In [1]:
```
#General

import numpy as np

from numpy.random import randn

import pandas as pd

from pandas import Series,DataFrame

#Stats
from scipy import stats

import seaborn as sns


#Plots
import matplotlib as mpl

import matplotlib.pyplot as plt

%matplotlib inline
```

In [2]:
```
#Creating a Heatmap
```

In [3]:
```
flight_dframe=sns.load_dataset('flights')
```

In [11]:
```
flight_dframe.head()
```

Out[11]:

month	January	February	March	April	May	June	July	August	September	October	November	De
year												
1949	112	118	132	129	121	135	148	148	136	119	104	11
1950	115	126	141	135	125	149	170	170	158	133	114	14
1951	145	150	178	163	172	178	199	199	184	162	146	16
1952	171	180	193	181	183	218	230	242	209	191	172	19
1953	196	196	236	235	229	243	264	272	237	211	180	20

In [ ]:
```
flight_dframe.pivot('year','month','passengers')#Pivoting the passengers data by ye
ar/month
```

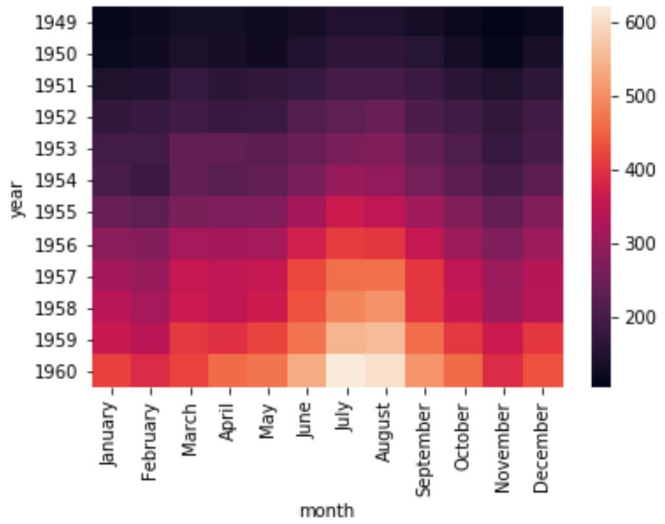
In [12]:
```
flight_dframe
```

Out[12]:

month	January	February	March	April	May	June	July	August	September	October	November	De
year												
1949	112	118	132	129	121	135	148	148	136	119	104	11
1950	115	126	141	135	125	149	170	170	158	133	114	14
1951	145	150	178	163	172	178	199	199	184	162	146	16
1952	171	180	193	181	183	218	230	242	209	191	172	19
1953	196	196	236	235	229	243	264	272	237	211	180	20
1954	204	188	235	227	234	264	302	293	259	229	203	22
1955	242	233	267	269	270	315	364	347	312	274	237	27
1956	284	277	317	313	318	374	413	405	355	306	271	30
1957	315	301	356	348	355	422	465	467	404	347	305	33
1958	340	318	362	348	363	435	491	505	404	359	310	33
1959	360	342	406	396	420	472	548	559	463	407	362	40
1960	417	391	419	461	472	535	622	606	508	461	390	43

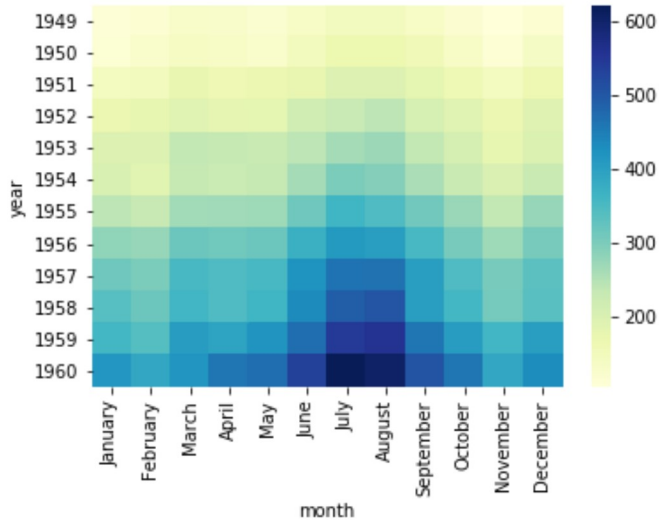
In [13]:
```
sns.heatmap(flight_dframe)
```

Out[13]: `<matplotlib.axes._subplots.AxesSubplot at 0x2a3660acdd8>`



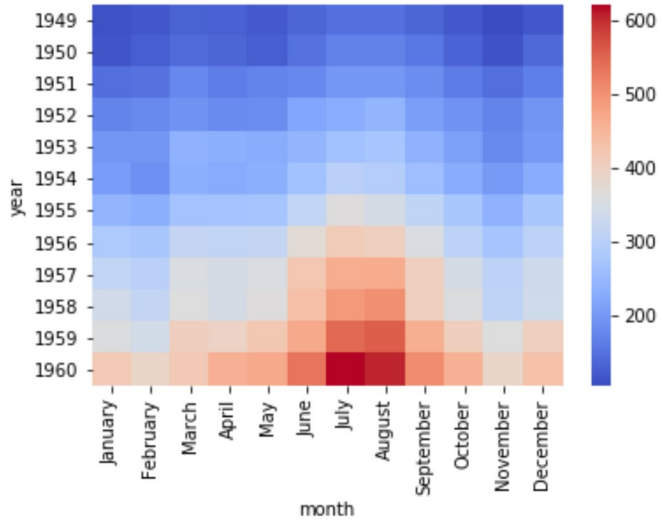
In [19]:
```
sns.heatmap(flight_dframe,cmap="YlGnBu")#,linecolor='blue'
```

Out[19]: <matplotlib.axes._subplots.AxesSubplot at 0x2a3666a9dd8>



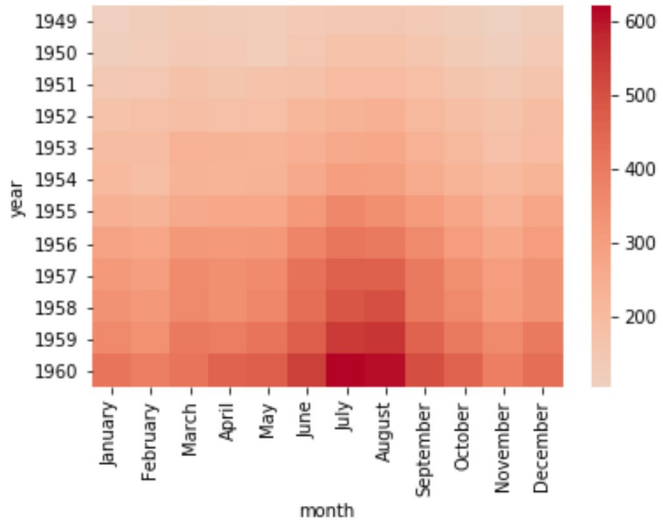
In [23]:
```
sns.heatmap(flight_dframe,cmap="coolwarm")
```

Out[23]: <matplotlib.axes._subplots.AxesSubplot at 0x2a3668bdac8>



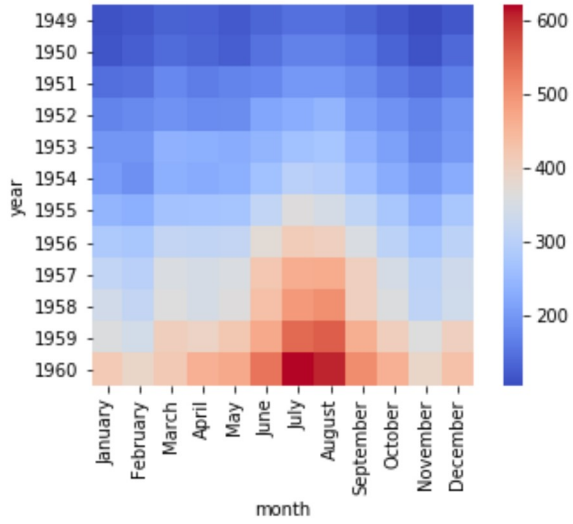
In [26]:
```
sns.heatmap(flight_dframe,cmap="coolwarm",center=10)
```

Out[26]: <matplotlib.axes._subplots.AxesSubplot at 0x2a366ac5160>



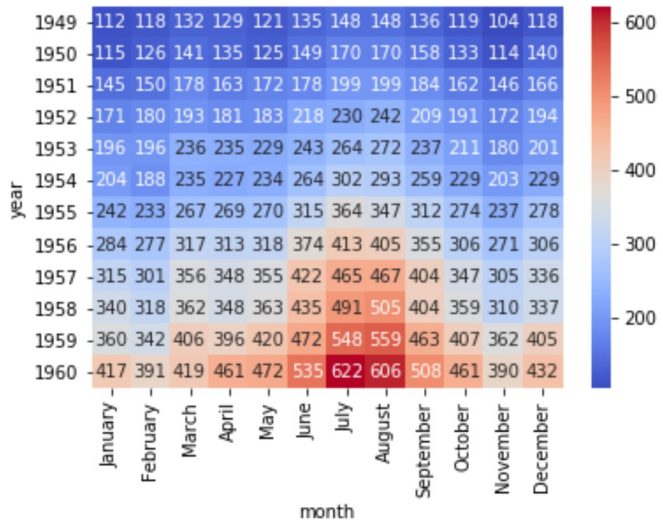
In [28]:
```
sns.heatmap(flight_dframe,cmap="coolwarm",square=True)#shape in the form of square.
```

Out[28]: <matplotlib.axes._subplots.AxesSubplot at 0x2a366c1d0f0>



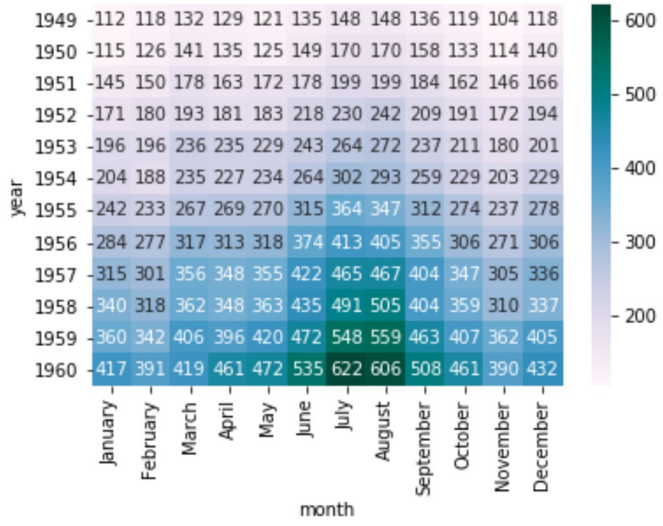
In [30]:
```
sns.heatmap(flight_dframe,cmap="coolwarm",annot=True,fmt='d')#Displaying the numbers
```

Out[30]: <matplotlib.axes._subplots.AxesSubplot at 0x2a367e122e8>



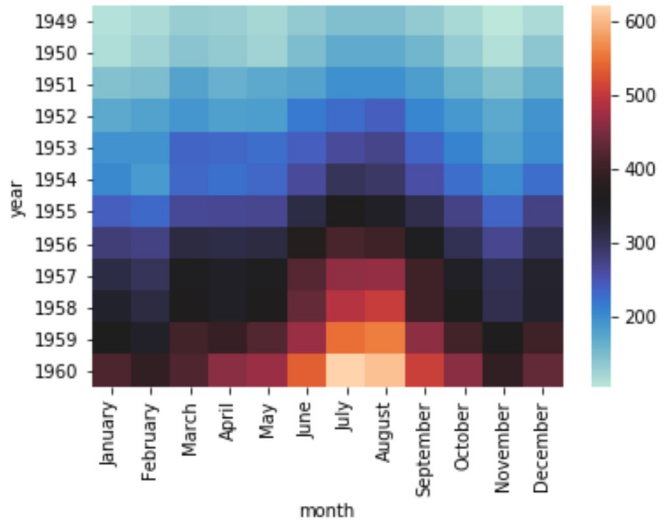
In [32]:
```
sns.heatmap(flight_dframe,cmap="PuBuGn",annot=True,fmt='d')#Displaying the numbers
```

Out[32]: <matplotlib.axes._subplots.AxesSubplot at 0x2a367f91a90>



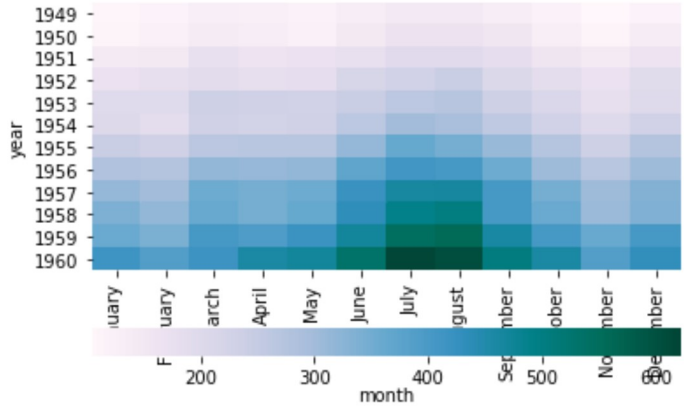
In [40]:
```
sns.heatmap(flight_dframe,center=flight_dframe.loc[1955,'July'])
```

Out[40]: <matplotlib.axes._subplots.AxesSubplot at 0x2a368428320>



In [51]:
```
sns.heatmap(flight_dframe,cmap='PuBuGn',cbar_kws={'orientation':'horizontal'})#Moving colormap to Horizontal
```

Out[51]: <matplotlib.axes._subplots.AxesSubplot at 0x2a36885ef98>



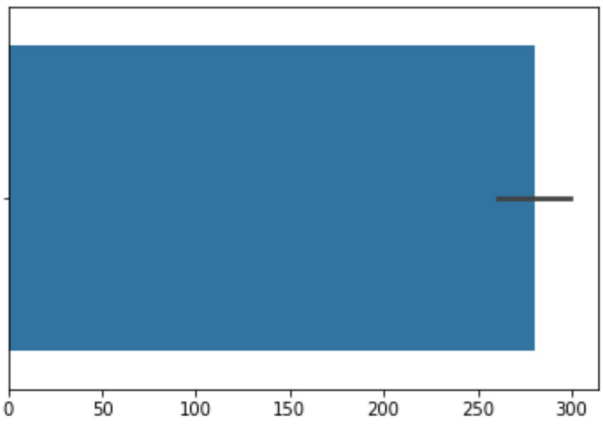
In [53]:
```
flight_dframe
```

Out[53]:

month	January	February	March	April	May	June	July	August	September	October	November	De
year												
1949	112	118	132	129	121	135	148	148	136	119	104	11
1950	115	126	141	135	125	149	170	170	158	133	114	14
1951	145	150	178	163	172	178	199	199	184	162	146	16
1952	171	180	193	181	183	218	230	242	209	191	172	19
1953	196	196	236	235	229	243	264	272	237	211	180	20
1954	204	188	235	227	234	264	302	293	259	229	203	22
1955	242	233	267	269	270	315	364	347	312	274	237	27
1956	284	277	317	313	318	374	413	405	355	306	271	30
1957	315	301	356	348	355	422	465	467	404	347	305	33
1958	340	318	362	348	363	435	491	505	404	359	310	33
1959	360	342	406	396	420	472	548	559	463	407	362	40
1960	417	391	419	461	472	535	622	606	508	461	390	43

In [54]:
```
sns.barplot(flight_dframe)
```

Out[54]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x2a36855cc50>
```



In [101]:
```
#f,(axis1,axis2)=plt.subplots(2,1)

#yearly_flights=flight_dframe.sum()

years=pd.Series(flight_dframe.index.values)
years=pd.DataFrame(years)

c=flight_dframe.transpose()

passng=c.sum()
passngers=pd.Series(passng)
passngers=pd.DataFrame(passngers)

x=pd.concat(years,passngers)

x
#years_dframe=pd.concat((years,passngers))
#years_dframe.columns=['Year','#Pass']

#print(years_dframe)

#sns.barplot(years_dframe,ax=axis1)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-101-d61ab5b80ef6> in <module>()
     12 #passngers=pd.DataFrame(passngers)
     13
---> 14 x=pd.concat(years,passngers)
     15
     16 x

~\Anaconda3\lib\site-packages\pandas\core\reshape\concat.py in concat(objs, axis
, join, join_axes, ignore_index, keys, levels, names, verify_integrity, sort, co
py)
    223                       keys=keys, levels=levels, names=names,
    224                       verify_integrity=verify_integrity,
--> 225                       copy=copy, sort=sort)
    226     return op.get_result()
    227

~\Anaconda3\lib\site-packages\pandas\core\reshape\concat.py in __init__(self, ob
js, axis, join, join_axes, keys, levels, names, ignore_index, verify_integrity,
copy, sort)
    239             raise TypeError('first argument must be an iterable of panda
s '
    240                             'objects, you passed an object of type '
--> 241                             '"{name}"'.format(name=type(objs).__name__))
    242
    243         if join == 'outer':

TypeError: first argument must be an iterable of pandas objects, you passed an o
bject of type "Series"
```

In [107]:
```
flight_dframe1=sns.load_dataset('flights')
```

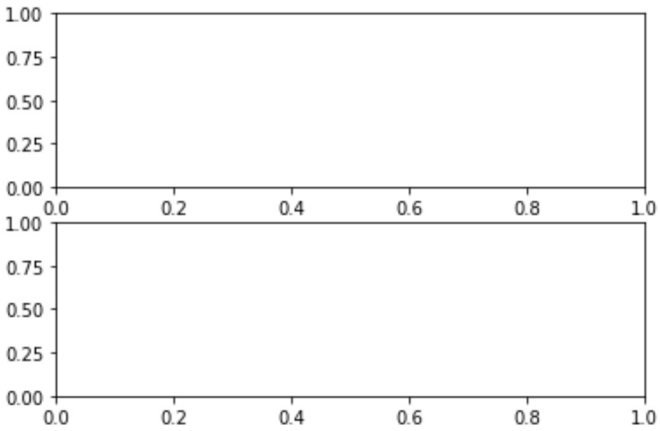
In [108]:
```
flight_dframe1.pivot('month','year','passengers')#
```

Out[108]:

year	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
month												
January	112	115	145	171	196	204	242	284	315	340	360	417
February	118	126	150	180	196	188	233	277	301	318	342	391
March	132	141	178	193	236	235	267	317	356	362	406	419
April	129	135	163	181	235	227	269	313	348	348	396	461
May	121	125	172	183	229	234	270	318	355	363	420	472
June	135	149	178	218	243	264	315	374	422	435	472	535
July	148	170	199	230	264	302	364	413	465	491	548	622
August	148	170	199	242	272	293	347	405	467	505	559	606
September	136	158	184	209	237	259	312	355	404	404	463	508
October	119	133	162	191	211	229	274	306	347	359	407	461
November	104	114	146	172	180	203	237	271	305	310	362	390
December	118	140	166	194	201	229	278	306	336	337	405	432

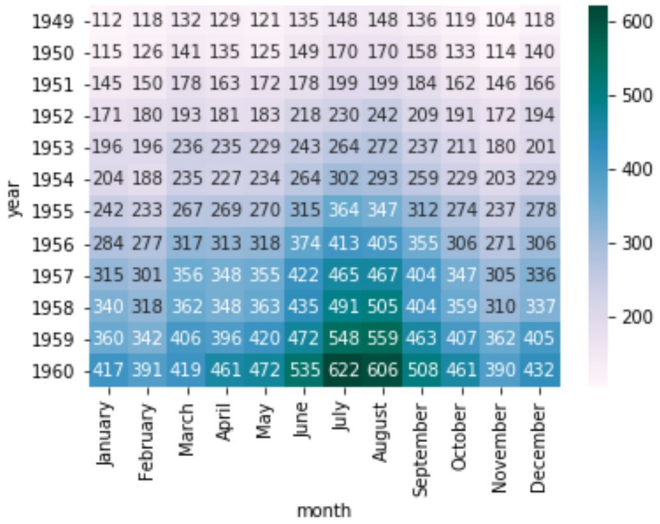
In [61]:
```
f,(axis1,axis2)=plt.subplots(2,1)

yearly_flights=flight_dframe1.sum()

years=pd.Series(yearly_flights.index.values)

years
```

Out[61]:
```
0          year
1         month
2    passengers
dtype: object
```



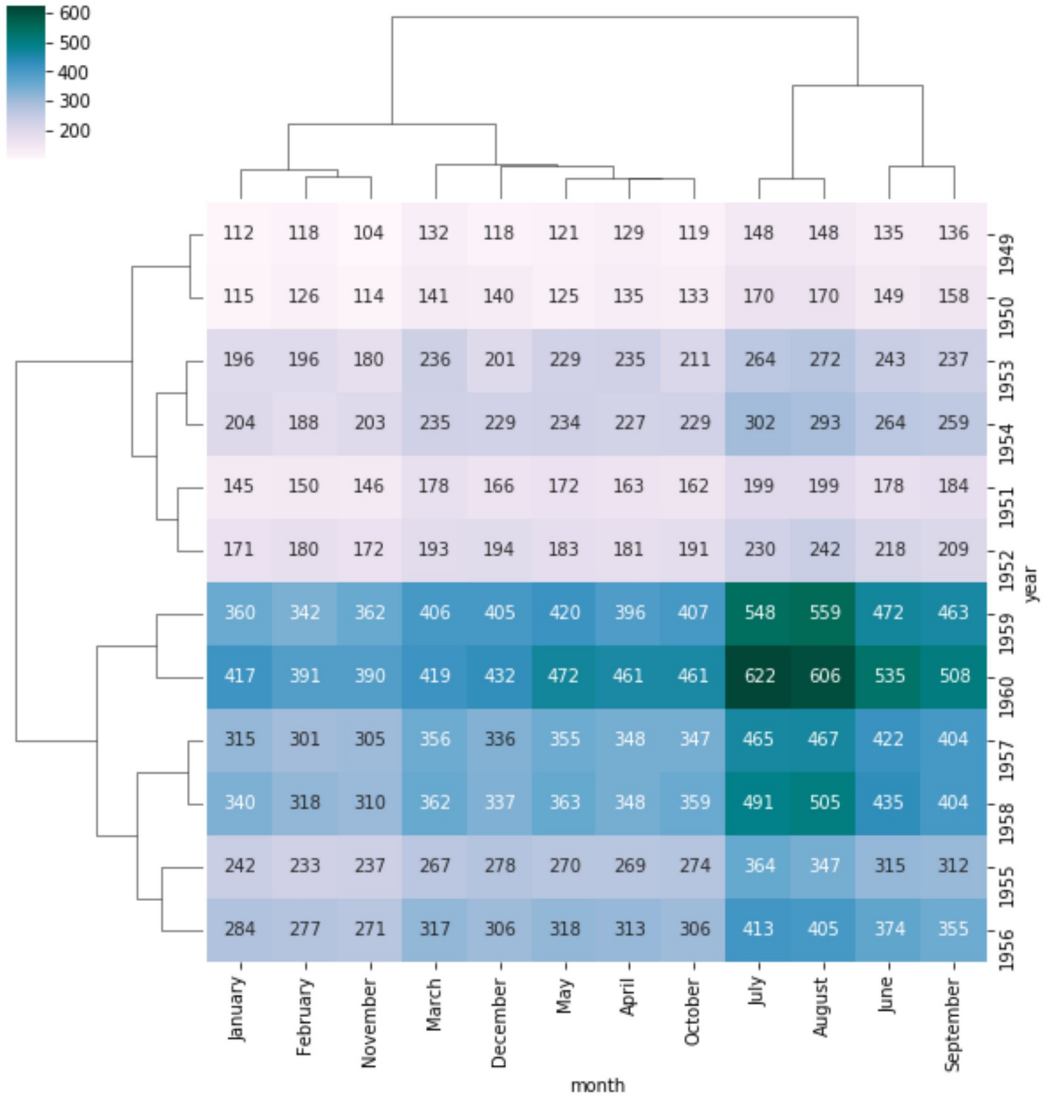
In [102]:
```
sns.heatmap(flight_dframe,cmap="PuBuGn",annot=True,fmt='d')
```

Out[102]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x2a369d3ca20>
```



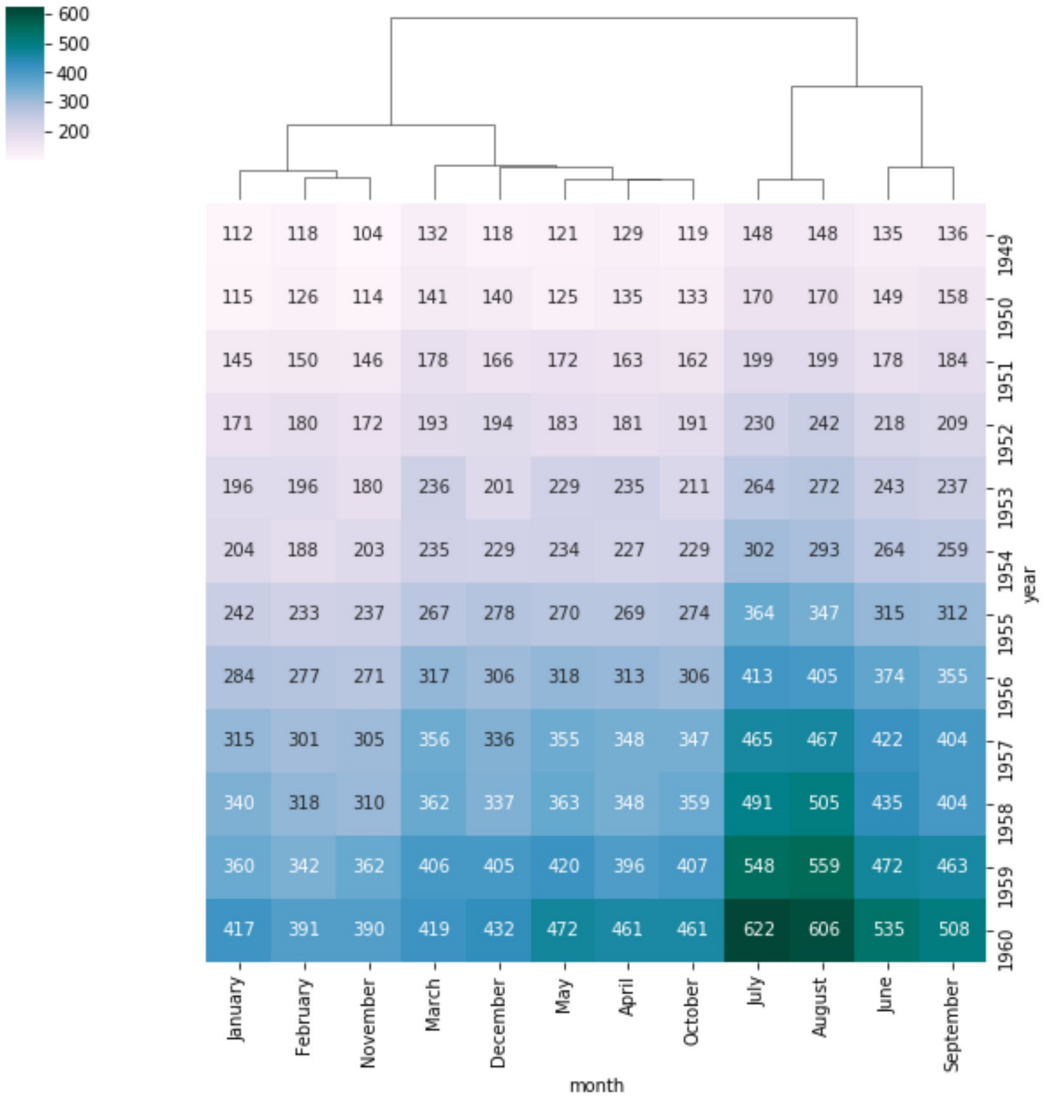
In [105]:
```
sns.clustermap(flight_dframe,cmap="PuBuGn",annot=True,fmt='d')
```

Out[105]: <seaborn.matrix.ClusterGrid at 0x2a3685e96d8>



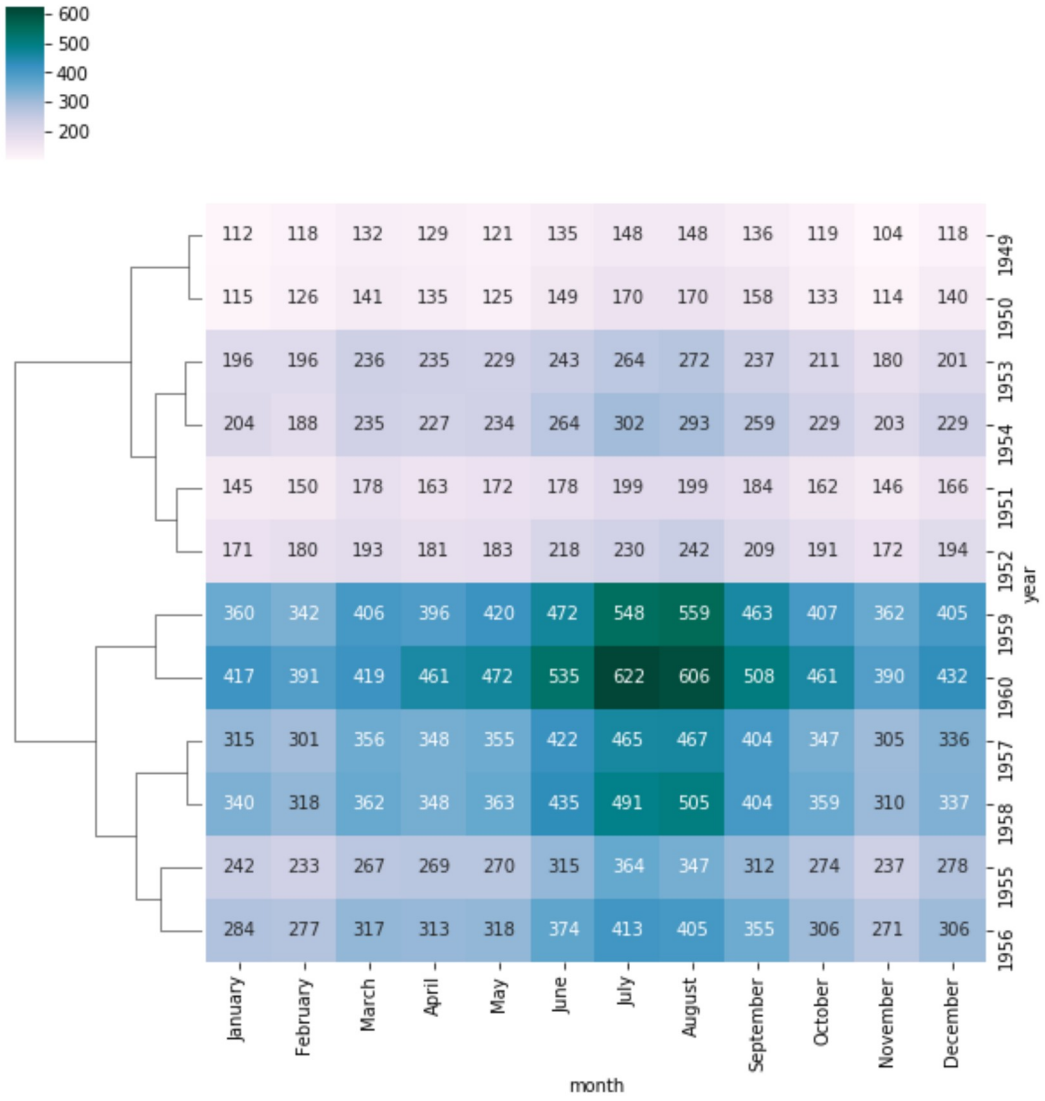
In [114]:
```
sns.clustermap(flight_dframe,cmap="PuBuGn",annot=True,fmt='d',row_cluster=False)
#sorting/arranging values by Columns
```

Out[114]: <seaborn.matrix.ClusterGrid at 0x2a368620588>



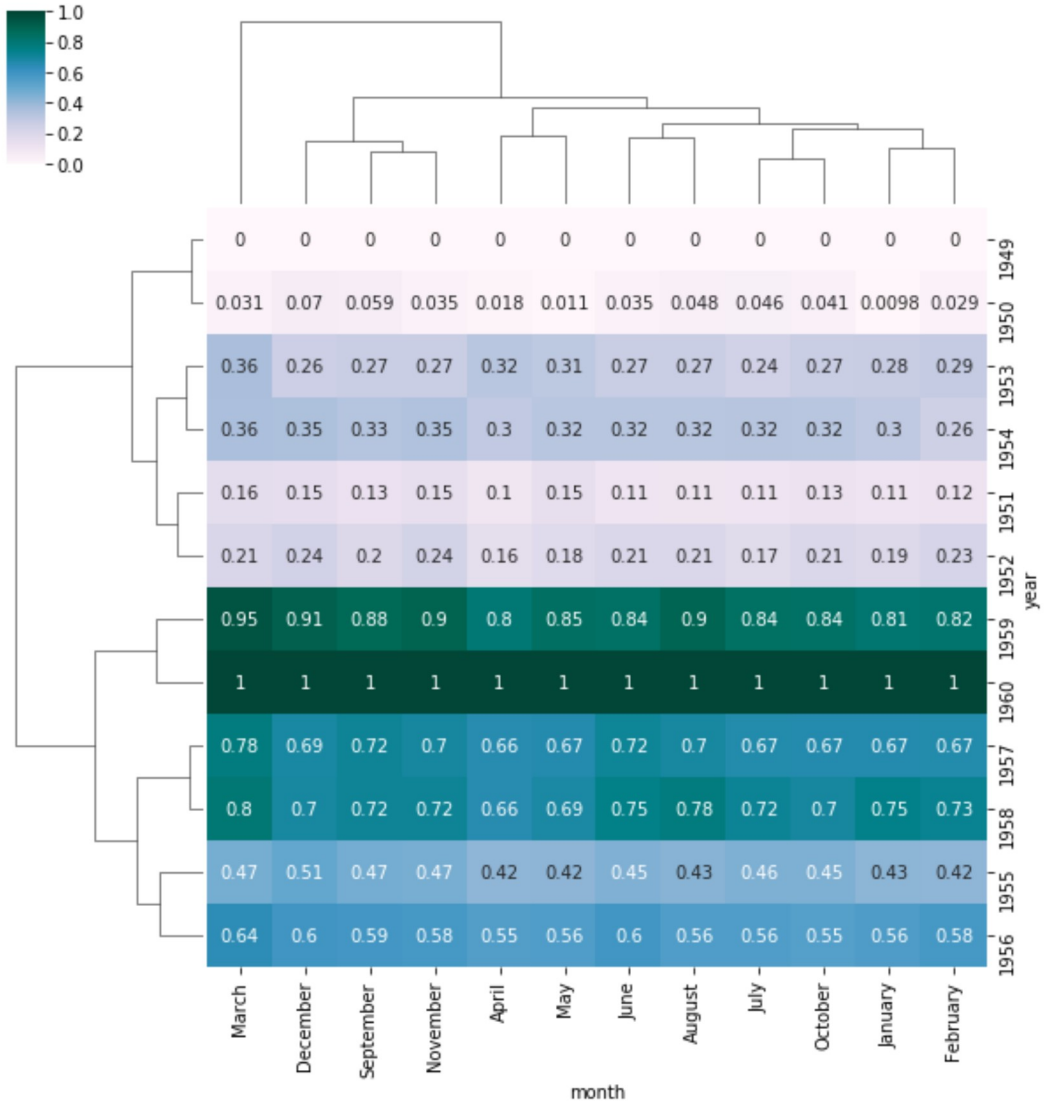
In [117]:
```
sns.clustermap(flight_dframe,cmap="PuBuGn",annot=True,fmt='d',col_cluster=False)
#sorting/arranging values by Rows
```

Out[117]: <seaborn.matrix.ClusterGrid at 0x2a36c625fd0>



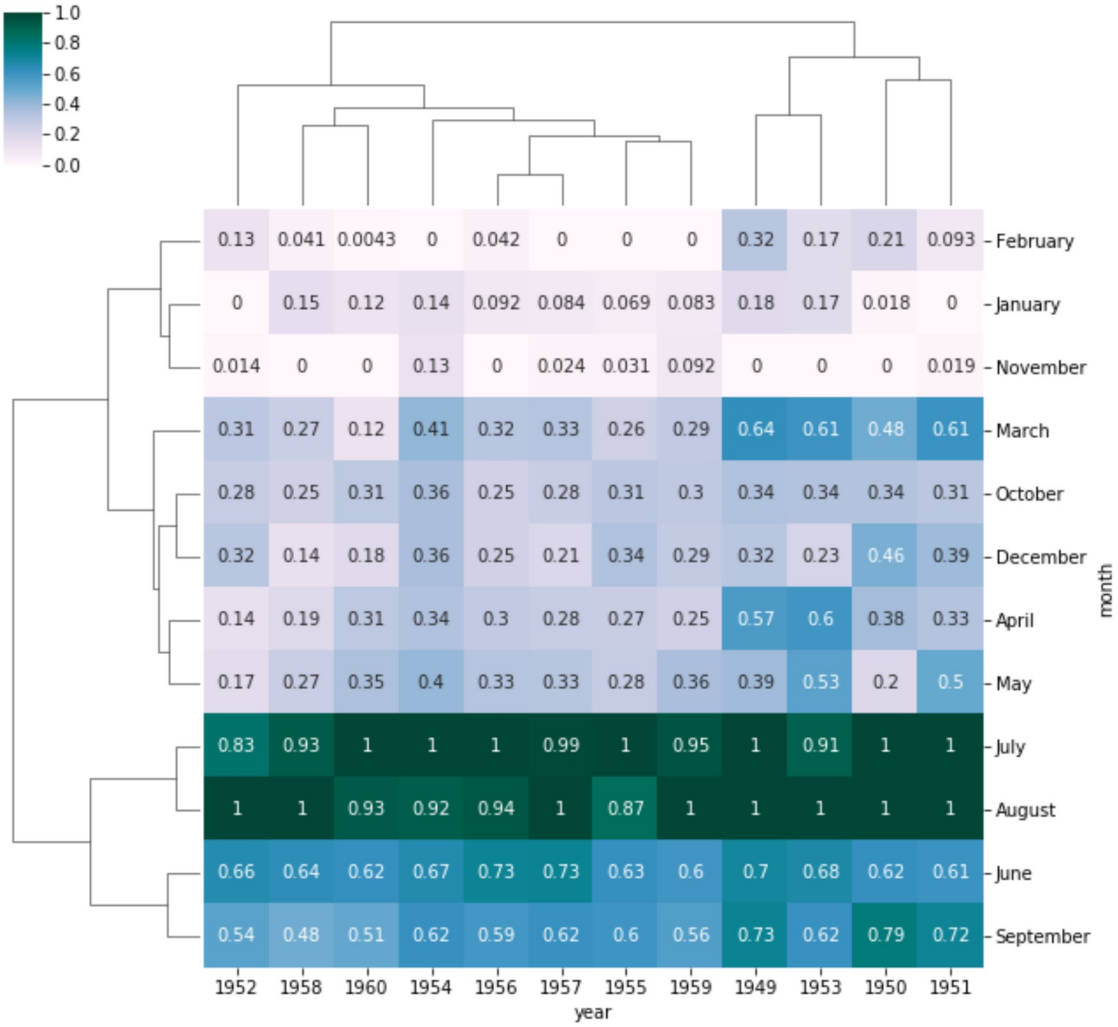
In [119]:
```
sns.clustermap(flight_dframe,cmap="PuBuGn",annot=True,standard_scale=1)
```

Out[119]: <seaborn.matrix.ClusterGrid at 0x2a36d106ac8>



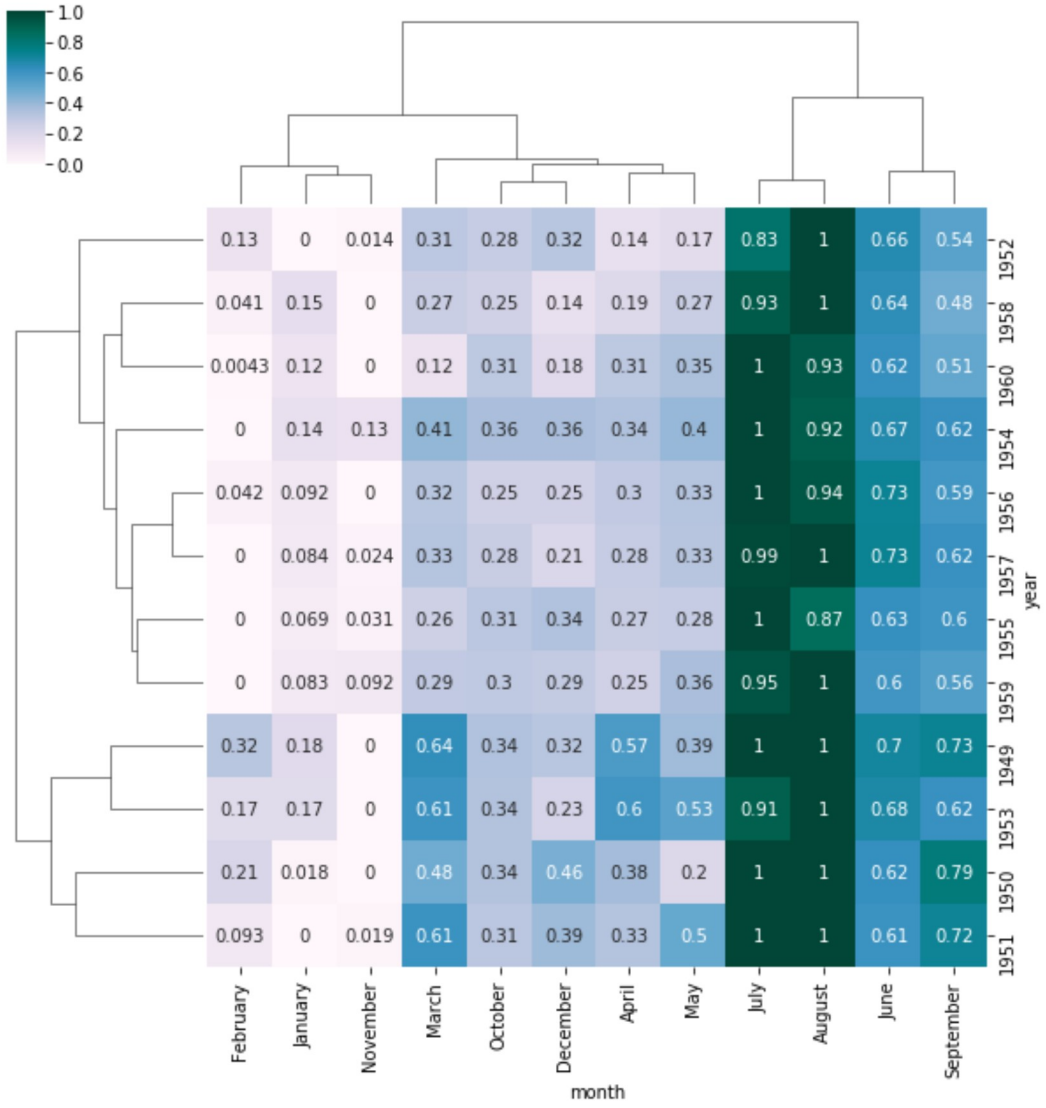
In [120]:
```
sns.clustermap(flight_dframe.transpose(),cmap="PuBuGn",annot=True,standard_scale=1
)
```

Out[120]: <seaborn.matrix.ClusterGrid at 0x2a36d6a6d30>



In [121]:
```
sns.clustermap(flight_dframe,cmap="PuBuGn",annot=True,standard_scale=0)
```

Out[121]: <seaborn.matrix.ClusterGrid at 0x2a36ae30fd0>



In [122]:
```
fd=sns.load_dataset('flights')
```

In [143]:
```
fd=fd.pivot('month','year','passengers')
```

In [144]:
```
fd
```

Out[144]:

year	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
month												
January	112	115	145	171	196	204	242	284	315	340	360	417
February	118	126	150	180	196	188	233	277	301	318	342	391
March	132	141	178	193	236	235	267	317	356	362	406	419
April	129	135	163	181	235	227	269	313	348	348	396	461
May	121	125	172	183	229	234	270	318	355	363	420	472
June	135	149	178	218	243	264	315	374	422	435	472	535
July	148	170	199	230	264	302	364	413	465	491	548	622
August	148	170	199	242	272	293	347	405	467	505	559	606
September	136	158	184	209	237	259	312	355	404	404	463	508
October	119	133	162	191	211	229	274	306	347	359	407	461
November	104	114	146	172	180	203	237	271	305	310	362	390
December	118	140	166	194	201	229	278	306	336	337	405	432

In [150]:
```
#Below command doing the sum of number of passengers by Year
yearly_flights=fd.sum()

yearly_flights
```

Out[150]:
```
year
1949    1520
1950    1676
1951    2042
1952    2364
1953    2700
1954    2867
1955    3408
1956    3939
1957    4421
1958    4572
1959    5140
1960    5714
dtype: int64
```

In [151]:
```
years=pd.Series(yearly_flights.index.values)

years
```

Out[151]:
```
0     1949
1     1950
2     1951
3     1952
4     1953
5     1954
6     1955
7     1956
8     1957
9     1958
10    1959
11    1960
dtype: int64
```

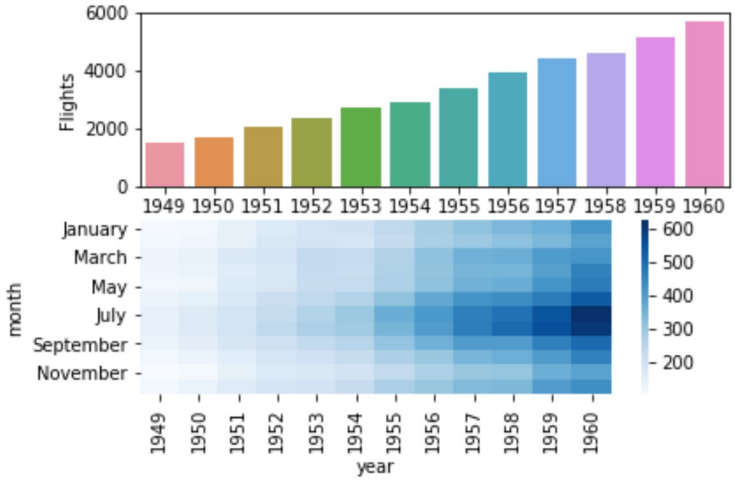
In [152]:
```
years=pd.DataFrame(years)

years
```

Out[152]:

	0
0	1949
1	1950
2	1951
3	1952
4	1953
5	1954
6	1955
7	1956
8	1957
9	1958
10	1959
11	1960

In [148]:
```
f,(axis1,axis2)=plt.subplots(2,1)
#Below command doing the sum of number of passengers by Year
yearly_flights=fd.sum()

# capturing only the index values i.e. Years
years=pd.Series(yearly_flights.index.values)

#Converting to DataFrame
years=pd.DataFrame(years)


# capturing only the  values i.e. Number of passengers
flights=pd.Series(yearly_flights.values)
#Converting to DataFrame
flights=pd.DataFrame(flights)

#Concatanating the 2 DataFrame
year_dframe=pd.concat((years,flights),axis=1)

#givign columns
year_dframe.columns=['Year','Flights']

#Plottign
sns.barplot('Year',y='Flights',data=year_dframe,ax=axis1)

sns.heatmap(fd,cmap='Blues',ax=axis2)
```

Out[148]: <matplotlib.axes._subplots.AxesSubplot at 0x2a36f034c18>



In [153]:
```
df=sns.load_dataset('flights')
```

In [156]:
```
df.head()
```

Out[156]:

	year	month	passengers
0	1949	January	112
1	1949	February	118
2	1949	March	132
3	1949	April	129
4	1949	May	121

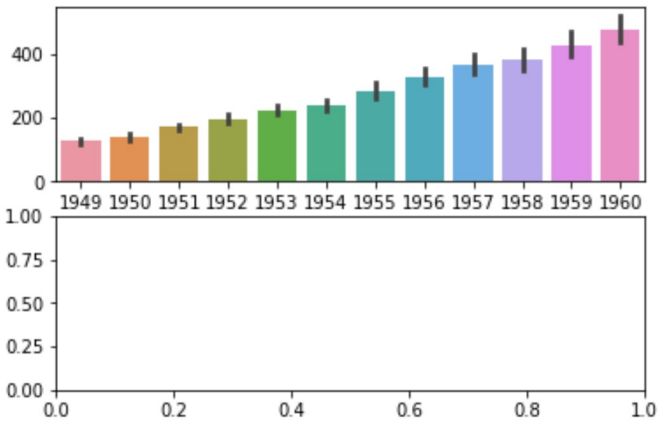
In [158]:
```
df=df.pivot('year','month','passengers')
```

In [159]:
```
df
```

Out[159]:

month	January	February	March	April	May	June	July	August	September	October	November	De
year												
1949	112	118	132	129	121	135	148	148	136	119	104	11
1950	115	126	141	135	125	149	170	170	158	133	114	14
1951	145	150	178	163	172	178	199	199	184	162	146	16
1952	171	180	193	181	183	218	230	242	209	191	172	19
1953	196	196	236	235	229	243	264	272	237	211	180	20
1954	204	188	235	227	234	264	302	293	259	229	203	22
1955	242	233	267	269	270	315	364	347	312	274	237	27
1956	284	277	317	313	318	374	413	405	355	306	271	30
1957	315	301	356	348	355	422	465	467	404	347	305	33
1958	340	318	362	348	363	435	491	505	404	359	310	33
1959	360	342	406	396	420	472	548	559	463	407	362	40
1960	417	391	419	461	472	535	622	606	508	461	390	43

In [178]:
```
fig,(axis1,axis2)=plt.subplots(2,1)

t=df.transpose()
total=t.sum()

years=pd.Series(total.index.values)
years=pd.DataFrame(years)

passng=pd.Series(total.values)
passng=pd.DataFrame(passng)

series=pd.concat((years,passng),axis=1)
series.columns=['Y','P']

plot=sns.barplot(data=t,ax=axis1)

plot

fig=plot.get_figure()

fig.savefig('a.png')

fig.savefig('a1.jpg')
```



In [174]:
```
pwd
```

Out[174]:
```
'C:\\Users\\acpimpar'
```