
<code>\'{O}\or</code>	% 0xD3 211 Ó
<code>\^{O}\or</code>	% 0xD4 212 Ô
<code>\~{O}\or</code>	% 0xD5 213 Õ
<code>\"{O}\or</code>	% 0xD6 214 Ö
<code>\texttimes\or</code>	% 0xD7 215 ×
<code>\O\or</code>	% 0xD8 216 Ø
<code>\`{U}\or</code>	% 0xD9 217 Ù
<code>\'{U}\or</code>	% 0xDA 218 Ú
<code>\^{U}\or</code>	% 0xDB 219 Û
<code>\"{U}\or</code>	% 0xDC 220 Ü
<code>\`{Y}\or</code>	% 0xDD 221 Ý
<code>\TH\or</code>	% 0xDE 222 Þ
<code>\ss\or</code>	% 0xDF 223 ß

\`{a}\or	% 0xE0 224 à
\' {a}\or	% 0xE1 225 á
\^{a}\or	% 0xE2 226 â
\~{a}\or	% 0xE3 227 ã
\" {a}\or	% 0xE4 228 ä
\aa\or	% 0xE5 229 å
\ae\or	% 0xE6 230 æ
\c{c}\or	% 0xE7 231 ç
\`{e}\or	% 0xE8 232 è
\' {e}\or	% 0xE9 233 é
\^{e}\or	% 0xEA 234 ê
\" {e}\or	% 0xEB 235 ë
\`{i}\or	% 0xEC 236 ì
\' {i}\or	% 0xED 237 í
\^{i}\or	% 0xEE 238 î
\" {i}\or	% 0xEF 239 ï
\dh\or	% 0xF0 240 ð
\~{n}\or	% 0xF1 241 ñ
\`{o}\or	% 0xF2 242 ò
\' {o}\or	% 0xF3 243 ó
\^{o}\or	% 0xF4 244 ô
\~{o}\or	% 0xF5 245 õ
\" {o}\or	% 0xF6 246 ö
\textdiv\or	% 0xF7 247 ÷
\o\or	% 0xF8 248 ø
\`{u}\or	% 0xF9 249 ù
\' {u}\or	% 0xFA 250 ú
\^{u}\or	% 0xFB 251 û
\" {u}\or	% 0xFC 252 ü
\' {y}\or	% 0xFD 253 ý
\th\or	% 0xFE 254 þ
\" {y}\else	% 0xFF 255 ÿ
\frame{#1d}\fi}	% else

5.6 main3.tex

```
\documentclass[12pt, a4paper]{article}
\usepackage[utf8]{inputenc}
\usepackage{geometry}
\geometry{left=30mm,right=30mm,top=30mm,bottom=20mm}
\usepackage{float}
\usepackage[linktocpage,colorlinks,linkcolor=blue,%
            citecolor=blue,hyperfootnotes=false,%
            bookmarks=false]{hyperref}
\usepackage[T1]{fontenc}
\usepackage{textcomp}
\newcommand{\idoublequote}{\textquotedblright}
\newcommand{\idash}{\textendash}
\newcommand{\islash}{/}
\newcommand{\ibackslash}{\textbackslash}
\newcommand{\iunderscore}{\discretionary{\_}{\_}{\_}}
\newcommand{\ibar}{\textbar}
\input{map.tex}
\begin{document}
\title{foo5}
\author{nobody}
\maketitle
\sloppy
\input{foo5.tex}
\end{document}
```

6 Bibliography

ISO-8859-1 ISO/IEC 8859-1 Information technology. 8-bit single-byte coded graphic character sets. Part 1. Latin alphabet No. 1. 1998.

ISO-8859-5 ISO/IEC 8859-5 Information technology. 8-bit single-byte coded graphic character sets. Part 5. Latin/Cyrillic alphabet. 1999.

ISO-8859-7 ISO/IEC 8859-7 Information technology. 8-bit single-byte coded graphic character sets. Part 7. Latin/Greek alphabet. 2003.

LaTeX The document markup language and document preparation system for the TeX typesetting program. *LaTeX* was written by Leslie Lamport in the early 1980s. The current version is *LaTeX2e*.

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