AO19 Final: sets

```
import numpy as np
import pandas as pd
import matplotlib
import matplotlib.pyplot as plt
%matplotlib inline
```

```
# I read the points table.
point = pd.read_csv('/home/...../points.csv')
point = point.drop(columns=['Unnamed: 0', 'x', 'y'])
point
```

```
# I create the table named first with the points of the 1st set.
# They played 43 points in the 1st set (6:3).
first = point.head(43)
first
```

```
#I create the events table for only the first set.
event = pd.read_csv('/home/...../events.csv')
event = event[['rallyid', 'hitter', 'isserve', 'serve', 'type', 'stroke', 'time']]
first_event = pd.merge(first, event, on='rallyid', how='left')
first_event
```

```
# Type of players' shots in the 1st set.
first_event[first_event['hitter'] == 'Djokovic'].groupby('type').count()
[['rallyid']]
```

```
# Forehands and backhands by players in the 1st set.
first_event[first_event['hitter'] == 'Djokovic'].groupby('stroke').count()
[['rallyid']]
```

```
# I keep only the last shots of points in the 1st set to get the winners and errors.
dec = first_event.groupby('rallyid').last()
dec
```

```
# Players' winners and errors by type and stroke.
hit = dec[(dec['hitter'] == 'Djokovic') & (dec['winner'] == "Djokovic") &
(dec['stroke'] == 'forehand')]
num_hit = hit.groupby('type').count()
num_hit
```

```
# The number of 1st serves by server in the 1st set.
first.groupby('server').count()[['rallyid']]
```

```
# The number of points won by winner in the 1st set.
first.groupby('winner').count()[['rallyid']]
```

```
# Reasons for points by winner in the 1st set.
first[first['winner'] == 'Nadal'].groupby('reason').count()[['rallyid']]
```

```
# The number of serve in by serve by server.
first[first['serve'] == 'second'].groupby('server').count()[['rallyid']]
```

```
# I create the event table for only the 3rd set.
third = point.tail(53)
third_event = pd.merge(third, event, on='rallyid', how='left')
third_event
```

```
# I get only the deciders of points in the 3rd set.
dec = third_event.groupby('rallyid').last()
dec
```

```
# The players' winners and errors by type and stroke.
dec[(dec['hitter'] == 'Nadal') & (dec['winner'] == "Djokovic") & (dec['stroke'] ==
'forehand')].groupby('type').count()
```

```
# Number of points by server in the 3rd set.
third.groupby('server').count()[['rallyid']]
```

```
# Number of 2nd serves in by server.
third[third['serve'] == 'second'].groupby('server').count()[['rallyid']]
```

```
# Number of points won and lost after the 1st and 2nd serve by players.
win_serve = third[(third['server'] == 'Djokovic') & (third['winner'] == 'Nadal') &
(third['serve'] == 'second')].count()
win_serve
```

```
# Number of aces in the 3rd set.
ace = third[(third['server'] == 'Djokovic') & (third['reason'] == 'ace')].count()
ace
```

```
# Number of points won by players in the 3rd set.
third[third.winner == 'Nadal'].count()
```

```
# Reasons for points by winner in the 3rd set.
winner = third[third['winner'] == 'Nadal'].groupby('reason').count()[['rallyid']]
winner
```

```
# I create the table of the second set.
second = point.iloc[44:89]
second
```

```
# Number of winners by players in the 2nd set.
second.groupby('winner').count()
```

```
# I got the deciders for the 2nd set.
second_event = pd.merge(second, event, on='rallyid', how='left')
dec = second_event.groupby('rallyid').last()
dec
```

```
# The players' winners and errors by type and stroke.
dec[(dec['hitter'] == 'Nadal') & (dec['winner'] == "Djokovic") & (dec['stroke'] ==
'forehand')].groupby('type').count()
```

```
# The number of 1st serves by server.
second.groupby('server').count()[['rallyid']]
```

```
#The number of serves in by hitter.
second[second['serve'] == 'second'].groupby('server').count()[['rallyid']]
```

```
# The number of points won after 1st and 2nd serves by server.
win_serve = second[(second['server'] == 'Nadal') & (second['winner'] == 'Djokovic')
& (second['serve'] == 'first')].count()
win_serve
```

```
#The reasons for points by winner in the 2nd set.
second[second['winner'] == 'Djokovic'].groupby('reason').count()[['rallyid']]
```