MSMS 105 : Practical

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⊕ Question

Consider the following setup :

	2	3	
4		2	1
3	1		
	4	1	3

Write R program to fill in the blank cells such that each of $\{1, 2, 3, 4\}$ appears only once in each row and each column.

⊕ R Program

```r
mat <- matrix(c(NA, 2, 3, NA, 4, NA, 2, 1, 3, 1, NA, NA, NA, 4, 1, 3),
              nrow = 4, ncol = 4, byrow = TRUE)
mat

##      [,1] [,2] [,3] [,4]
## [1,]   NA    2    3   NA
## [2,]    4   NA    2    1
## [3,]    3    1   NA   NA
## [4,]   NA    4    1    3
```

```r
A <- 1:4
```

```r
del <- function(vec){
  indices <- c()
  for (i in 1:length(vec)) {
    indices[i] <- which(A == vec[i])
  }
  return(A[-indices])
}
```

```r
for (i in 1:dim(mat)[1]) {
  for (j in 1:dim(mat)[2]) {
    if(is.na(mat[i, j])){

      a <- unique( c( mat[i,][which( !is.na(mat[i,]) )],
                      mat[,j][which( !is.na(mat[,j]) )]) )

      mat[i, j] <- as.numeric(del(a))

    }
  }
}
```

```r
mat
```

```
##      [,1] [,2] [,3] [,4]
## [1,]    1    2    3    4
## [2,]    4    3    2    1
## [3,]    3    1    4    2
## [4,]    2    4    1    3
```