

Soluzione esercizi su Array - 1

Array -----

Es.1:

```
> m <- matrix (runif(100), nrow=10)
> m <- matrix (runif(100), ncol=10)
> m <- array(runif(100), c(10,10))
```

Es.2:

```
> x <- matrix (rep(c("T", "A", "C"), c(4, 5, 3)), nrow=3)
> y <- matrix (rep(c("A", "G", "C"), c(4, 9, 2)), nrow=5)
> x[,1:2] <- t(y)[,4:5]
```

Es.3:

```
> a <-array(1:60, c(3,4,5))
> b <-array(round(runif(60)*9), c(3,4,5))
> c <- a*b
> v <-1:60
> x <- a*v # si ottiene un array
> is.array(x)
[1] TRUE
> dim(a) <- c(3,5,2,2)
> attributes(a)
$dim
[1] 3 5 2 2
```

Soluzione esercizi su Array -2

Array -----

Es.4:

```
> M <- matrix(1:20,ncol=5)
```

```
> N <- matrix(1:15,ncol=5)
```

```
> MN <- rbind(M,N)
```

```
> MN2 <- cbind(M,N)
```

```
Error in cbind(...) : number of rows of matrices must match (see arg 2)
```

Es.5:

```
> A <- matrix(runif(9),nrow=3)
```

```
> B <- matrix(runif(9),nrow=3)
```

```
> Pel <- A*B
```

```
> P <- A%*%B
```

```
> b <- runif(3)
```

```
> x <- solve(A,b)
```

Soluzione esercizi sulle Liste -1

Es.1:

```
li<-list(matrix(1:16,nrow=4),rep("NO",times=32),"topo",list(1:10,TRUE))
```

Es.2:

```
> li$m[,2] # opp. li[[1]][,2]
```

```
> li$s[li$s=="G"]
```

```
> li[3] <- list(runif(10))
```

Es.3:

```
> li2 <- list(1:5, matrix(1:4,nrow=2),v=c(TRUE,FALSE))
```

```
> li3 <- list(factor(rep(c("Q","T"),times=3)), matrix(1:4,nrow=2),  
+ v=c(TRUE,FALSE))
```

```
> vect <- c(li,li2,li3)
```

```
> is.vector(vect)
```

```
[1] TRUE
```

```
> is.list(vect)
```

```
[1] TRUE
```

Es.4:

```
> li[[2]]
```

```
[1] "T" "T" "T" "G" "G" "G" "G" "G"
```

```
> li$s
```

```
[1] "T" "T" "T" "G" "G" "G" "G" "G"
```

```
> li["s"]
```

```
$s
```

```
[1] "T" "T" "T" "G" "G" "G" "G" "G"
```

Soluzione esercizi sulle Liste - 2

Es.5:

```
> diag(li[[1]])  
[1] -0.7145504  1.2088036  0.5635183  0.5549922 -0.5632107 -  
1.9878782  0.8712786 -0.3021831  
> diag(li[1])  
Error in as.integer.default(x) : (list) object cannot be  
coerced to integer
```