# 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

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10 numbers, between 1 and 100, without repetition:
8,54,79,96,62,51,87,55,61,39
The 5th value is:
62

10 numbers, between 1 and 100, without multiples of 5:
19,34,37,72,24,92,76,36,44,89
The 9th value is:
44

15 numbers, between 1 and 20, with repetition:
15,18,12,17,9,17,20,17,5,18,9,1,16,15,14
The last value is:
14

6 sorted numbers, between 1 and 51, without repetition:
ascending : 1,24,28,39,42,44
descending : 36>31>29>18>10>2

---

1. *The luarandom package do the same things, but with the obligation to compile with LuaLaTeX.*
2. *The tuple package is so much better... but I keep* `randintlist`*, without new features...*

# Contents

# 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 te used with listofitems.

**All engines TEX 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
```

31,35,9,40,32,50

```
%10 between 1 and 50, with ascending
\randintlist[sort=asc,min=1,max=50,nb=10]{\mylistB}\mylistB
```

12,16,18,27,38,40,41,44,46,48

```
%15 between 1 and 50, with ascending and repetitions allowed
\randintlist[sort=asc,min=1,max=50,nb=15,repeat]{\mylistC}\mylistC
```

1,3,4,6,7,9,10,10,18,24,28,35,38,47,47

```
%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
```

2,2,3,7,7,9,16,18,23,28,29,36,38,38,47

```
%list used with listofitems
\randintlist{\mylistD}\mylistD\par
\readlist*\mylistused{\mylistD}\showitems{\mylistused}\par
\mylistused[1]; \mylistused[-1]
```

26,8,37,25,44,4
26 8 37 25 44 4
26; 4

## 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: 3,24,33,2,15,27
items list:
3
24
33
2
15
27
first element: 3

```
\getitemfromrandintlist{\mylistE}{3}[\myres]%
third element: \myres
```

third element: 33

## 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}
```

5/7/7/8/11/13/13
8

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

56,62,62,70,74,79,82,83,86,96
troisième élément : 62

## 3 Example

The following example uses Ti*k*Z, 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}
```

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

# 4 History

0.20a: Improvements in LaTeX3 version of the package
0.1.6: Improvements in LaTeX3 version of the package
0.1.5: LaTeX3 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 l3 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\TAEEsep{#1},%
    sort=\def\TAEEtri{#1},%
    seed=\def\TAEEseed{#1},%
    exclude=\def\TAEEexcluded{#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{\TAEEseed}{-}%
                {}%
                {%
                    \randintseed{\TAEEseed}%
                }%
            %list creation of first element
            \def\resisinlist{1}%
            \whiledo{\resisinlist=1}{%
                \xdef\tmpresrandint{\fpeval{randint(\TAEEmin,\TAEEmax)}}%
                \boolvalueinlist{\tmpresrandint}{\TAEEexcluded}%
            }%
            \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}{\TAEEexcluded}%
                    }%
                \xdef#2{#2,\tmpresrandint}%
                }%
        }%
        {%no repeating
            %randomize numbers
            \IfStrEq{\TAEEseed}{-}%
                {}%
                {%
                    \RLsetrandomseed{\TAEEseed}%
                }%
            \ClearList{tmprandintlist}%clearing the list
            \xintFor* ##1 in {\xintSeq{\TAEEmin}{\TAEEmax}}%
                \do{%
                    \ifintvalueinlist{##1}{\TAEEexcluded}%
                        {}%
                        {%
                            \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]%swipping 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\TAEEseed{#1},%
    Exclure=\def\TAEEexcluded{#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{\TAEEseed}{-}%
                {}%
                {%
                    \randintseed{\TAEEseed}%
                }%
            %list creation of first element
            \def\resisinlist{1}%
            \whiledo{\resisinlist=1}{%
                \xdef\tmpresrandint{\fpeval{randint(\TAEEmin,\TAEEmax)}}%
                \boolvalueinlist{\tmpresrandint}{\TAEEexcluded}%
            }%
            \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}{\TAEEexcluded}%
                    }%
                \xdef#2{#2,\tmpresrandint}%
                }%
        }%
        {%no repeating
            %randomize numbers
            \IfStrEq{\TAEEseed}{-}%
                {}%
                {%
                    \RLsetrandomseed{\TAEEseed}%
                }%
            \ClearList{tmprandintlist}%clearing the list
            \xintFor* ##1 in {\xintSeq{\TAEEmin}{\TAEEmax}}%
                \do{%
                    \ifintvalueinlist{##1}{\TAEEexcluded}%
                        {}%
                        {%
                            \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}{croiss}%if ascending
        {\intascsortlist{#2}}%
        {}%
    \IfStrEq{\TAEEtri}{decroiss}%if descending
        {\intdessortlist{#2}}%
        {}%
    \StrSubstitute{#2}{,}{\TAEEsep}[#2]%swipping separator if necessary
}

%-----Macro for extracting
\NewDocumentCommand\ExtraireEltListeRandint{ O{,} m m o }{%
    \IfStrEq{#1}{/}%
        {%useful
            \setsepchar[.]{#1}%
        }%
        {%
            \setsepchar{#1}%
        }%
```