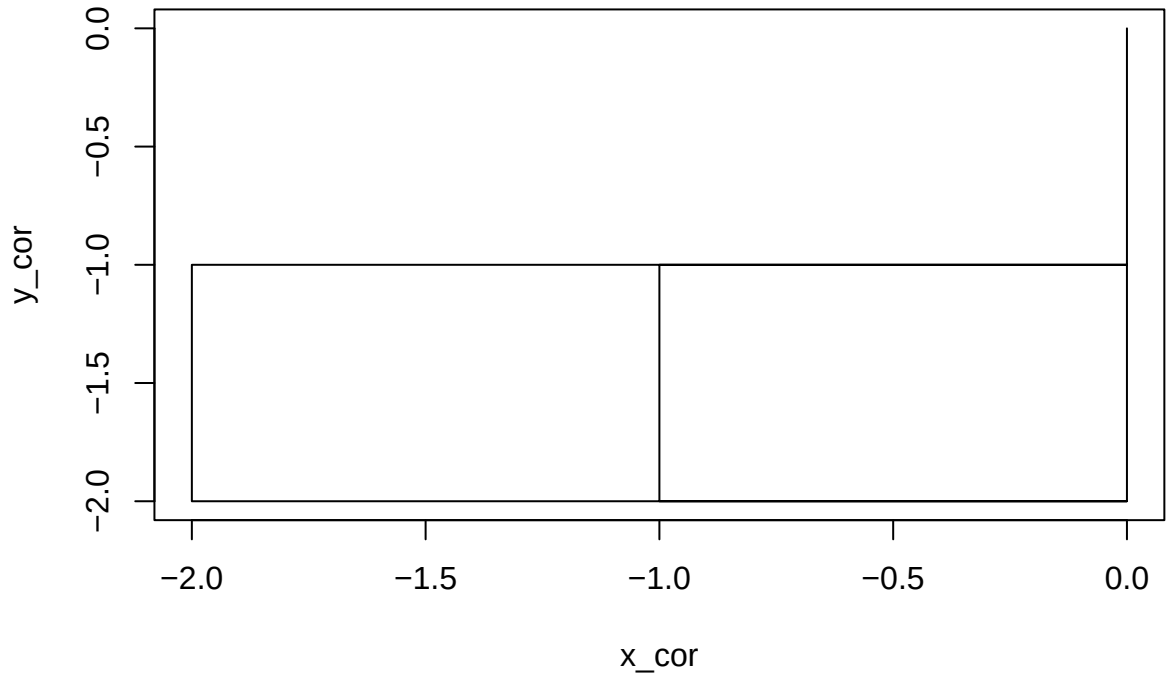
applebread.R

Anant

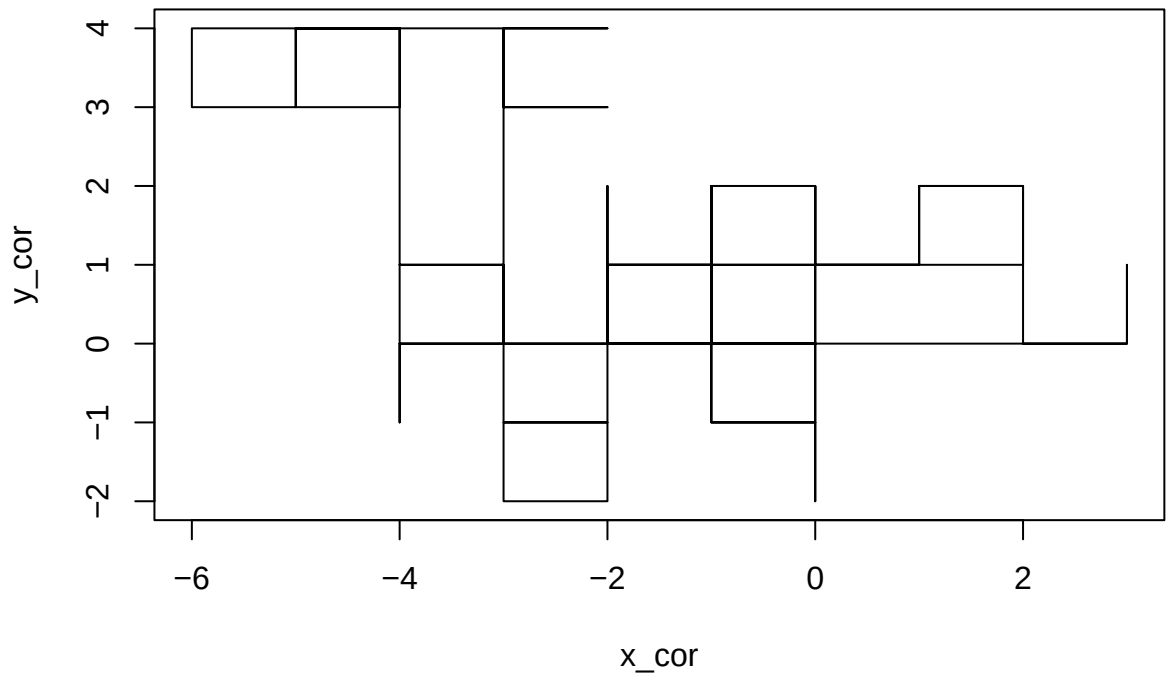
2024-03-14

```r
#Apple bread
library(ggplot2)
rmove = function(){
  m=sample(c(1,2,3,4),1)
  if(m==1){
    move=c(1,0)
  }
  if(m==2){
    move=c(-1,0)
  }
  if(m==3){
    move=c(0,1)
  }
  if(m==4){
    move=c(0,-1)
  }
  move
}
randwalk=function(z,n){
  z0=z
  x_cor=c()
  y_cor=c()
  x_cor[1]=z[1]
  y_cor[1]=z[2]
  for(i in 1:n){
    move=sample(c(1,-1),1)
    coord = sample(c(0,1),2)
    z=rmove()+z
    x_cor[i+1]=z[1]
    y_cor[i+1]=z[2]
  }
  plot(x_cor,y_cor,type="l")
  sqrt(sum(z^2-z0^2))
}
z=c(0,0)
randwalk(z,10)
```



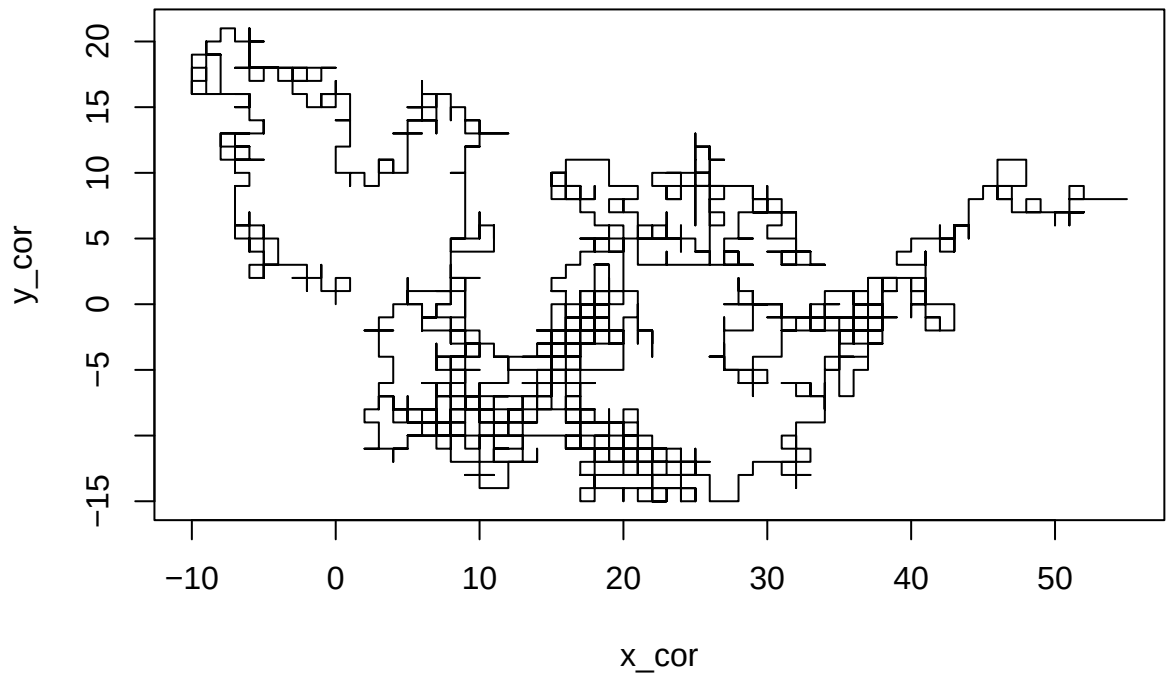

```
## [1] 2
```

```
randwalk(z,100)
```

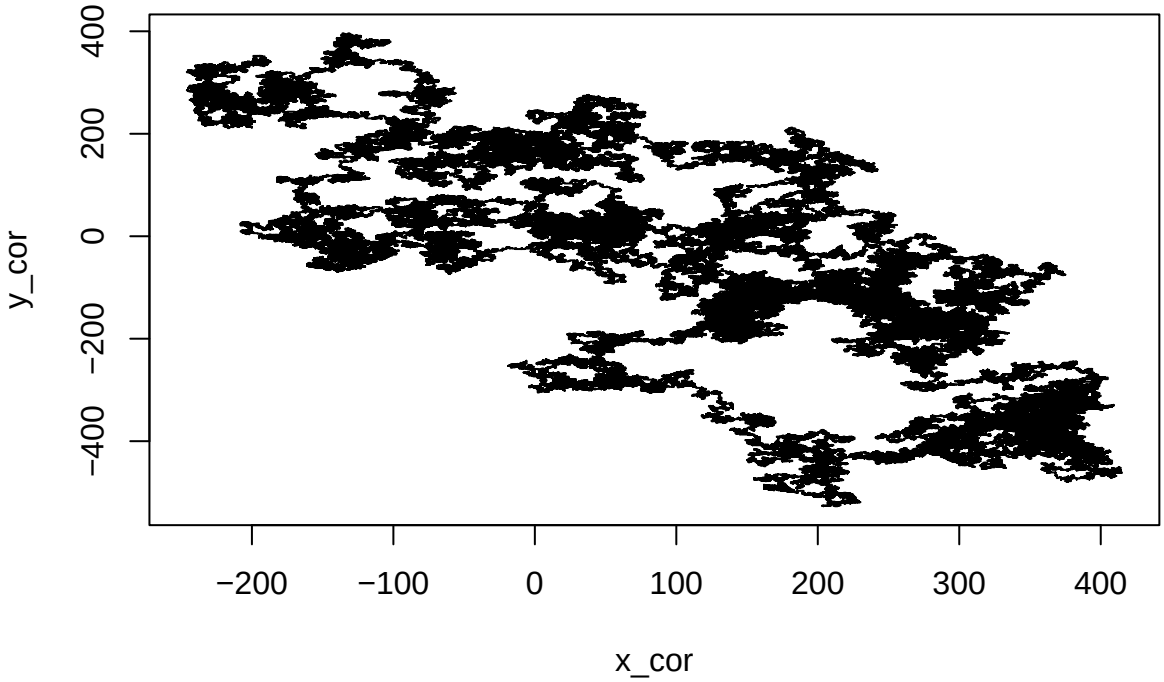



```
## [1] 4
```

```
whilerandwalk1 = function(z,dist){
  z0=z
  x_cor=c()
  y_cor=c()
  x_cor[1]=z[1]
  y_cor[1]=z[2]
  d=0
  i=1
  while(d<dist){
    move=sample(c(1,-1),1)
    coord = sample(c(0,1),2)
    z=rmove()+z
    x_cor[i+1]=z[1]
    y_cor[i+1]=z[2]
    d=sqrt(sum(z^2-z0^2))
    i=i+1
  }
  plot(x_cor,y_cor,type="l")
}
whilerandwalk1(c(0,0),55)
```




```
whilerandwalk2 = function(z,z2){
  z0=z
  x_cor=c()
  y_cor=c()
  x_cor[1]=z[1]
  y_cor[1]=z[2]
  i=1
  while(!(identical(z,z2))){
    move=sample(c(1,-1),1)
    coord = sample(c(0,1),2)
    z=rmove()+z
    x_cor[i+1]=z[1]
    y_cor[i+1]=z[2]
    i=i+1
  }
  plot(x_cor,y_cor,type="l")
  }
whilerandwalk2(c(55,0),c(0,0))
```


y_cor
400
200
0
−200
−400
−200
−100
0
100
200
300
400
x_cor