SimInf – unknown error example

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Loading the *SimInf* package and reading in the initialisation data (*u0_cts*):

```
## Loading required package: SimInf
```

u0_cts looks like this:

```r
dim(u0_cts)
```

```
## [1] 71811     3
```

```r
head(u0_cts)
```

```
##      S I R
## 6  138 0 0
## 7    7 0 0
## 8   26 0 0
## 17  14 0 0
## 61  11 0 0
## 68   8 0 0
```

Read in the events data (*events_cts*) and transform the **select** variable to suit the SIR model:

```r
# Read in CTS events data for Scotland
events_cts <- read.csv('~/Werk/EPIC/Data/cts201404/movements/cts201404_movements_for_siminf_tidy.csv')

events2SIR <- function (x){
  x$select[x$event == 0] <- 2
  x$select[x$event == 1] <- 1
  x <- x[x$event != 2, ]
  x$select[x$event == 3] <- 2
  return(x)
}

events_cts <- events2SIR(x = events_cts)
```

```
## Loading required package: plyr
```

The *events_cts* data looks like this:

```r
dim(events_cts)
```

```
## [1] 789628      8
```

```r
head(events_cts)
```

```
##   event time node  dest     n proportion select shift
## 1     3    1   70   580     1          0      2     0
## 2     3    1   70   582     1          0      2     0
## 3     0    1  245     0     1          0      2     0
## 4     0    1  253     0     1          0      2     0
## 5     0    1  279     0     1          0      2     0
## 6     3    1  292 67881    42          0      2     0
```

Seed a single infected individual at node 186, create an SIR model and run it. This seems to work fine up until event 547801.

```
# Seeding single infected animal at node 186
u0_cts$I <- rep(0, times = nrow(u0_cts))
u0_cts$I[186] <- 1

## Create a SIR model object.
model <- SIR(u0 = u0_cts,
             events = events_cts[1:547801, ],
             tspan = seq(1, 68, by = 1),
             beta = 0.16, # transmission rate from susceptible to infected
             gamma = 0) # recovery rate from infected to recovered/removed

## Run the SIR model and plot the result.
result <- run(model, seed = 1235)
```

Event 547802 looks like this:

```
events_cts[547802, ]
```

```
##          event time  node   dest n proportion select shift
## 547802      3   68 66154 71597 1          0      2     0
```

At the end of the previous (succesful) simulation, the nodes involved in the 547802th event has the following number of animals in each category:

```
susceptible(result)[66154, 68]
```

```
## [1] 14044
```

```
infected(result)[66154, 68]
```

```
## [1] 1
```

```
recovered(result)[66154, 68]
```

```
## [1] 0
```

```
susceptible(result)[71597, 68]
```

```
## [1] 64
```

```
infected(result)[71597, 68]
```

```
## [1] 0
```

```
recovered(result)[71597, 68]
```

```
## [1] 0
```

However, adding event 547802 (i.e. movement of a single animal from node 66154 to node 71597 at time 68) to the simulation model seems to break it:

```
## Create a SIR model object.
model <- SIR(u0 = u0_cts,
             events = events_cts[1:547802, ],
             tspan = seq(1, 68, by = 1),
             beta = 0.16, # transmission rate from susceptible to infected
             gamma = 0) # recovery rate from infected to recovered/removed

## Run the SIR model and plot the result.
```

```
result <- try(run(model, seed = 1235))
result
```

```
## [1] "Error in siminf_error(result$error) : Unknown error code.\n"
## attr(,"class")
## [1] "try-error"
## attr(,"condition")
## <simpleError in siminf_error(result$error): Unknown error code.>
```