CITS5507 Project2

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```
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
```

```
library(gridExtra)
```

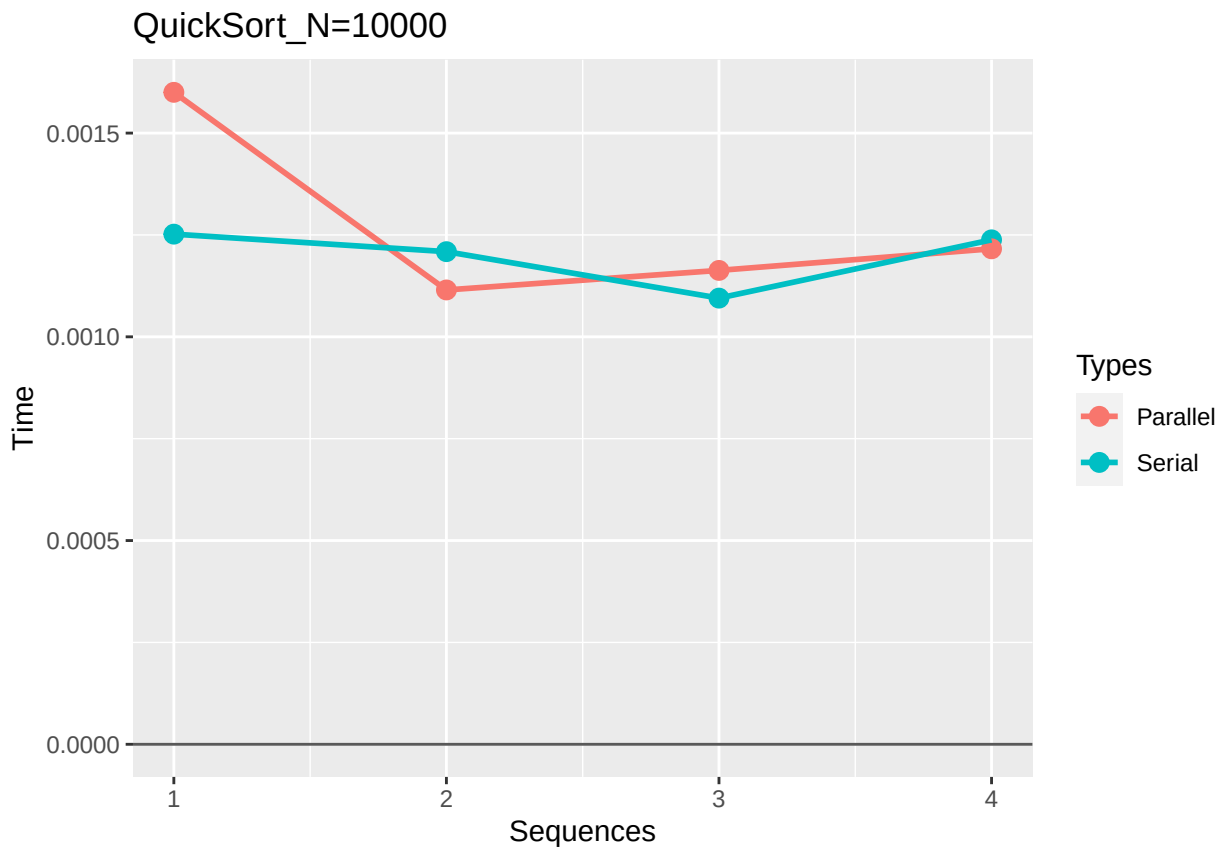
```
##
## Attaching package: 'gridExtra'

## The following object is masked from 'package:dplyr':
##
##     combine
```

```
MPI <-read.csv ("/Users/liuyu/Desktop/MPI.csv")
MPI <- subset(MPI,select=c(Time,Sort,Types,Sequences,N))
QuickSort_1=subset(MPI ,N==10000 & Sort=="QuickSort")
QuickSort_1
```

```
##        Time      Sort    Types Sequences     N
## 1  0.001252 QuickSort   Serial         1 10000
## 3  0.001209 QuickSort   Serial         2 10000
## 5  0.001095 QuickSort   Serial         3 10000
## 7  0.001238 QuickSort   Serial         4 10000
## 9  0.001600 QuickSort Parallel         1 10000
## 11 0.001115 QuickSort Parallel         2 10000
## 13 0.001163 QuickSort Parallel         3 10000
## 15 0.001216 QuickSort Parallel         4 10000
```

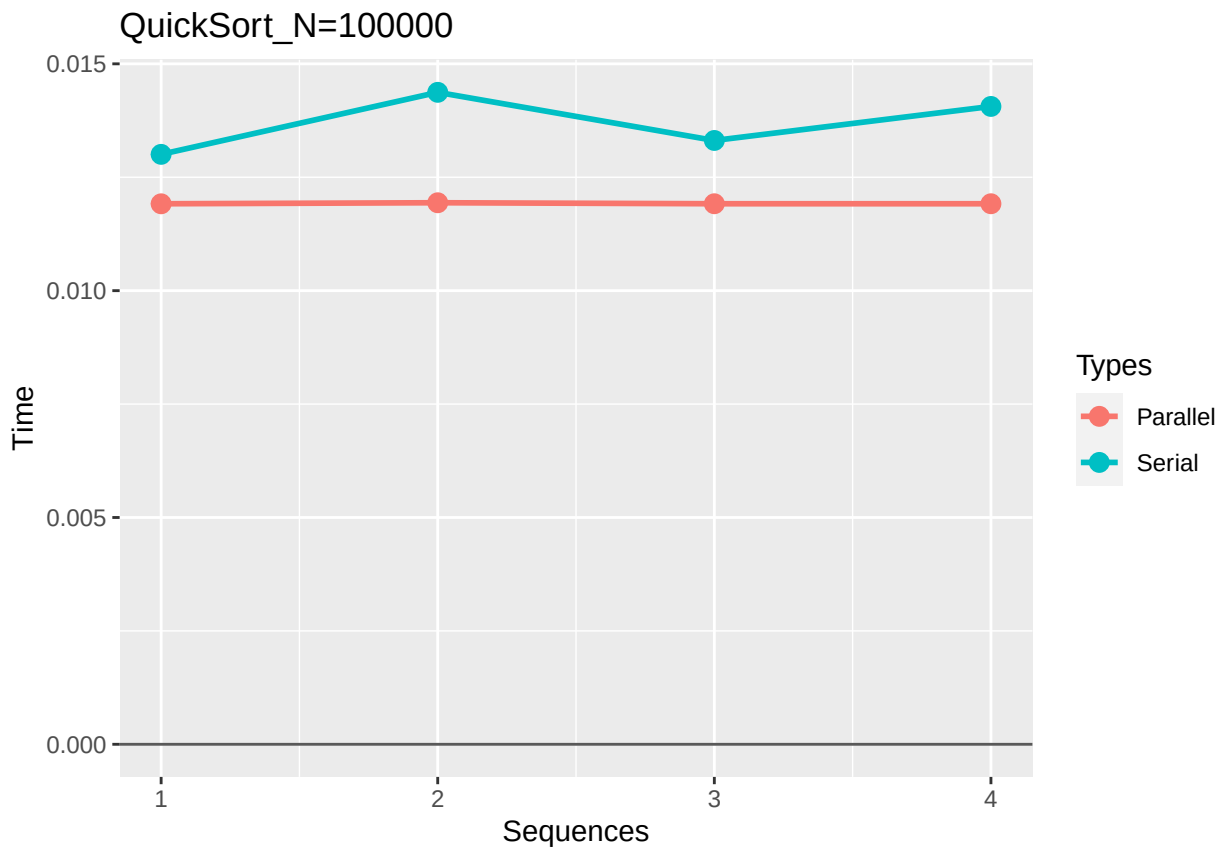
```
ggplot(data = QuickSort_1, aes(x = Sequences, y = Time,  color = Types)) +
  geom_point(size = 3) +
  geom_line(size = 1) +
 geom_hline(aes(yintercept=0), alpha = 0.65)+ggtitle("QuickSort_N=10000")
```




```
QuickSort_2=subset(MPI ,N==100000 & Sort=="QuickSort")
QuickSort_2
```

```
##        Time      Sort    Types Sequences      N
## 2  0.013005 QuickSort   Serial         1 100000
## 4  0.014372 QuickSort   Serial         2 100000
## 6  0.013311 QuickSort   Serial         3 100000
## 8  0.014061 QuickSort   Serial         4 100000
## 10 0.011915 QuickSort Parallel         1 100000
## 12 0.011938 QuickSort Parallel         2 100000
## 14 0.011916 QuickSort Parallel         3 100000
## 16 0.011916 QuickSort Parallel         4 100000
```

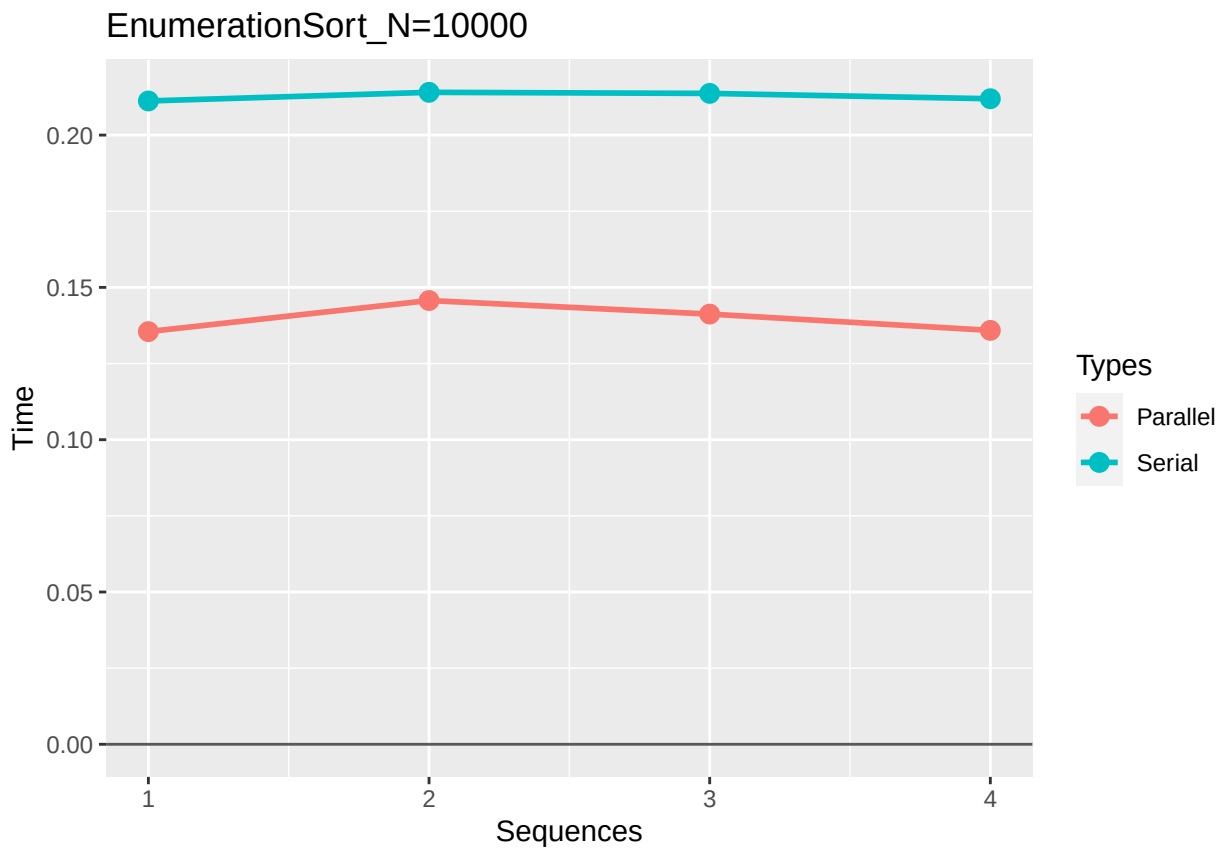
```
ggplot(data = QuickSort_2, aes(x = Sequences, y = Time,  color = Types)) +
  geom_point(size = 3) +
  geom_line(size = 1) +
 geom_hline(aes(yintercept=0), alpha = 0.65)+ggtitle("QuickSort_N=100000")
```




```
EnumerationSort_1=subset(MPI ,N==10000 & Sort=="EnumerationSort")
EnumerationSort_1
```

```
##         Time            Sort    Types Sequences     N
## 17 0.2111990 EnumerationSort   Serial         1 10000
## 19 0.2140330 EnumerationSort   Serial         2 10000
## 21 0.2136830 EnumerationSort   Serial         3 10000
## 23 0.2119320 EnumerationSort   Serial         4 10000
## 25 0.1354860 EnumerationSort Parallel         1 10000
## 27 0.1456821 EnumerationSort Parallel         2 10000
## 29 0.1412354 EnumerationSort Parallel         3 10000
## 31 0.1358876 EnumerationSort Parallel         4 10000
```

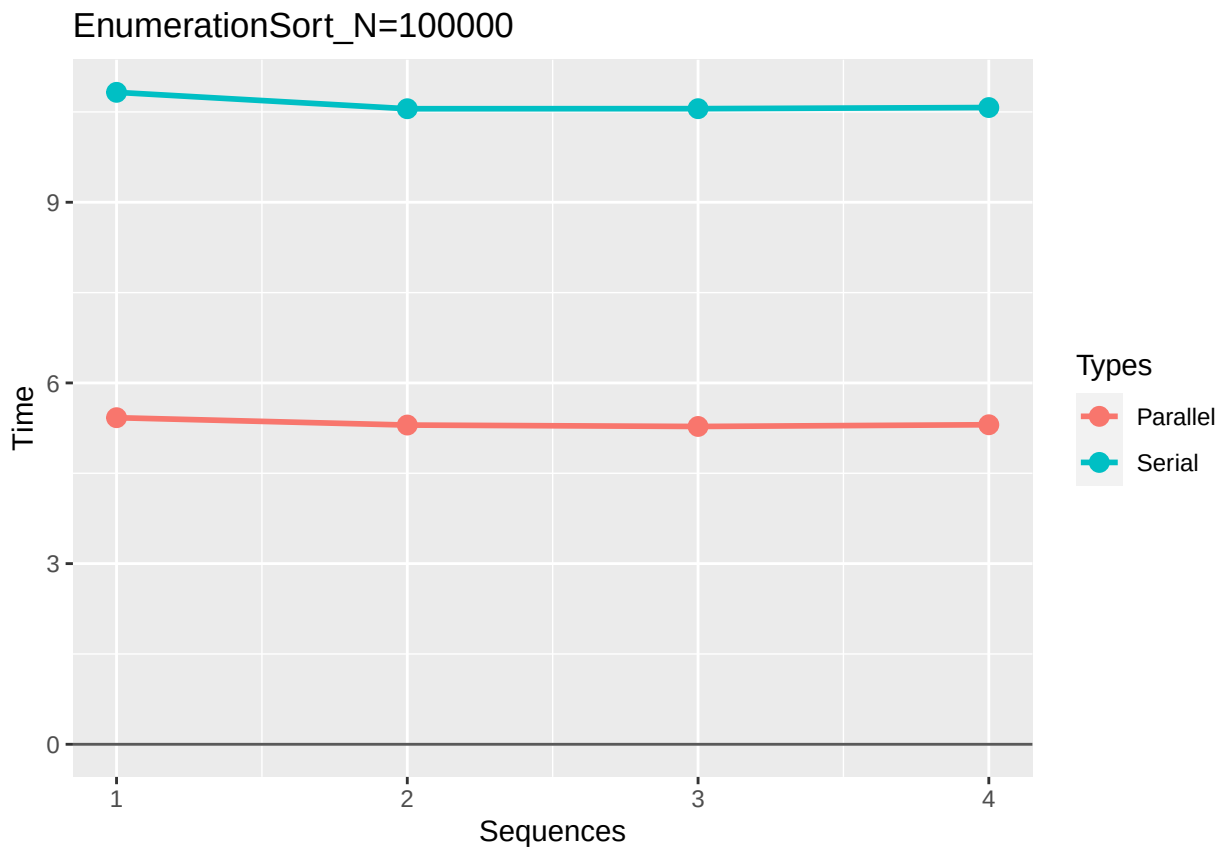
```
ggplot(data = EnumerationSort_1, aes(x = Sequences, y = Time,  color = Types)) +
  geom_point(size = 3) +
  geom_line(size = 1) +
 geom_hline(aes(yintercept=0), alpha = 0.65)+ggtitle("EnumerationSort_N=10000")
```




```
EnumerationSort_2=subset(MPI ,N==100000 & Sort=="EnumerationSort")
EnumerationSort_2
```

```
##         Time            Sort    Types Sequences      N
## 18 10.825174 EnumerationSort   Serial         1 100000
## 20 10.552899 EnumerationSort   Serial         2 100000
## 22 10.553925 EnumerationSort   Serial         3 100000
## 24 10.572657 EnumerationSort   Serial         4 100000
## 26  5.422981 EnumerationSort Parallel         1 100000
## 28  5.300767 EnumerationSort Parallel         2 100000
## 30  5.277323 EnumerationSort Parallel         3 100000
## 32  5.305882 EnumerationSort Parallel         4 100000
```

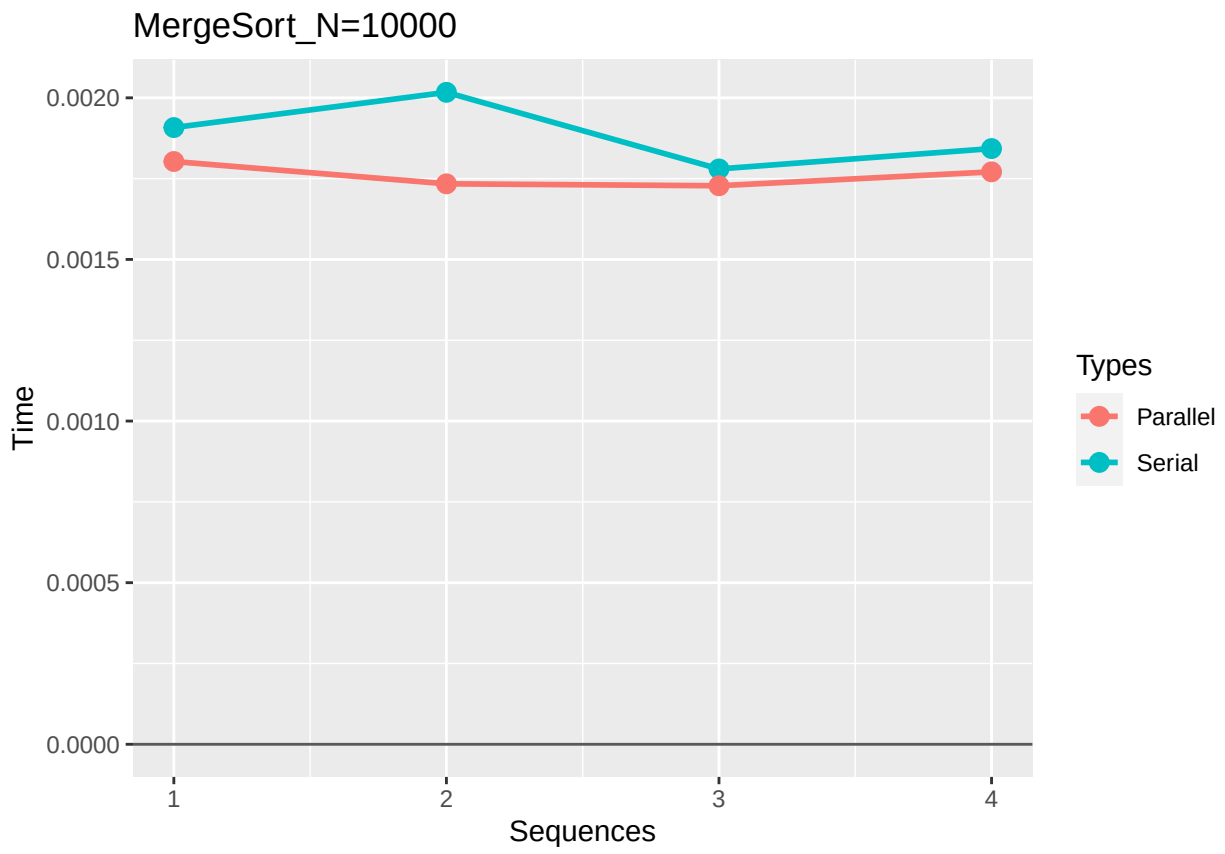
```
ggplot(data = EnumerationSort_2, aes(x = Sequences, y = Time,  color = Types)) +
  geom_point(size = 3) +
  geom_line(size = 1) +
 geom_hline(aes(yintercept=0), alpha = 0.65)+ggtitle("EnumerationSort_N=100000")
```




```
MergeSort_1=subset(MPI ,N==10000 & Sort=="MergeSort")
MergeSort_1
```

```
##        Time      Sort    Types Sequences     N
## 33 0.001908 MergeSort   Serial         1 10000
## 35 0.002017 MergeSort   Serial         2 10000
## 37 0.001780 MergeSort   Serial         3 10000
## 39 0.001843 MergeSort   Serial         4 10000
## 41 0.001803 MergeSort Parallel         1 10000
## 43 0.001734 MergeSort Parallel         2 10000
## 45 0.001728 MergeSort Parallel         3 10000
## 47 0.001771 MergeSort Parallel         4 10000
```

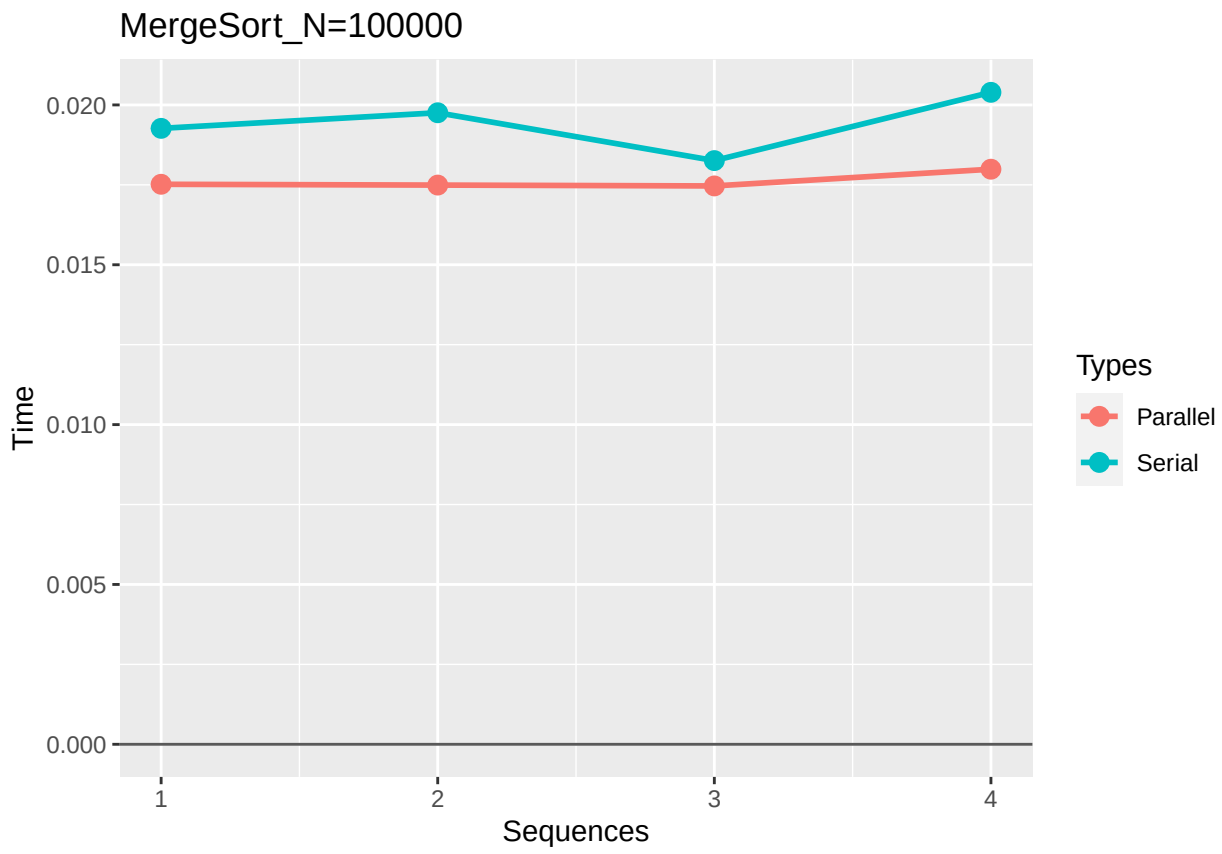
```
ggplot(data = MergeSort_1, aes(x = Sequences, y = Time,  color = Types)) +
  geom_point(size = 3) +
  geom_line(size = 1) +
 geom_hline(aes(yintercept=0), alpha = 0.65)+ggtitle("MergeSort_N=10000")
```




```
MergeSort_2=subset(MPI ,N==100000 & Sort=="MergeSort")
MergeSort_2
```

```
##        Time      Sort    Types Sequences      N
## 34 0.019267 MergeSort   Serial         1 100000
## 36 0.019755 MergeSort   Serial         2 100000
## 38 0.018259 MergeSort   Serial         3 100000
## 40 0.020394 MergeSort   Serial         4 100000
## 42 0.017518 MergeSort Parallel         1 100000
## 44 0.017493 MergeSort Parallel         2 100000
## 46 0.017466 MergeSort Parallel         3 100000
## 48 0.017989 MergeSort Parallel         4 100000
```

```
ggplot(data = MergeSort_2, aes(x = Sequences, y = Time,  color = Types)) +
  geom_point(size = 3) +
  geom_line(size = 1) +
 geom_hline(aes(yintercept=0), alpha = 0.65)+ggtitle("MergeSort_N=100000")
```


MergeSort_N=100000
0.020
0.015
0.010
0.005
0.000
Time
1
2
3
4
Sequences
Types
Parallel
Serial