

# Package ‘pbbd’

September 8, 2021

**Version** 1.0.0

**Date** 2021-09-06

**Title** Position Balanced and Nearly Position Balanced Block Designs

**Author** B N Mandal [aut, cre],  
Pramod Katore [aut],  
Sukanta Dash [aut],  
Rajender Parsad [aut]

**Maintainer** B N Mandal <mandal.stat@gmail.com>

**Depends** R (>= 4.1.0)

**Imports** ibd (>= 1.5)

**Description** Generates a position balanced or nearly position balanced block design with given parameters. This package can also convert a given proper and equireplicate block design into a position balanced or nearly position balanced block design.

**License** GPL (>= 2)

**NeedsCompilation** no

**Repository** CRAN

**Date/Publication** 2021-09-08 08:40:02 UTC

## R topics documented:

balancify . . . . .	2
pbbd . . . . .	3
<b>Index</b>	<b>4</b>

---

 balancify

*Position balanced and nearly position balanced block design*


---

**Description**

This function generates a position balanced or nearly position balanced block design from a given equireplicate and proper block design

**Usage**

```
balancify(d1)
```

**Arguments**

d1                   Block design specified in the form of a b x k matrix with elements labelled as 1 to v where b is number of blocks, k is block size and v is number of treatments

**Value**

design               (Nearly) position balanced block design  
P                    Treatment by Position incidence matrix

**Note**

Input design should be equireplicate that is, each treatment should have equal replications. Block sizes should be same for each block. For any issue, kindly report to author.

**Author(s)**

B N Mandal <mandal.stat@gmail.com>

**Examples**

```
d1 = matrix(c(3, 4, 6,
5, 6, 7,
1, 4, 5,
2, 4, 7,
1, 3, 7,
1, 2, 6,
2, 3, 5), ncol = 3, byrow = TRUE)
balancify(d1)
```

```
d1 = matrix(c(7, 8, 9,
1, 6, 8,
1, 3, 9,
4, 6, 9,
5, 6, 7,
1, 4, 5,
3, 5, 8,
), ncol = 3, byrow = TRUE)
balancify(d1)
```

```

      3 ,4 ,7 ,
      2 ,5 ,9 ,
      2 ,4 ,8 ,
      1 ,2 ,7 ,
      2 ,3 ,6), ncol = 3, byrow = TRUE)
balancify(d1)

```

---

pbbd

---

*Position balanced and nearly position balanced block design*


---

### Description

This function generates a position balanced or nearly position balanced block design with given parameters. User needs to specify number of treatments ( $v$ ), number of blocks ( $b$ ) and block size ( $k$ )

### Usage

```
pbbd(v, b, k)
```

### Arguments

$v$	Number of treatments
$b$	Number of blocks
$k$	Block size

### Value

parameters	Parameters $v, b, r, k$ . Here $r$ is number of replications of each treatment
efficiencies	A- and D-efficiency of the design generated
design	Position balanced block design
$P$	Treatment versus position incidence matrix

### Note

This function works for generating a position balanced block design for upto 30 treatments and block size 10. For getting design with larger number of treatments and/or block size, it is better to use `balancify()` function with a design supplied by user to make the design position balanced.

### Author(s)

B N Mandal <mandal.stat@gmail.com>

### Examples

```
pbbd(7, 7, 3)
```

```
pbbd(9, 12, 3)
```

# Index

- \* **incidence matrix**
  - balancify, 2
  - pbbd, 3
- \* **incomplete block design**
  - balancify, 2
  - pbbd, 3
- \* **nearly position balanced**
  - balancify, 2
  - pbbd, 3
- \* **order balanced**
  - balancify, 2
  - pbbd, 3
- \* **position balanced**
  - balancify, 2
  - pbbd, 3

balancify, 2

pbbd, 3