Getting Reproducible Sequence of Random Numbers

Version 3.5.1 (Default setting)

```
Microsoft R Open 3.5.1
The enhanced R distribution from Microsoft
Microsoft packages Copyright (C) 2018 Microsoft Corporation

> RNGkind()
[1] "Mersenne-Twister" "Inversion"
> set.seed(12345)
> x1 <- sample(1:100,10)
> set.seed(12345)            # Reset starting value of RNG
> x2 <- sample(1:100,10)
> x3 <- sample(1:100,10)     # Continue 'fixed' random sequence
> cbind(x1,x2,x3)
      x1 x2 x3
 [1,] 73 73  4
 [2,] 87 87 16
 [3,] 75 75 73
 [4,] 86 86  1
 [5,] 44 44 38
 [6,] 16 16 44
 [7,] 31 31 37
 [8,] 48 48 96
 [9,] 67 67 17
[10,] 91 91 87
```

Version 3.6.1 (Default Setting)

```
R version 3.6.1 (2019-07-05) -- "Action of the Toes"
Copyright (C) 2019 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)

> RNGkind()
[1] "Mersenne-Twister" "Inversion"        "Rejection"

> set.seed(12345)
> x1 <- sample(1:100,10)
> set.seed(12345)            # Reset starting value of RNG
> x2 <- sample(1:100,10)
> x3 <- sample(1:100,10)     # Continue 'fixed' random sequence
> cbind(x1,x2,x3)
      x1 x2 x3
 [1,] 14 14  2
 [2,] 51 51 86
 [3,] 80 80 75
 [4,] 90 90 38
 [5,] 92 92 94
 [6,] 24 24 10
 [7,] 58 58 81
 [8,] 93 93 32
 [9,] 75 75 40
[10,] 88 88 39
```

Version 3.6.1 (Compatibility Setting "Rounding")

```
> RNGkind(sample.kind = "Rounding")
> set.seed(12345)
> x1 <- sample(1:100,10)
> set.seed(12345)             # Reset starting value of RNG
> x2 <- sample(1:100,10)
> x3 <- sample(1:100,10)      # Continue 'fixed' random sequence
> cbind(x1,x2,x3)
      x1 x2 x3
 [1,] 73 73  4
 [2,] 87 87 16
 [3,] 75 75 73
 [4,] 86 86  1
 [5,] 44 44 38
 [6,] 16 16 44
 [7,] 31 31 37
 [8,] 48 48 96
 [9,] 67 67 17
[10,] 91 91 87
Warning message:
In RNGkind(sample.kind = "Rounding") : non-uniform 'Rounding' sampler used
```

Conclusions

Version 3.5.1 and Version 3.6.1 are using different options for the random number generator. Thus, they generate different sequences of random numbers.

The new option "Rounding" in Version 3.6.1 allows to get reproducible random number sequences that are identical with earlier versions of R.