randintlist

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

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https://github.com/cpierquet/randintlist

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10 numbers, between 1 and 100, without repetition :

38,100,82,8,94,46,68,43,75,61

The 5th value is :

94

---

15 numbers, between 1 and 20, with repetition :

2,3,13,8,6,12,16,18,15,6,10,14,4,3,2

The last value is :

2

---

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

ascending : 3,4,27,42,44,49

descending : 49>44>36>30>26>13

The luarandom package do the same things, but with the obligation to compile with LuaLATEX.

Contents

1 Loading, useful packages

In order to load `randintlist`, simply use :

```
\usepackage{randintlist}
```

Loaded packages are `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) ;

- `seed` : random seed value according to used packages (default -).

```
%default values
\randintlist{\mylistA}\mylistA
```

16,34,17,10,4,12

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

8,19,20,24,32,33,36,39,43,46

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

4,4,10,15,23,30,31,35,37,37,38,39,40,43,44

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

22,15,45,35,33,6
|22|15|45|35|33|6|
22 ; 6

2.3 Accessing elements

```
%accessing item
\getitemfromrandintlist[separator]{\macro}{index}
```

```
%with default keys
\randintlist{\mylistE}raw list : \mylistE\par
items list :\par
\xintFor* #1 in {\xintSeq{1}{6}}\do{\getitemfromrandintlist{\mylistE}{#1}\par}
\getitemfromrandintlist{\mylistE}{1}
```

raw list : 1,31,7,45,8,37
items list :
1
31
7
45
8
37
1

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=...]{\macro}

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

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

%élément
\ExtraireEltListeRandint[/]{\maliste}{4}
```

5/6/8/9/10/10/12
9

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}
```

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

4 History

```
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.txtf

\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{randintlist}[2024/09/23 0.1.0 Create a list of random numbers with or without multiple values]

%------History
% 0.1.0 Initial version

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

%-----Macros 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

%----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}
}

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

\NewList{tmprandintlist}

\NewDocumentCommand\randintlist{ O{} m }{%1=keys,2=listname
```

```latex
    \useKVdefault[randomlistintegers]%
    \setKV[randomlistintegers]{#1}%
    \ifboolKV[randomlistintegers]{repeat}%repeat or not
        {%repeat allowed
            \IfStrEq{\TAEEseed}{-}%
                {}%
                {%
                    \randintseed{\TAEEseed}%
                }%
            %list creation (first then other)
            \xdef#2{\fpeval{randint(\TAEEmin,\TAEEmax)}}%
            \xintFor* ##1 in {\xintSeq{2}{\TAEEnb}}%
                \do{\xdef#2{#2,\fpeval{randint(\TAEEmin,\TAEEmax)}}}%
        }%
        {%no repeating
            %randomize numbers
            \IfStrEq{\TAEEseed}{-}%
                {}%
                {%
                    \RLsetrandomseed{\TAEEseed}%
                }%
            \ClearList{tmprandintlist}%clearing the list
            \xintFor* ##1 in {\xintSeq{\TAEEmin}{\TAEEmax}}%
                \do{\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 }{%
    \IfEq{#1}{/}%
        {%
            \setsepchar[.]{#1}%
        }%
        {%
            \setsepchar{#1}%
        }%
    \readlist*\TMPLISTRANDINT{#2}%
    \TMPLISTRANDINT[#3]%
}
```