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```
%%problem 2
info=readtable('Riverside2019_2020m.csv');
info=info(:,4:end);
```

```
data=info{:,~};
Tmin=data(:,8);
Tmax=data(:,7);
```

```
Tmin19=Tmin(1:365,1);
Tmin20=Tmin(366:end,1);
```

```
Tmax19=Tmax(1:365,1);
Tmax20=Tmax(366:end,1);
```

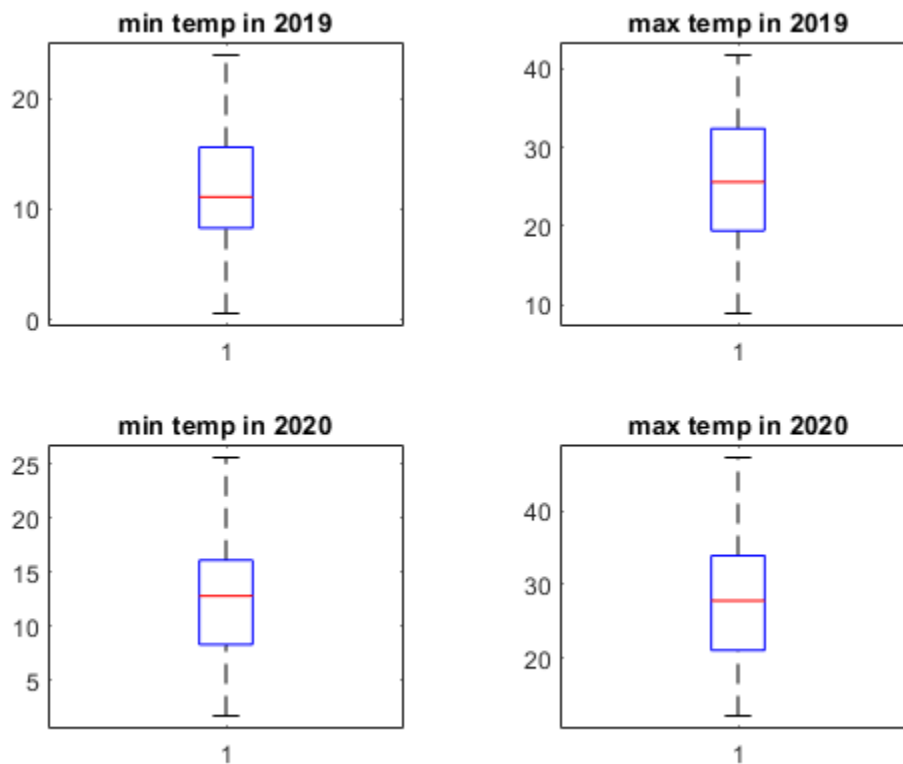
part 1

```
figure
tiledlayout(2,2)
```

```
min19=boxplot(nexttile,Tmin19);
title('min temp in 2019')
max19=boxplot(nexttile,Tmax19);
title('max temp in 2019')
min20=boxplot(nexttile,Tmin20);
title('min temp in 2020')
max20=boxplot(nexttile,Tmax20);
title('max temp in 2020')
%%the average temp in 2020 is greater than 2019 average temp, both max and
%%minum temp.
```

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part 2

```
springmin19=Tmin(60:151,1);%%min19
summermin19=Tmin(152:243,1);
fallmin19=Tmin(244:334,1);
wintermin19=Tmin(335:425,1);

springmax19=Tmax(60:151,1);%%max19
summermax19=Tmax(152:243,1);
fallmax19=Tmax(244:334,1);
wintermax19=Tmax(335:425,1);

springmin20=Tmin(426:517,1);%%min20
summermin20=Tmin(518:609,1);
fallmin20=Tmin(610:700,1);
wintermin20=Tmin(701:731,1);

springmax20=Tmax(426:517,1);%%max20
summermax20=Tmax(518:609,1);
fallmax20=Tmax(610:700,1);
wintermax20=Tmax(701:731,1);

%2019-2020 spring-winter box plot
```

```

figure
tiledlayout(4,4)
boxplot(nexttile, springmin19);
title('spring 2019 minum temp')
boxplot(nexttile, summermin19);
title('summer 2019 min temp')
boxplot(nexttile, fallmin19);
title('fall 2019 min temp');
boxplot(nexttile, wintermin19);
title('winter 2019 min temp');

boxplot(nexttile, springmax19);
title('spring 2019 max temp')
boxplot(nexttile, summermax19);
title('summer 2019 max temp')
boxplot(nexttile, fallmax19);
title('fall 2019 max temp');
boxplot(nexttile, wintermax19);
title('winter 2019 max temp');

boxplot(nexttile, springmin20)
title('spring min 2020 temp ')
boxplot(nexttile, summermin20);
title('summer 2020 min temp')
boxplot(nexttile, fallmin20);
title('fall 2020 min temp');
boxplot(nexttile, wintermin20);
title('winter 2020 min temp');

boxplot(nexttile, springmax20)
title('spring max 2020 temp')
boxplot(nexttile, summermax20);
title('summer 2020 max temp')
boxplot(nexttile, fallmax20);
title('fall 2020 max temp');
boxplot(nexttile, wintermax20);
title('winter 2020 max temp');

% I noticed that during summer 2019 and summer 2020, there where more
% outlires than the rest. So during the summmer of both years the max and
% min temp where less consistent comared to the rest of the seasons

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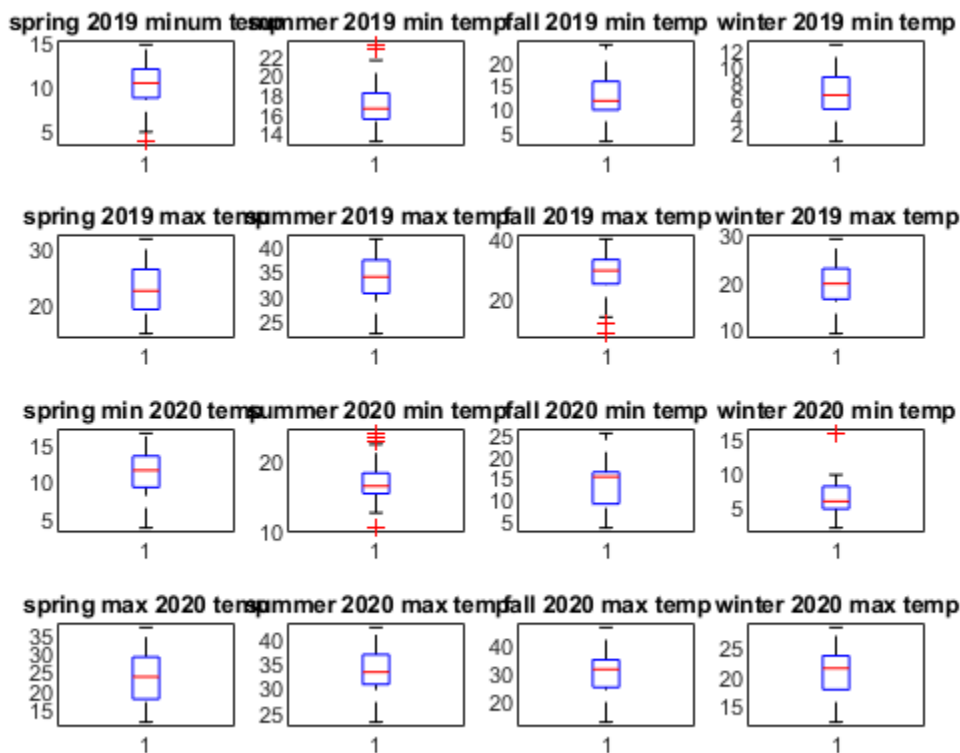
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Part3

```
avgwind=data(:,1);
```

```

spring19wind=avgwind(60:151,1);%average wind speed in 2019
summer19wind=avgwind(152:243,1);
fall19wind=avgwind(244:334,1);
winter19wind=avgwind(335:425,1);

spring20wind=avgwind(426:517,1);%average wind speed in 2020
summer20wind=avgwind(518:609,1);
fall20wind=avgwind(610:700,1);
winter20wind=avgwind(701:731,1);

figure
tiledlayout(2,4)
boxplot(nexttile, spring19wind);
title('average wind speed in spring 2019')
boxplot(nexttile, summer19wind);
title('average wind speed in summer 2019')
boxplot(nexttile, fall19wind);
title('average wind speed in fall 2019');
boxplot(nexttile, winter19wind);
title('average wind speed in winter 2019');

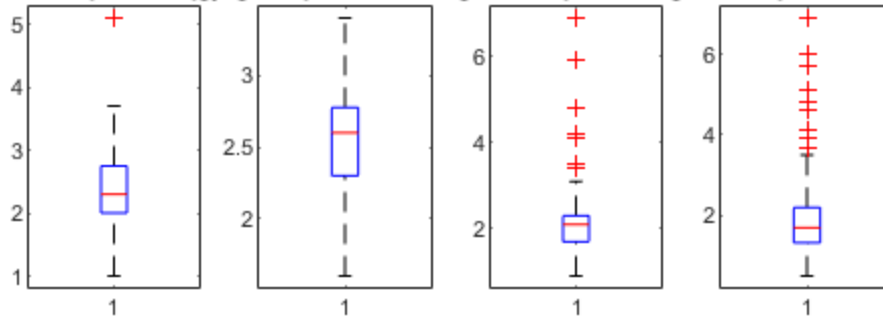
boxplot(nexttile, spring20wind);
title('average wind speed in spring 2020')
boxplot(nexttile, summer20wind);
title('average wind speed in summer 2020')
boxplot(nexttile, fall20wind);
title('average wind speed in fall 2020');
boxplot(nexttile, winter20wind);
title('average wind speed in winter 2020');

%In 2019 the average wind speed was larger than the rest of the seasons in
% , but in 2020 the largest average wind speed was not in winter but it
%was actually in fall.

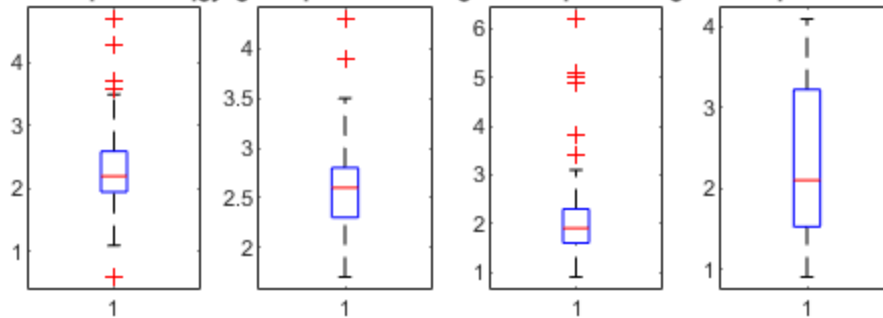
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```

average wind speed in spring 2019 average wind speed in summer 2019 average wind speed in fall 2019 average wind speed in winter 2019



average wind speed in spring 2020 average wind speed in summer 2020 average wind speed in fall 2020 average wind speed in winter 2020



part 4

```
direction5=data(:,10);
```

```
spring19direction5=direction5(60:151,1);%average wind speed in 2019
summer19direction5=direction5(152:243,1);
fall19direction5=direction5(244:334,1);
winter19direction5=direction5(335:425,1);
```

```
spring20direction5=direction5(426:517,1);%average wind speed in 2020
summer20direction5=direction5(518:609,1);
fall20direction5=direction5(610:700,1);
winter20direction5=direction5(701:731,1);
```

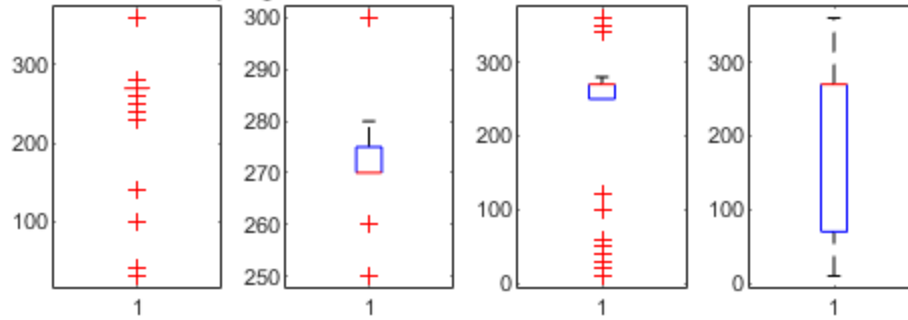
```
figure
tiledlayout(2,4)
boxplot(nexttile, spring19direction5);
title('direction of 5 sec wind spring 2019')
boxplot(nexttile, summer19direction5);
title('direction of 5 sec wind summer 2019')
boxplot(nexttile, fall19direction5);
title('direction of 5 sec wind fall 2019');
boxplot(nexttile, winter19direction5);
title('direction of 5 sec wind winter 2019');
```

```
boxplot(nexttile, spring20direction5);
title('direction of 5 sec wind spring 2020')
boxplot(nexttile, summer20direction5);
title('direction of 5 sec wind summer 2020')
boxplot(nexttile, fall20direction5);
title('direction of 5 sec wind fall 2020');
boxplot(nexttile, winter20direction5);
title('direction of 5 sec wind winter 2020');
```

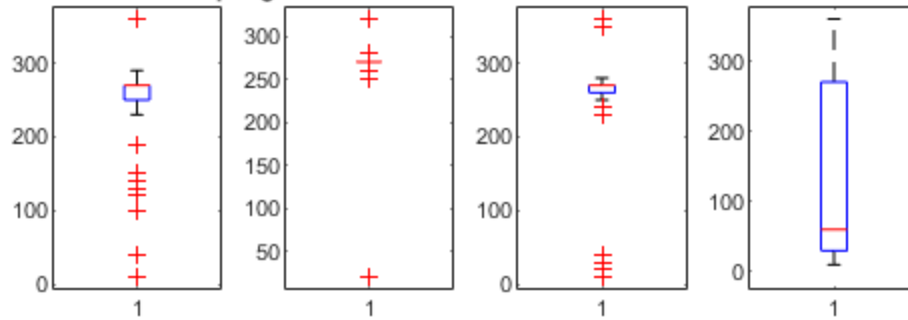
```
%I noticed that when looking at the box plots for the average directions of
%5 second wind speed the average direction was 270 for 3 out of the 8
%seasons. when looking at the other seasons they where in the low to high
%200 degree range +/-50
```

```
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```

direction of 5 sec wind spring 2019 direction of 5 sec wind summer 2019 direction of 5 sec wind fall 2019 direction of 5 sec wind winter 2019



direction of 5 sec wind spring 2020 direction of 5 sec wind summer 2020 direction of 5 sec wind fall 2020 direction of 5 sec wind winter 2020



part5

```
rain=data(:,3);
```

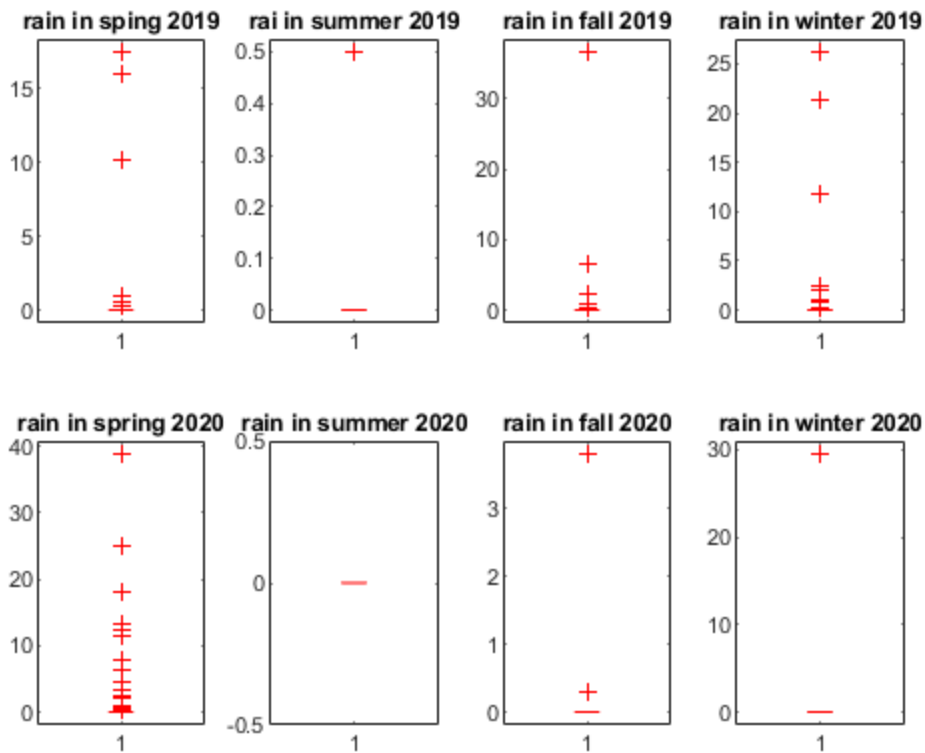
```
rainspring19=rain(60:151,1);%average wind speed in 2019
rainsummer19=rain(152:243,1);
rainfall19=rain(244:334,1);
rainwinter19=rain(335:425,1);
```

```
rainspring20=rain(426:517,1);%average wind speed in 2020
rainsummer20=rain(518:609,1);
rainfall20=rain(610:700,1);
rainwinter20=rain(701:731,1);
```

```
figure
tiledlayout(2,4)
boxplot(nexttile,rainspring19);
title('rain in spring 2019')
boxplot(nexttile,rainsummer19);
title('rain in summer 2019')
boxplot(nexttile,rainfall19);
title('rain in fall 2019');
boxplot(nexttile,rainwinter19);
title('rain in winter 2019');
```

```
boxplot(nexttile,rainspring20);
title('rain in spring 2020')
boxplot(nexttile,rainsummer20);
title('rain in summer 2020')
boxplot(nexttile,rainfall20);
title('rain in fall 2020');
boxplot(nexttile,rainwinter20);
title('rain in winter 2020');
%it appears that there was more rain fall in 2029 in riverside over all
% but sprinf 2020 had the most rain out of the rest of the season from 2019
% to 2020
```

```
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```



part 6

%when comparing the average wind speed and max temp I noticed that when the
 %max temp is at a maximum the average wind speed is fairly low. Maxumum max
 %temp occurs during einter and fall and during this times wind spwweds are
 %fairly low compared to spring and winter. So as we reach maximim max temp
 %wind speed is small but as it gets cooler wind speeds tend to increase.

% when looking at min temp i noticed that the data is more choppy and
 % fluxuates more than max temp. I notced that during times of jerastic min
 % temp change the wind averagespeeds tend to increase. I noticed this arounf
 % spring 2019 and sprinf 2020. during these times wind average speed tens
 % to pic up due to the jurstic temp change

part 7

```
n19min=0;
n19max=0;
for i=1:365
    T =Tmin19(i);
    if T<=20
        n19min=n19min+1;
    end
```

```

    TT=Tmax19(i);
    if TT>=27
        n19max=n19max+1;
    end
end

n20min=0;
n20max=0;
for i=1:365
    T=Tmin20(i);
    if T<20
        n20min=n20min+1;
    end
    TT=Tmax20(i);
    if TT>27
        n20max=n20max+1;
    end
end

% since there was not data for average temp I used data for min and max temp
% for the years 2019 and 2020.
%in 2019 the minimum temp hit below 20 C a total of 352 times
%in 2019 the max temp hit above 27 C a total of 166 times
%ac would be needed 166 times and heater would be needed 352 times in 2019
%in 2020 the minimum temp hit below 20 C a total of 342 times
%in 2020 the max temp hit above 27 C a total of 191 times
%ac would be needed 191 times and heater would be needed 342 times in 2020
% this ofcourse ranges from during the day and the middle of the night.

```

part 8

```

smoke=data(:,17);
smoke19=smoke(1:365);
smoke20=smoke(366:end);
haz19=0;
haz20=0;
for i=1:365

    s19=smoke19(i);
    if s19==1
        haz19=haz19+1;
    end
    s20=smoke20(i);
    if s20==1
        haz20=haz20+1;
    end
end

foggy=data(:,13);

foggy19=foggy(1:365);
foggy20=foggy(366:end);
fog19=0;

```

```
fog20=0;
for i=1:365
    f19=foggy19(i);
    if f19==1
        fog19=fog19+1;
    end
    f20=foggy20(i);
    if f20==1
        fog20=fog20+1;
    end
end
% in 2019 there where 97 days of haz/smoke
% in 2020 there where 94 dats of haz/smoke

%in 2019 there where 118 days of fog
%in 2020 there where 76 days of fog
```

Published with MATLAB® R2021b