Evklidov algoritem

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Contents

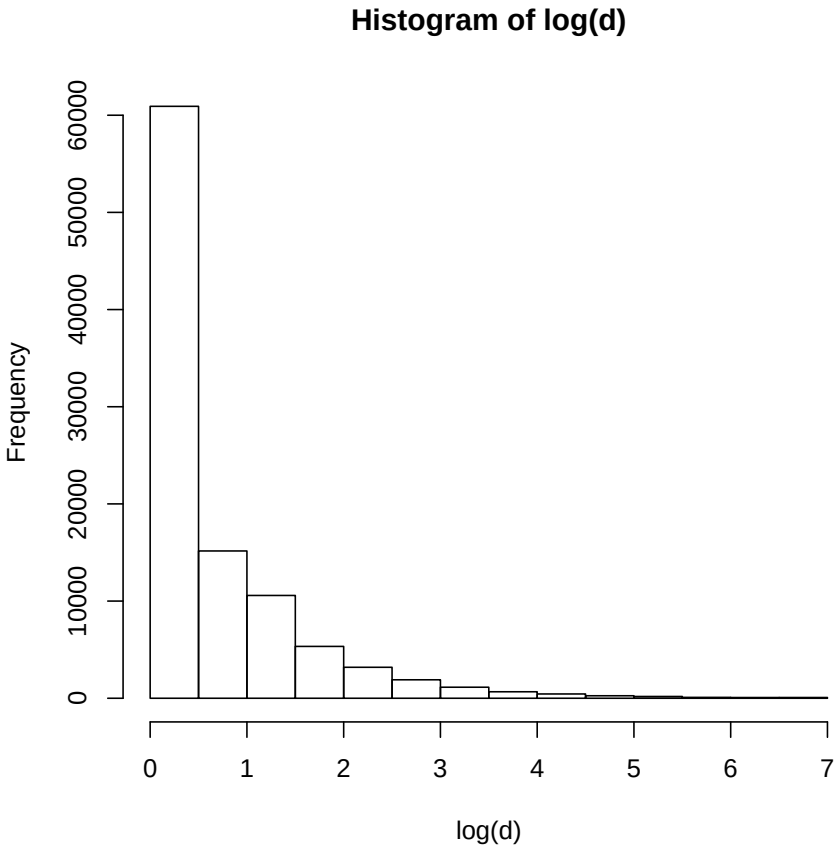
1 Evklidov algoritem

Primer rekurzivne funkcije

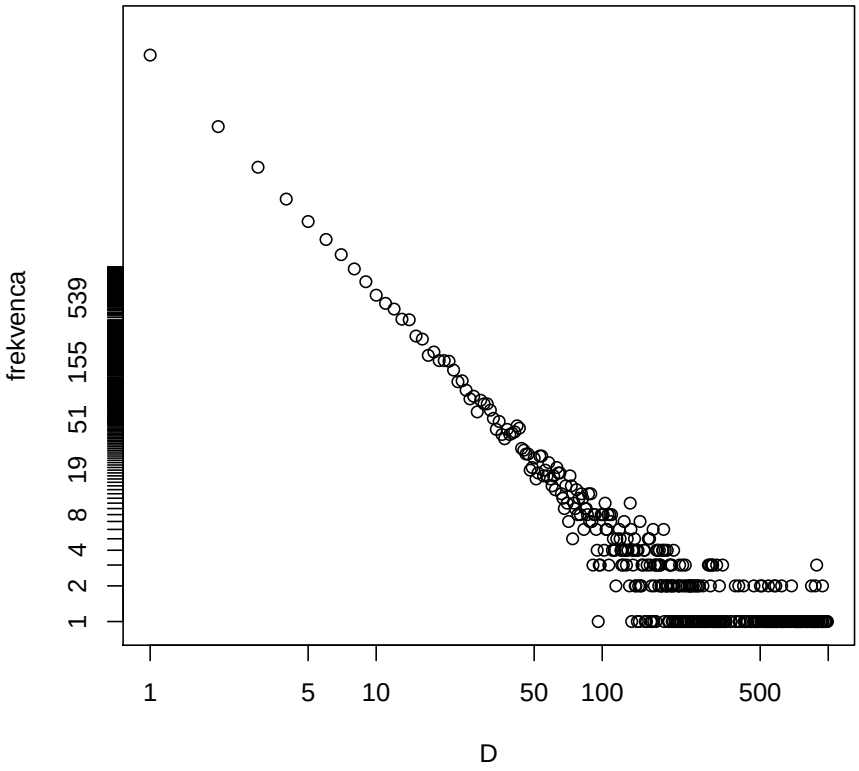
```
> D <- function(x,y,verbose=TRUE){
+     if(verbose) cat(sprintf("%8i = %5i * %4i + %4i",x,y,x%/%y,x%%y),"\n")
+     if(x%%y!=0) D(y,x%%y,verbose=verbose) else {
+         if(verbose) {cat("D =", y,"\n")
+         invisible(y) } else return(y)
+     }
+ }

> D(4246,212)
    4246 =   212 *   20 +    6
     212 =     6 *   35 +    2
       6 =     2 *    3 +    0
D = 2

> D(2^3*5^5*7,2^2*5^2*3)
  175000 =   300 *  583 +  100
     300 =   100 *    3 +    0
D = 100

> D(123432,12321)
  123432 = 12321 *   10 +  222
   12321 =   222 *   55 +  111
     222 =   111 *    2 +    0
D = 111

>
```

```
> a <- 10
> x <- a^2*(a-4)*(a+1)
> y <- (a-4)*(a+4)
> x
[1] 6600
> y
[1] 84
> D(x,y)
    6600 =    84 *   78 +   48
      84 =    48 *    1 +   36
      48 =    36 *    1 +   12
      36 =    12 *    3 +    0
D = 12
>
```

```
> n <- 100000
> x <- round(runif(n,1000,100000))
> y <- x-round(runif(n,x-1000,x-500))
> d <- apply(cbind(x,y),1,function(x) D(x[1],x[2],verbose=FALSE))
> d[1:min(n,100)]
  [1]   1   1   1  40   1   3  22   1   1   1   1  14   1 106   1   2
 [17]   4   1   1   1   3   1   1   1   1   1   8  71   3  10   1   1
 [33]   1  13   3   2   3   3   3   3   2   2   1   1   1   1   1   1
 [49]   1   1   1   2   1   1   1   1   1   1   1   1   3   7   2   2
 [65]   1   4   1   3   1   1   4   1   2   1   1   1   2  28   1   1
 [81]   2   2   1   1   1   1   1   1   2   1   1   1   1   1   1   1
 [97]   1   4   3   1
> hist(log(d))
```



```
> plot(as.numeric(names(table(d))),table(d),xlab="D",ylab="frekvenca",log="xy"
```



SessionInfo

Windows 7 x64 (build 7601) Service Pack 1

- R version 2.15.1 (2012-06-22), `x86_64-pc-mingw32`
- Locale: `LC_COLLATE=Slovenian_Slovenia.1250`, `LC_CTYPE=Slovenian_Slovenia.1250`, `LC_MONETARY=Slovenian_Slovenia.1250`, `LC_NUMERIC=C`, `LC_TIME=Slovenian_Slovenia.1250`
- Base packages: base, datasets, graphics, grDevices, methods, splines, stats, utils
- Other packages: Hmisc 3.9-3, patchDVI 1.8.1584, survival 2.36-14
- Loaded via a namespace (and not attached): cluster 1.14.2, grid 2.15.1, lattice 0.20-6, tools 2.15.1

Project path: `D:/_Y/R/Bioinformatika`

View as vignette

Project files can be viewed by pasting this code to R console:

```
> projectName <-"Bioinformatika";  mainFile <-"EvklidovAlgoritem"

> commandArgs()
> library(tkWidgets)
> # getrootpath <- function() {
> # fp <- (strsplit(getwd(), "/"))[[1]]
> # file <- file.path(paste(fp[-length(fp)], collapse = "/"))
> # return(file)
> # }
> # fileName <- function(name="bla",ext="PDF") paste(name,ext,sep=".")
>  openPDF(file.path(dirname(getwd()),"doc",paste(mainFile,"PDF",sep=".")))
>  viewVignette("viewVignette", projectName, file.path("../doc",paste(mainFile
>
```