# Code Examples

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## Chapter 4

### Section 1

```
set.seed(23)
RME_beta(N = 4, beta = 2, size = 10)
```

```
## [[1]]
##           [,1]       [,2]      [,3]      [,4]
## [1,] 0.1932123  2.0794414 0.0000000 0.0000000
## [2,] 2.0794414 -0.4346821 1.7784901 0.0000000
## [3,] 0.0000000  1.7784901 0.9132671 0.5680636
## [4,] 0.0000000  0.0000000 0.5680636 1.7933881
##
## [[2]]
##           [,1]      [,2]      [,3]       [,4]
## [1,] -1.083567 2.0044736 0.0000000  0.0000000
## [2,]  2.004474 0.2366887 1.6832869  0.0000000
## [3,]  0.000000 1.6832869 0.3266128  1.3031575
## [4,]  0.000000 0.0000000 1.3031575 -0.5985366
##
## [[3]]
##           [,1]       [,2]       [,3]      [,4]
## [1,] 0.7682613  2.3547488  0.0000000 0.0000000
## [2,] 2.3547488 -0.6003051  0.7614178 0.0000000
## [3,] 0.0000000  0.7614178 -0.3879033 0.4240992
## [4,] 0.0000000  0.0000000  0.4240992 0.8760697
##
## [[4]]
##           [,1]       [,2]      [,3]      [,4]
## [1,] 0.7606833  2.0482469 0.0000000 0.0000000
## [2,] 2.0482469 -0.3257157 0.1949160 0.0000000
## [3,] 0.0000000  0.1949160 0.6830309 0.7904189
## [4,] 0.0000000  0.0000000 0.7904189 0.9070262
##
## [[5]]
##            [,1]       [,2]       [,3]       [,4]
## [1,] -0.5532052 1.48008299  0.0000000  0.0000000
## [2,]  1.4800830 0.09818141  1.6167607  0.0000000
## [3,]  0.0000000 1.61676073 -1.1466659  0.7178645
## [4,]  0.0000000 0.00000000  0.7178645 -1.2499273
##
```

```
## [[6]]
##            [,1]       [,2]      [,3]      [,4]
## [1,] -0.7031392  2.0739305 0.0000000  0.000000
## [2,]  2.0739305 -0.7601991 0.5851737  0.000000
## [3,]  0.0000000  0.5851737 1.4692615  2.507171
## [4,]  0.0000000  0.0000000 2.5071707 -1.278592
##
## [[7]]
##           [,1]       [,2]       [,3]       [,4]
## [1,] 0.1721076  1.5689750 0.00000000  0.0000000
## [2,] 1.5689750 -0.4383313 2.23813786  0.0000000
## [3,] 0.0000000  2.2381379 0.07453945  0.9555631
## [4,] 0.0000000  0.0000000 0.95556312 -1.1034689
##
## [[8]]
##            [,1]      [,2]      [,3]       [,4]
## [1,] -0.3521016 1.8402452 0.0000000  0.0000000
## [2,]  1.8402452 0.3251382 1.0212978  0.0000000
## [3,]  0.0000000 1.0212978 0.9842378  0.7658441
## [4,]  0.0000000 0.0000000 0.7658441 -0.5548134
##
## [[9]]
##           [,1]       [,2]      [,3]      [,4]
## [1,] -1.940389  2.0822239  0.000000 0.0000000
## [2,]  2.082224 -0.4603579  1.484855 0.0000000
## [3,]  0.000000  1.4848546 -1.022353 1.0269443
## [4,]  0.000000  0.0000000  1.026944 0.3862112
##
## [[10]]
##           [,1]       [,2]       [,3]     [,4]
## [1,] 0.9875476  2.1062091  0.0000000 0.000000
## [2,] 2.1062091 -0.1840218  1.1038458 0.000000
## [3,] 0.0000000  1.1038458 -0.3793526 0.431690
## [4,] 0.0000000  0.0000000  0.4316900 1.072247
```

```
\begin{lstlisting}[language=R]
library(RMAT)
ensemble <- RME_beta(N = 4, beta = 2, size = 10)
# Outputs the following
ensemble


...
[[10]]
          [,1]      [,2]        [,3]     [,4]
[1,] 0.7246302 1.8893868  0.00000000 0.000000
[2,] 1.8893868 1.5278221  0.68840045 0.000000
[3,] 0.0000000 0.6884004 -0.03876104 1.944495
[4,] 0.0000000 0.0000000  1.94449533 1.042741
\end{lstlisting}
```