arith

Srini

2023-08-11

Create the waves

```
../bin/arith arith
```

```
library(ggplot2)
library(dplyr)
```

```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
load_signal <- function(filename) {
  signal<-read.csv(filename,header=FALSE,sep=",")
  names(signal) <- c("x","y")
  signal
}

load_freq <- function(filename) {
   signalfreq<-read.csv(filename,header=FALSE,sep=",")
   names(signalfreq)<-c("freq","rex","imx","mod","arg")
   signalfreq
}

plot_signal <- function(s,c) {
  ggplot(s,aes(x=x,y=y))+geom_line(colour=c, size=2,show.legend=TRUE)+theme(legend.position = "bottom")
}

plot_freq <- function(freq) {
  dominant<-freq %>% slice_head(n=10)
  barplot(dominant$mod,col="steelblue",names.arg=dominant$freq,xlab="Frequency")
}
```

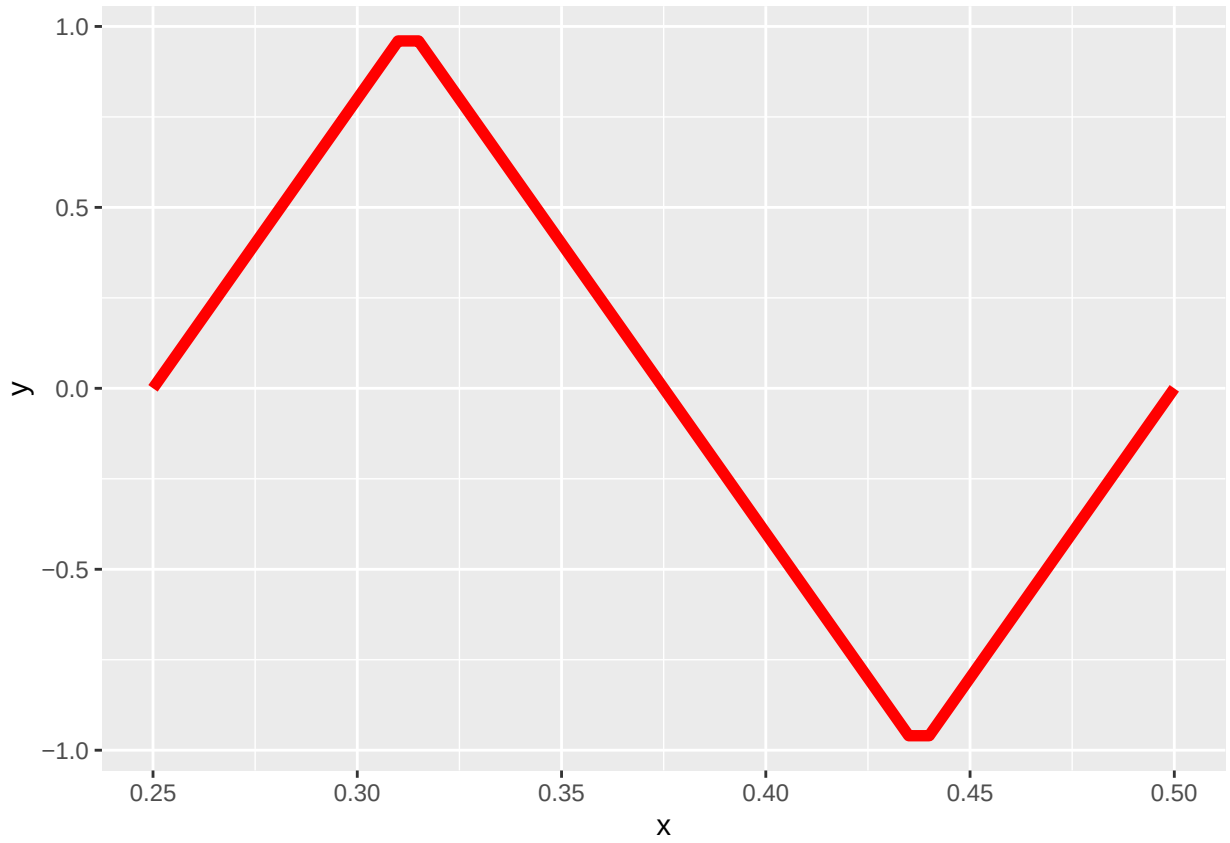
```
str<-load_signal("arith_tr.csv")
ssq<-load_signal("arith_sq.csv")
ssin1<-load_signal("arith_sin1.csv")
ssin2<-load_signal("arith_sin2.csv")

combined <- load_signal("arith_combined.csv")
```

Triangle

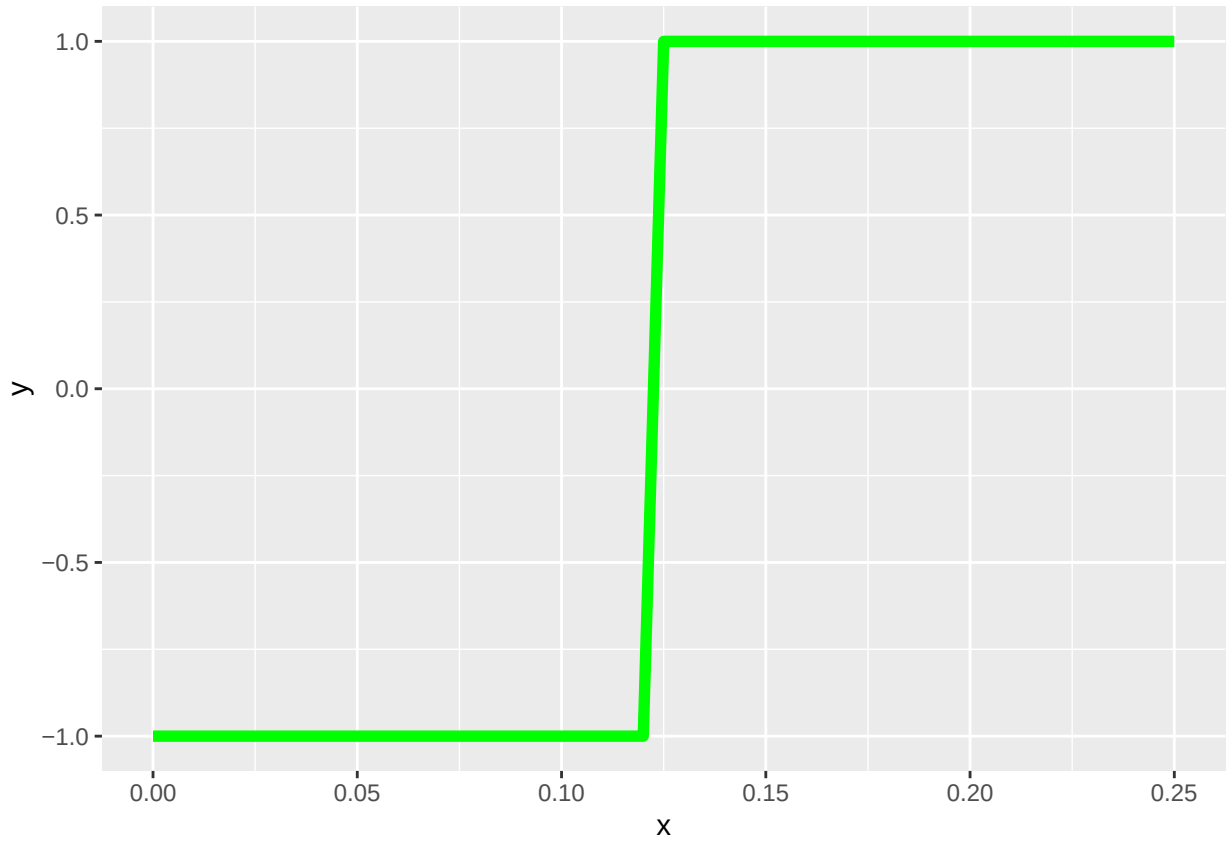
```
plot_signal(str,"red")
```

```
## Warning: Using ‘size‘ aesthetic for lines was deprecated in ggplot2 3.4.0.
## i Please use ‘linewidth‘ instead.
## This warning is displayed once every 8 hours.
## Call ‘lifecycle::last_lifecycle_warnings()‘ to see where this warning was
## generated.
```



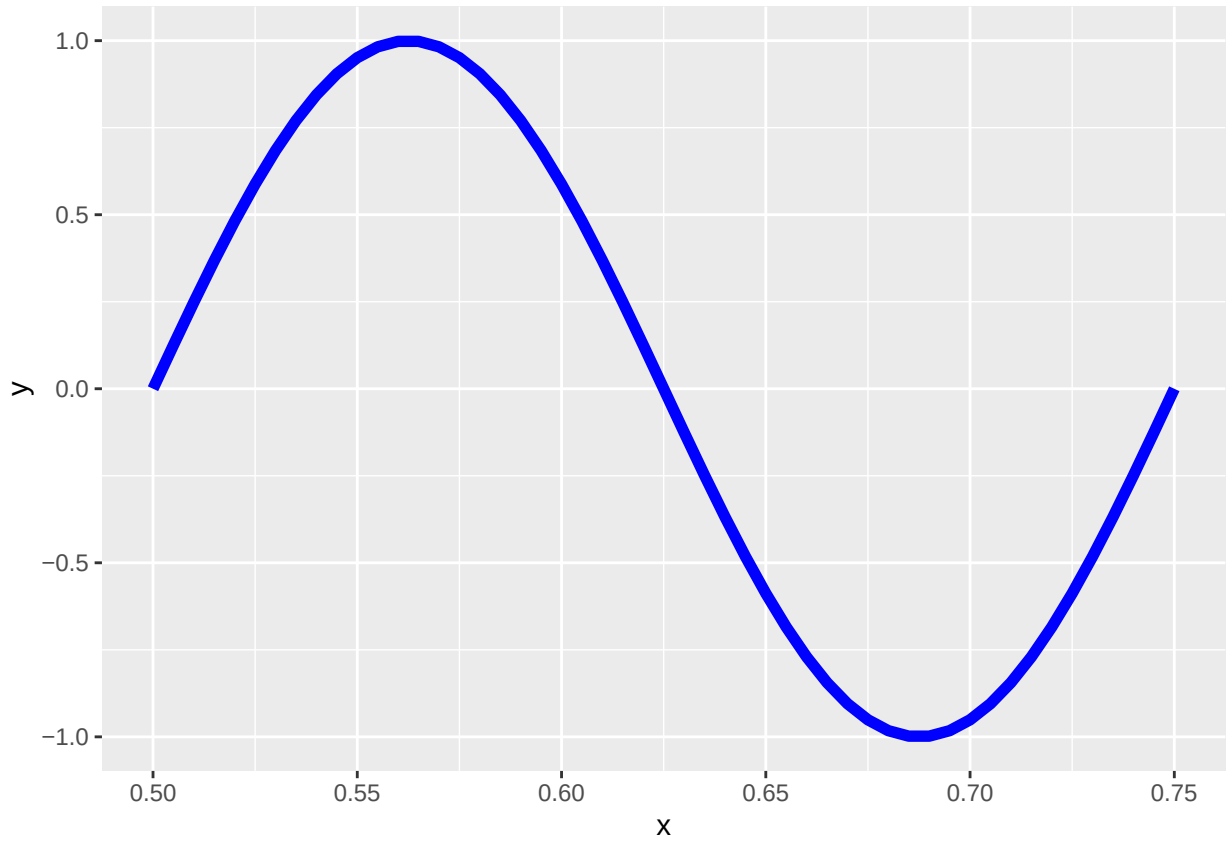
Square

```
plot_signal(ssq,"green")
```

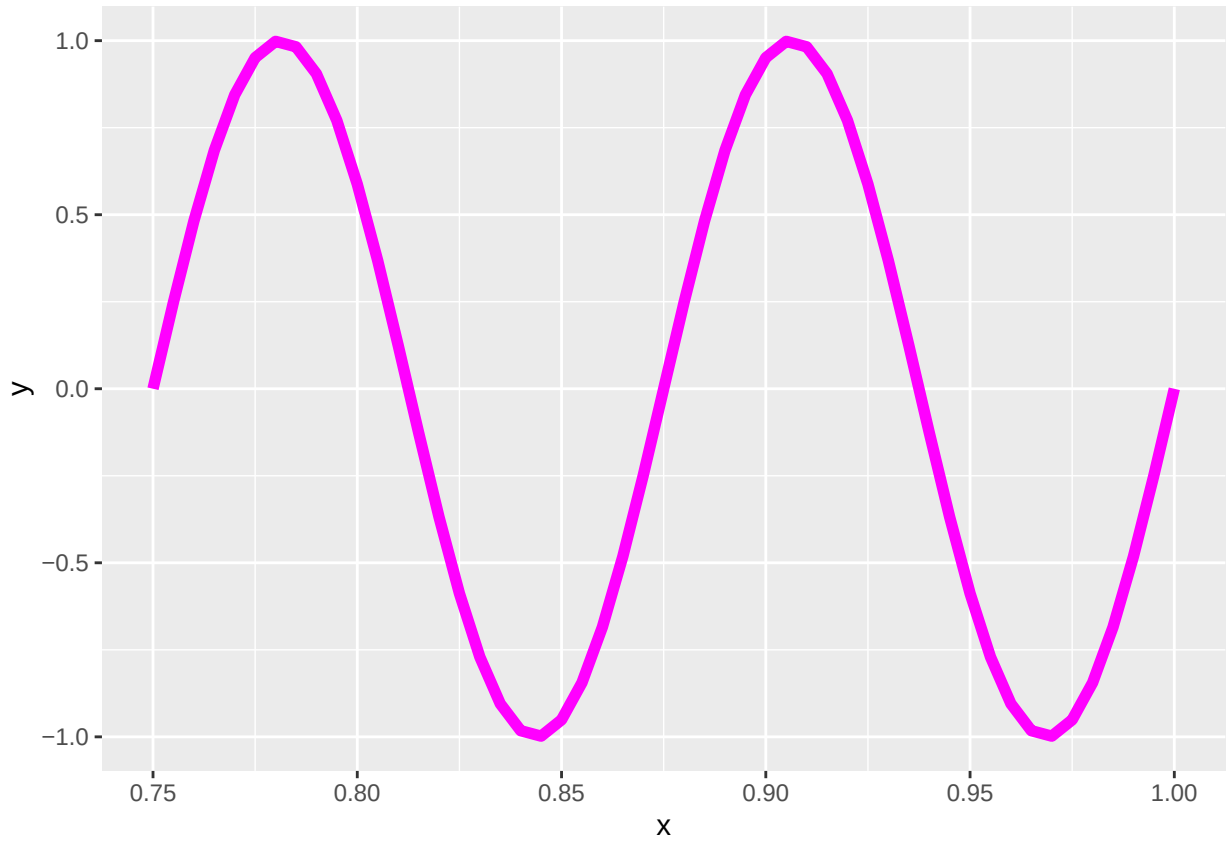


Sinusoids

```
plot_signal(ssin1,"blue")
```

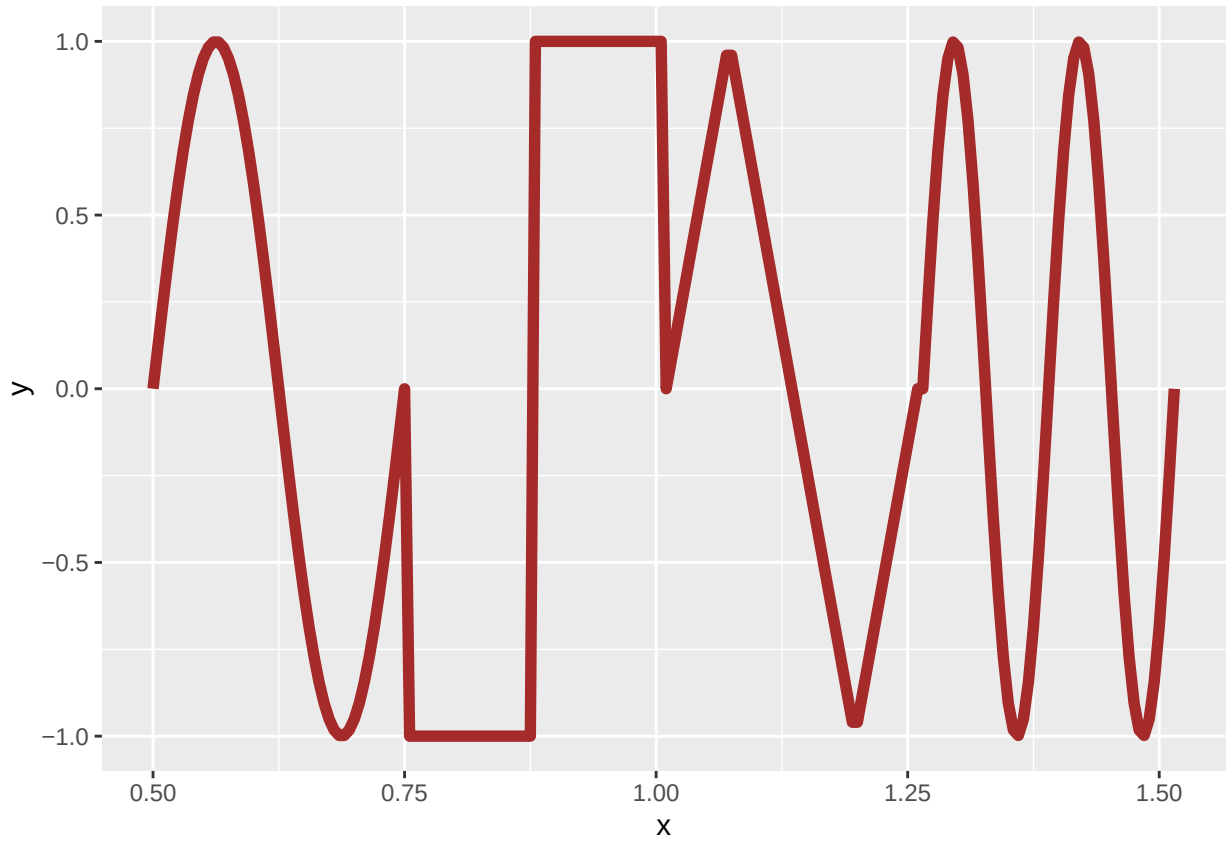



```
plot_signal(ssin2,"magenta")
```



Combined

```
plot_signal(combined,"brown")
```

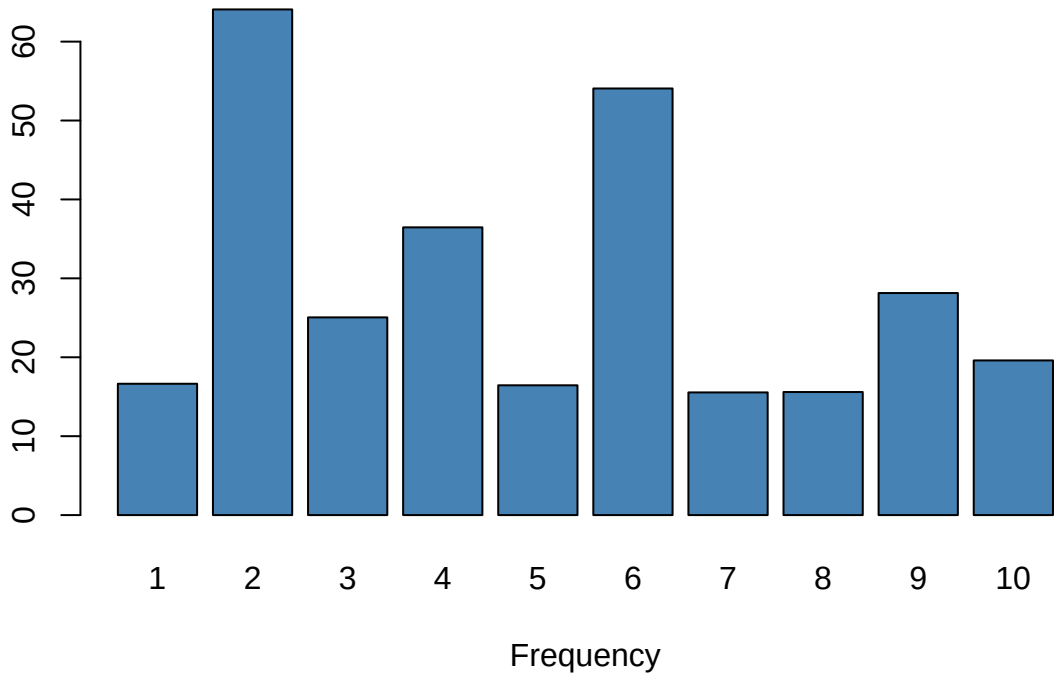


Frequency Domain

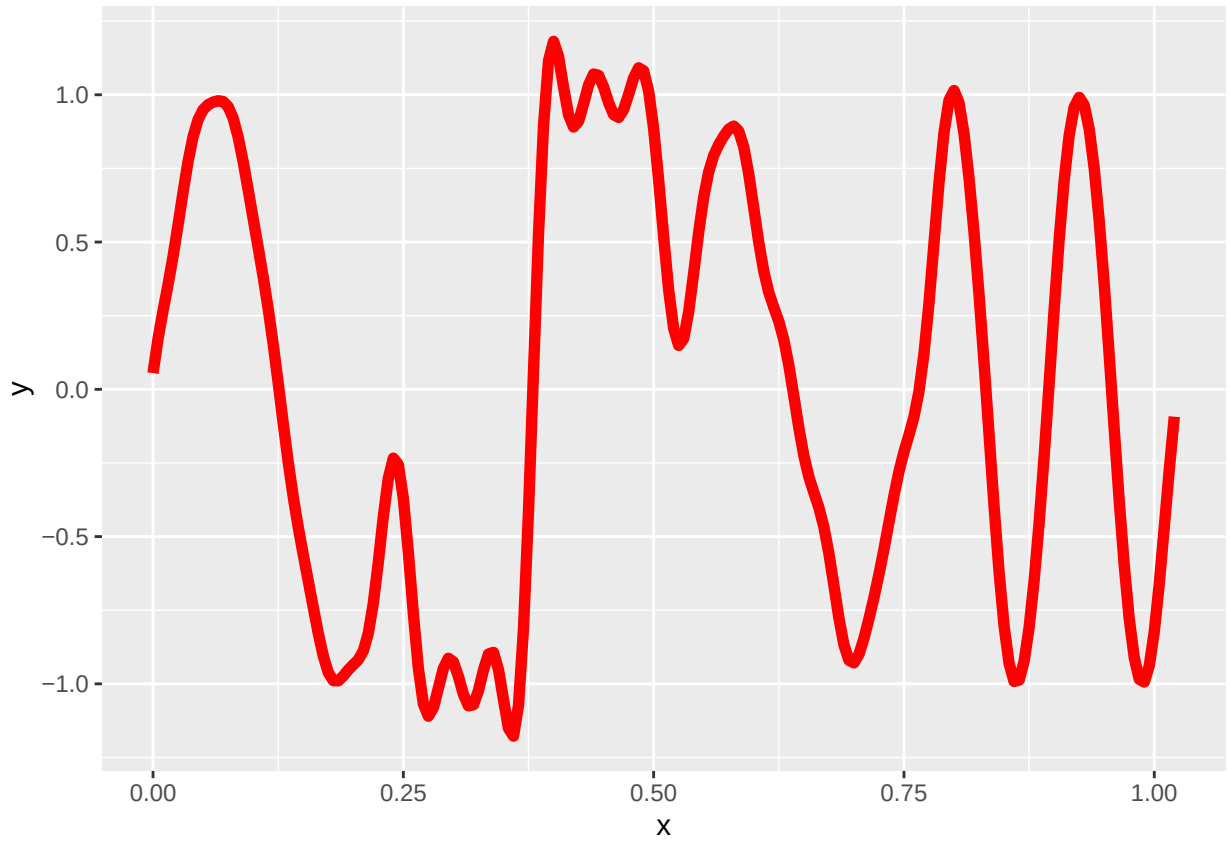
```
../../freqd/bin/freqd arith_combined.csv  0.25
```

```
## arith_combined.csv
```

```
combfreq<-load_freq("arith_combined.csv.csv")
plot_freq(combfreq)
```




```
combre<-load_signal("arith_combined.csv_re.csv")
plot_signal(combre,"red")
```


1.0
0.5
0.0
−0.5
−1.0
y
0.00
0.25
0.50
0.75
1.00
x