

# randintlist

Creating random integer number lists,  
with multiple numbers or not,  
sorted or not.

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<https://github.com/cpierquet/latex-packages/tree/main/randintlist>

10 numbers, between 1 and 100, without repetition:

94,33,43,68,6,16,60,1,27,34

The 5th value is:

6

10 numbers, between 1 and 100, without multiples of 5:

97,73,79,82,9,31,66,39,19,11

The 9th value is:

19

15 numbers, between 1 and 20, with repetition:

18,9,7,19,9,10,2,15,18,6,10,5,19,15,2

The last value is:

2

6 sorted numbers, between 1 and 51, without repetition:

ascending : 4,10,18,36,37,44

descending : 36>31>14>12>5>1

- 
1. The *luarandom* package do the same things, but with the obligation to compile with *Lua<sup>A</sup>T<sub>E</sub>X*.
  2. The *tuple* package is so much better... but I keep *randintlist*, without new features...
-

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# 1 Loading, useful packages

In order to load `randintlist`, simply use:

```
\usepackage{randintlist}
```

Loaded packages are `ifthen`, `simplekv`, `listofitems`, `randomlist`, `xintexpr` and `xstring`.

## 2 The Macros

### 2.1 Global usage

Package `randintlist` supports the creation of random integer number lists where a number will appear only once or multiple times. Generated lists can be used with `listofitems`.

**All engines T<sub>E</sub>X are compatible with this package.**

### 2.2 Generate the list

```
%generate list  
\randintlist[keys]{\macro}
```

Available keys are:

- `min`: minimum value (default 1);
- `max`: maximum value (default 50);
- `nb`: number of values (default 6);
- `sep`: separator for the list (default ,);
- `sort`: sorting options, within no/asc/dec (default no);
- `repeat`: boolean to authorize repeating values (default false);
- `exclude`: list of excluded values (default empty);
- `seed`: random seed value according to used packages (default -).

```
%default values  
\randintlist{\mylistA}\mylistA  
31,42,36,26,25,46
```

```
%10 between 1 and 50, with ascending  
\randintlist[sort=asc,min=1,max=50,nb=10]{\mylistB}\mylistB  
2,7,8,21,23,37,38,44,45,46
```

```
%15 between 1 and 50, with ascending and repetitions allowed  
\randintlist[sort=asc,min=1,max=50,nb=15,repeat]{\mylistC}\mylistC  
1,2,2,7,8,8,12,12,16,22,32,35,37,41,43
```

```
%15 between 1 and 50, without multiples of 5
\randintlist[%
  sort=asc,min=1,max=50,nb=15,repeat,%
  exclude={5,10,15,20,25,30,35,40,45,50}]%
{\mylistC}\mylistC
```

```
2,6,8,18,18,21,22,23,36,38,38,39,41,43,48
```

```
%list used with listofitems
```

```
\randintlist{\mylistD}\mylistD\par
\readlist*\mylistused{\mylistD}\showitems{\mylistused}\par
\mylistused[1]; \mylistused[-1]
```

```
11,32,31,14,3,41


|    |    |    |    |   |    |
|----|----|----|----|---|----|
| 11 | 32 | 31 | 14 | 3 | 41 |
|----|----|----|----|---|----|


11; 41
```

## 2.3 Accessing elements

```
%accessing item
```

```
\getitemfromrandintlist[separator]{\macro}{index}[\macrores]
```

```
%with default keys
```

```
\randintlist{\mylistE}raw list: \mylistE\par
items list:\par
\xintFor* #1 in {\xintSeq{1}{6}}\do{\getitemfromrandintlist{\mylistE}{#1}\par}
first element: \getitemfromrandintlist{\mylistE}{1}\par
```

```
raw list: 40,2,49,15,11,9
```

```
items list:
```

```
40
```

```
2
```

```
49
```

```
15
```

```
11
```

```
9
```

```
first element: 40
```

```
\getitemfromrandintlist{\mylistE}{3}[\myres]%
```

```
third element: \myres
```

```
third element: 49
```

## 2.4 Version française

Voilà les commandes en version française, la syntaxe et les clés ne seront pas explicitées.

```
%obtenir la liste
\ListeRandint[Min=.,Max=.,Nb=.,Repet=.,Graine=.,Tri=.,Sep=.,Exclure=..]{\macro}

%extraire un élément
\ExtraireEltListeRandint[sep]{\macro}{position}[\macrores]
```

```
%liste
\ListeRandint[Min=5,Max=15,Nb=7,Repet,Tri=croiss,Sep={/}]{\maliste}\maliste\
%élément
\ExtraireEltListeRandint[/]{\maliste}{4}

6/10/10/10/12/14/14
10
```

```
%liste
\ListeRandint[Min=50,Max=100,Nb=10,Repet,Tri=croiss]{\malisteB}\malisteB\
%troisième élément
\ExtraireEltListeRandint{\malisteB}{3}[\montroisieme]%
troisième élément : \montroisieme

52,60,62,68,71,76,78,90,95,97
troisième élément : 62
```

### 3 Example

The following example uses TikZ, and comes from luarandom's documentation.

```
\begin{tikzpicture}[scale=0.75]
  \randintlist[min=1,max=100,nb=100]{\mylistsquare}
  \draw[thin,gray] (0,0) grid (10,10) ;
  \foreach \i in {1,...,100}{%
    \xdef\tmpnumber{\getitemfromrandintlist{\mylistsquare}{\i}}%
    \xdef\tmpnumberrow{\xinteval{\xintiiRem{\i-1}{10}}}%
    \xdef\tmpnumbercol{\xinteval{\xintiiQuo{\i-1}{10}}}%
    \draw ({0.5+\tmpnumbercol},{0.5+\tmpnumberrow}) node {\tmpnumber} ;
  }%
\end{tikzpicture}
```

97	93	7	3	71	67	39	59	31	52
47	68	5	46	91	76	92	21	95	48
84	81	79	27	1	11	45	87	54	26
55	65	22	62	88	43	60	10	96	25
13	15	70	80	64	77	35	73	32	57
38	51	61	16	33	12	17	78	50	83
9	19	69	44	30	82	42	53	98	24
41	37	100	86	66	8	2	56	58	34
28	49	6	63	72	89	23	20	29	75
18	85	4	36	74	99	14	90	40	94

## 4 History

0.1.6: Improvements in  $\LaTeX$ 3 version of the package  
0.1.5:  $\LaTeX$ 3 version of the package  
0.1.4: Bugfix  
0.1.3: Bugfix  
0.1.2: Changing name of internal macro  
0.1.1: Possibility to exclude values  
0.1.0: Initial version

## 5 The code

```
% Author      : C. Pierquet
% licence     : Released under the LaTeX Project Public License v1.3c or later, see
               http://www.latex-project.org/lppl.txt

\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{randintlist}[2025/10/17 0.1.6 Create a list of random numbers with or without multiple values]

%-----History
% 0.1.6 Improvements with latex3
% 0.1.5 13 version of the package
% 0.1.4 Bugfix
% 0.1.3 new usage of extracting element (with storing \macro)
% 0.1.2 Changing name of macro
% 0.1.1 Possibility to exclude values
% 0.1.0 Initial version

%-----Packages
\RequirePackage{simplekv}
\RequirePackage{listofitems}
\RequirePackage{randomlist}
\RequirePackage{xintexpr}
\RequirePackage{xstring}
\RequirePackage{ifthen}

%-----Macros (latex3) for sorting and seed
\ExplSyntaxOn
\cs_new_eq:NN \randintseed \sys_gset_rand_seed:n
\NewDocumentCommand\intascsortlist{m}
{
  \clist_sort:Nn #1
  {
    \fp_compare:nNnTF {##1} > {##2}
    { \sort_return_swapped: }
    { \sort_return_same: }
  }
}
\NewDocumentCommand\intdessortlist{m}
{
  \clist_sort:Nn #1
  {
    \fp_compare:nNnTF {##1} < {##2}
    { \sort_return_swapped: }
    { \sort_return_same: }
  }
}
\ExplSyntaxOff

%----Internal macro (latex2) for testing if element is in list
\newcommand\ifintvalueinlist[2]{\IfSubStr{,#2,}{,#1,}}

\newcommand\boolvalueinlist[2]{\IfSubStr{,#2,}{,#1,}{\def\resisinlist{1}}{\def\resisinlist{0}}}

\newcommand\testifintvalueinlist[4]{%
  \IfSubStr{,#2,}{,#1,}{\xdef\RESTMPVALUE{1}}{\xdef\RESTMPVALUE{0}}%
  \xintifboolexpr{ \RESTMPVALUE == 1}{#3}{#4}%
}
```

```

}

%---Macro for generating
\defKV[randomlistintegers]{%
  min=\def\TAEEmin{#1},%
  max=\def\TAEEmax{#1},%
  nb=\def\TAEEnb{#1},%
  sep=\def\TAEEsp{#1},%
  sort=\def\TAEETri{#1},%
  seed=\def\TAESeed{#1},%
  exclude=\def\TAEExcluded{#1}
}

\setKVdefault[randomlistintegers]{%
  min=1,%
  max=50,%
  nb=6,%
  sep={,},%
  sort=no,%
  repeat=false,%
  seed={-},%
  exclude={}
}

\NewList{tmprandintlist}

\NewDocumentCommand\randintlist{ O{ } m }{%1=keys,2=listname
  \useKVdefault[randomlistintegers]%
  \setKV[randomlistintegers]{#1}%
  \ifboolKV[randomlistintegers]{repeat}%repeat or not
    {%repeat allowed
      \IfStrEq{\TAESeed}{-}%
        {}%
        {%
          \randintseed{\TAESeed}%
        }%
      %list creation of first element
      \def\resisinlist{1}%
      \whiledo{\resisinlist=1}{%
        \xdef\tmpresrandint{\fpeval{randint(\TAEEmin,\TAEEmax)}}%
        \boolvalueinlist{\tmpresrandint}{\TAEExcluded}%
      }%
      \xdef#2{\tmpresrandint}%
      %list creation of other elements
      \xintFor* ##1 in {\xintSeq{2}{\TAEEnb}}%
        \do{%
          \def\resisinlist{1}%
          \whiledo{\resisinlist=1}{%
            \xdef\tmpresrandint{\fpeval{randint(\TAEEmin,\TAEEmax)}}%
            \boolvalueinlist{\tmpresrandint}{\TAEExcluded}%
          }%
          \xdef#2{#2,\tmpresrandint}%
        }%
    }%
  {%no repeating
    %randomize numbers
    \IfStrEq{\TAESeed}{-}%
      {}%
      {%
        \RLsetrandomseed{\TAESeed}%
      }%
    \ClearList{tmprandintlist}%clearing the list
    \xintFor* ##1 in {\xintSeq{\TAEEmin}{\TAEEmax}}%
      \do{%
        \ifintvalueinlist{##1}{\TAEExcluded}%
          {}%
          {%
            \InsertRandomItem{tmprandintlist}{##1}%
          }%
      }%
    %list creation (first then other)
    \xdef#2{\tmprandintlist[0]}%
  }
}

```



```

        \xintFor* ##1 in {\xintSeq{1}{\TAEEnb-1}}%
        \do{%
            \xdef#2{#2,\tmprandintlist[##1]}%
        }%
    }%
%sorting
\IfStrEq{\TAEETri}{asc}%if ascending
{\intascsortlist{#2}}%
{}%
\IfStrEq{\TAEETri}{des}%if descending
{\intdessortlist{#2}}%
{}%
\StrSubstitute{#2}{,}{\TAEEsep}[#2]%swapping separator if necessary
}

%-----Macro for extracting
\NewDocumentCommand\getitemfromrandintlist{ O{,} m m o }{%
    \IfStrEq{#1}{/}%
    {%useful
        \setsepchar[.]{#1}%
    }%
    {%
        \setsepchar{#1}%
    }%
    \readlist*\TMPLISTRANDINT{#2}%
    \IfNoValueTF{#4}{\TMPLISTRANDINT[#3]}{\itemtomacro\TMPLISTRANDINT[#3]#4}%
}

%-----french version
\defKV[randomlisteentiers]{%
    Min=\def\TAEEmin{#1},%
    Max=\def\TAEEmax{#1},%
    Nb=\def\TAEEnb{#1},%
    Sep=\def\TAEEsep{#1},%
    Tri=\def\TAEETri{#1},%
    Graine=\def\TAESeed{#1},%
    Exclure=\def\TAEExcluded{#1}
}

\setKVdefault[randomlisteentiers]{%
    Min=1,%
    Max=50,%
    Nb=6,%
    Sep={,},%
    Tri=non,%
    Repet=false,%
    Graine={-},%
    Exclure={}
}

\NewDocumentCommand\ListeRandint{ O{ } m }{%1=keys,2=listname
    \useKVdefault[randomlisteentiers]%
    \setKV[randomlisteentiers]{#1}%
    \ifboolKV[randomlisteentiers]{Repet}%repeat or not
        {%repeat allowed
            \IfStrEq{\TAESeed}{-}%
            {}%
            {%
                \randintseed{\TAESeed}%
            }%
        }%
        %list creation of first element
        \def\resisinlist{1}%
        \whiledo{\resisinlist=1}{%
            \xdef\tmpresrandint{\fpeval{randint(\TAEEmin,\TAEEmax)}}%
            \boolvalueinlist{\tmpresrandint}{\TAEExcluded}%
        }%
        \xdef#2{\tmpresrandint}%
        %list creation of other elements
        \xintFor* ##1 in {\xintSeq{2}{\TAEEnb}}%
        \do{%
            \def\resisinlist{1}%
            \whiledo{\resisinlist=1}{%

```

