

Lampiran 6 Sintaks *Brown's Double Exponential Smoothing* (B-DES)

```

data.cp=read.delim("clipboard",header=TRUE)
head(data.cp)
library(minpack.lm)

bdes=function(par,data.cp)
{
  #panjang data
  n=(dim(data.cp))[1];
  N=n+1

  #pembentukan matriks
  F0=matrix(0,n,1);
  S1=matrix(0,n,1);
  S2=matrix(0,n,1);
  a=matrix(0,n,1);
  b=matrix(0,n,1);

  #initial value
  S1[5]=(mean(data.cp[1:5,]));
  S2[5]=(mean(data.cp[1:5,]));
  a[5]=(mean(data.cp[1:5,]));

  for (i in 6:N)
  {
    S1[i]=par*data.cp[i,1]+(1-par)*S1[i-1];
    S2[i]=par*S1[i]+(1-par)*S2[i-1];
    b[i]=par/(1-par)*(S1[i]-S2[i]);
    a[i]=2*S1[i]-S2[i];
    F0[i]=a[i-1]+b[i-1]
  }
  return(F0)
}

forecast = bdes(0.1,data.cp)
head(forecast)
data=as.data.frame(forecast)

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View(forecast)

msebdes=function(par,data.cp)
{
  n=nrow(data.cp);
  forecast=bdes(par,data.cp);
  data = as.data.frame(forecast);
  error2=(data[6:n,]-data.cp[6:n,])^2
  msebdes=mean(error2)
}

mapebdes=function(par,data)
{
  n=nrow(data.cp);
  data.cp2=data.cp[6:n,]
  forecast=bdes(par,data.cp);
  data= as.data.frame(forecast);
  error=(data[6:n,]-data.cp[6:n,])
  pei=(error/data.cp2)*-1
  mapebdes=mean(abs(pei))*100
}

mse= msebdes(0.1,data.cp)
mse
mape= mapebdes(0.1,data.cp)
mape

#optimasi algoritma lm
lm=nls.lm(c(0.1),lower=NULL,upper=NULL,msebdes,data=data.cp)
lm

forecast.op=bdes(0.4420,data.cp)
head(forecast.op)
data=as.data.frame(forecast.op)
View(forecast.op)

msebdes.op=function(par,data.cp)

```

```
{
  n=nrow(data.cp);
  forecas.opt=bdes(par,data.cp);
  data = as.data.frame(forecast.op);
  error2=(data[6:n,]-data.cp[6:n,])^2
  msebdes.op=mean(error2)
}

mapebdes.op=function(par,data)
{
  n=nrow(data.cp);
  data.cp2=data.cp[6:n,]
  forecast.op=bdes(par,data.cp);
  data= as.data.frame(forecast.op);
  error=(data[6:n,]-data.cp[6:n,])
  pei=(error/data.cp2)*-1
  mapebdes.op=mean(abs(pei))*100
}

mse.op= msebdes.op(0.4420,data.cp)
mse.op
mape.op= mapebdes(0.4420,data.cp)
mape.op
```