# sNeighDirect

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sNeighDirect · · · · · · *Function to calculate direct neighbors for each hexagon/rectangle in a grid*

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## Description

sNeighDirect is supposed to calculate direct neighbors for each hexagon/rectangle in a regular 2D grid. It returns a matrix with rows for the self, and columns for its direct neighbors.

## Usage

```
sNeighDirect(sObj)
```

## Arguments

sObj · · · · · · an object of class "sTopol" or "sInit" or "sMap"

## Value

- dNeigh: a matrix of nHex x nHex, containing presence/absence info in terms of direct neighbors, where nHex is the total number of hexagons/rectanges in the grid

## Note

The return matrix has rows for the self, and columns for its direct neighbors. The "1" means the presence of direct neighbors, "0" for the absence. It has rows/columns ordered in the same order as the "coord" matrix of the input object does.

## See Also

[sHexDist](#)

## Examples

```
# 1) generate an iid normal random matrix of 100x10
data <- matrix( rnorm(100*10,mean=0,sd=1), nrow=100, ncol=10)

# 2) from this input matrix, determine nHex=5*sqrt(nrow(data))=50,
# but it returns nHex=61, via "sHexGrid(nHex=50)", to make sure a supra-hexagonal grid
sTopol <- sTopology(data=data, lattice="hexa", shape="suprahex")

# 3) initialise the codebook matrix using "uniform" method
sI <- sInitial(data=data, sTopol=sTopol, init="uniform")

# 4) calculate direct neighbors based on different objects
# 4a) based on an object of class "sTopol"
dNeigh <- sNeighDirect(sObj=sTopol)
# 4b) based on an object of class "sMap"
# dNeigh <- sNeighDirect(sObj=sI)
```