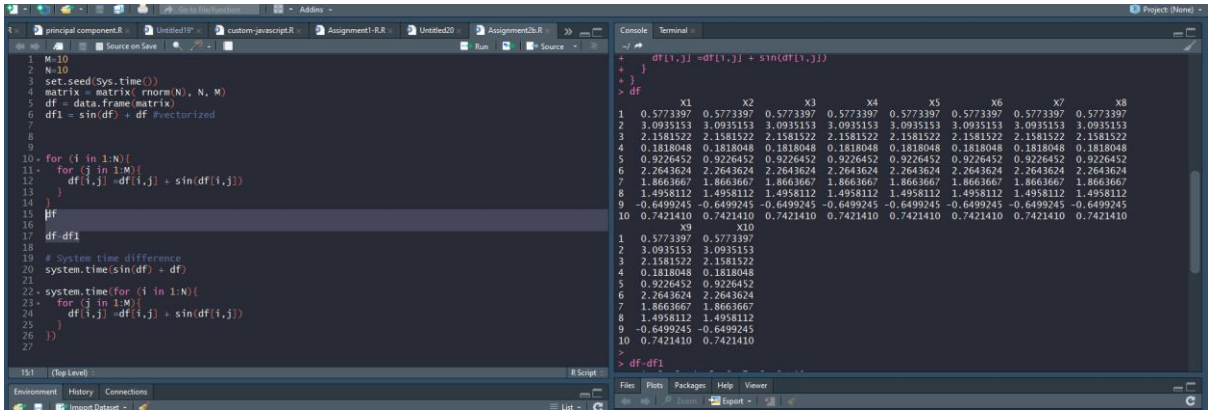
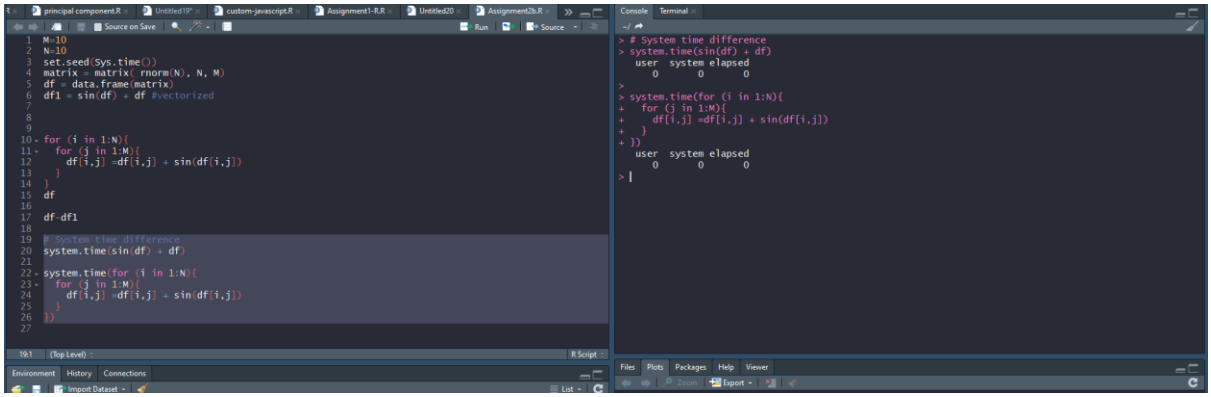


```
M=10
N=10
set.seed(Sys.time())
matrix = matrix( rnorm(N), N, M)
df = data.frame(matrix)
df1 = sin(df) + df #vectorized


for (i in 1:N){
  for (j in 1:M){
    df[i,j] =df[i,j] + sin(df[i,j])
  }
}
df

df-df1

# System time difference
system.time(sin(df) + df)

system.time(for (i in 1:N){
  for (j in 1:M){
    df[i,j] =df[i,j] + sin(df[i,j])
  }
})
```

```
+     df[i,j] =df[i,j] + sin(df[i,j])
+   }
+ }
> df
          X1        X2        X3        X4        X5        X6        X7        X8
1  0.5773397 0.5773397 0.5773397 0.5773397 0.5773397 0.5773397 0.5773397 0.5773397
2  3.0935153 3.0935153 3.0935153 3.0935153 3.0935153 3.0935153 3.0935153 3.0935153
3  2.1581522 2.1581522 2.1581522 2.1581522 2.1581522 2.1581522 2.1581522 2.1581522
4  0.1818048 0.1818048 0.1818048 0.1818048 0.1818048 0.1818048 0.1818048 0.1818048
5  0.9226452 0.9226452 0.9226452 0.9226452 0.9226452 0.9226452 0.9226452 0.9226452
6  2.2643624 2.2643624 2.2643624 2.2643624 2.2643624 2.2643624 2.2643624 2.2643624
7  1.8663667 1.8663667 1.8663667 1.8663667 1.8663667 1.8663667 1.8663667 1.8663667
8  1.4958112 1.4958112 1.4958112 1.4958112 1.4958112 1.4958112 1.4958112 1.4958112
9 -0.6499245 -0.6499245 -0.6499245 -0.6499245 -0.6499245 -0.6499245 -0.6499245 -0.6499245
10 0.7421410 0.7421410 0.7421410 0.7421410 0.7421410 0.7421410 0.7421410 0.7421410
          X9       X10
1  0.5773397 0.5773397
2  3.0935153 3.0935153
3  2.1581522 2.1581522
4  0.1818048 0.1818048
5  0.9226452 0.9226452
6  2.2643624 2.2643624
7  1.8663667 1.8663667
8  1.4958112 1.4958112
9 -0.6499245 -0.6499245
10 0.7421410 0.7421410
>
> df-df1
```


principal component.R
Untitled19*
custom-javascript.R
Assignment1-R.R
Untitled20
Assignment2b.R
Source on Save
Run
Source
M=10
N=10
set.seed(Sys.time())
matrix = matrix(rnorm(N), N, M)
df = data.frame(matrix)
df1 = sin(df) + df #vectorized
for (i in 1:N){
for (j in 1:M){
df[i,j] =df[i,j] + sin(df[i,j])
}
}
df
df-df1
# System time difference
system.time(sin(df) + df)
system.time(for (i in 1:N){
for (j in 1:M){
df[i,j] =df[i,j] + sin(df[i,j])
}
})
19:1
(Top Level)
R Script
Environment
History
Connections
Import Dataset
List
Console
Terminal
~/
> # System time difference
> system.time(sin(df) + df)
user system elapsed
0 0 0
>
> system.time(for (i in 1:N){
+ for (j in 1:M){
+ df[i,j] =df[i,j] + sin(df[i,j])
+ }
+ })
user system elapsed
0 0 0
>
Files
Plots
Packages
Help
Viewer
Zoom
Export