In [1]:
```
import pandas as pd #importing pandas for reading
```

In [2]:
```
data=pd.read_csv("/home/placement/Downloads/arunachal.csv") #reading the given data
```

In [3]:
```
data.describe()
```

Out[3]:

	Unnamed: 0	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
count	91.00000	91.000000	90.000000	90.000000	89.000000	91.000000	91.000000	90.000000	90.000000	91.000000	91.000000
mean	155.00000	1962.747253	48.598889	93.966667	154.446067	262.990110	364.651648	659.556667	711.963333	502.163736	433.273626
std	26.41338	27.695003	34.687078	46.258375	87.918484	113.395773	181.095447	311.642230	356.372598	275.716730	204.991358
min	110.00000	1916.000000	1.800000	6.100000	28.500000	94.700000	101.800000	239.400000	233.000000	172.400000	152.500000
25%	132.50000	1938.500000	20.075000	65.625000	101.700000	180.600000	237.150000	425.675000	442.150000	301.100000	282.150000
50%	155.00000	1964.000000	45.400000	87.600000	141.700000	245.400000	314.600000	545.750000	613.000000	411.600000	384.300000
75%	177.50000	1986.500000	65.150000	120.400000	189.600000	335.300000	447.050000	840.400000	922.075000	669.200000	521.150000
max	200.00000	2009.000000	164.500000	208.500000	605.600000	595.100000	1168.600000	1609.900000	2362.800000	1664.600000	1222.000000

In [4]:
```
data.info() #getting the info about the data
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 91 entries, 0 to 90
Data columns (total 20 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   Unnamed: 0   91 non-null     int64  
 1   SUBDIVISION  91 non-null     object 
 2   YEAR         91 non-null     int64  
 3   JAN          90 non-null     float64
 4   FEB          90 non-null     float64
 5   MAR          89 non-null     float64
 6   APR          91 non-null     float64
 7   MAY          91 non-null     float64
 8   JUN          90 non-null     float64
 9   JUL          90 non-null     float64
 10  AUG          91 non-null     float64
 11  SEP          91 non-null     float64
 12  OCT          89 non-null     float64
 13  NOV          89 non-null     float64
 14  DEC          89 non-null     float64
 15  ANNUAL       85 non-null     float64
 16  Jan-Feb      90 non-null     float64
 17  Mar-May      89 non-null     float64
 18  Jun-Sep      89 non-null     float64
 19  Oct-Dec      88 non-null     float64
dtypes: float64(17), int64(2), object(1)
memory usage: 14.3+ KB
```

In [5]:
```
data.tail() # getting last details in the data
```

Out[5]:

	Unnamed: 0	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	Jan-Feb	Mar-May	J S
86	196	ARUNACHAL PRADESH	2005	48.4	167.6	229.5	195.3	179.8	269.3	430.8	400.0	243.6	139.3	28.6	3.3	2335.5	216.0	604.6	134
87	197	ARUNACHAL PRADESH	2006	6.0	103.7	63.3	202.7	321.7	520.4	382.2	227.6	263.2	77.2	69.7	21.7	2259.6	109.7	587.7	139
88	198	ARUNACHAL PRADESH	2007	13.4	97.4	48.1	292.4	250.4	530.2	761.0	364.6	529.3	102.6	24.3	6.9	3020.7	110.8	590.9	218
89	199	ARUNACHAL PRADESH	2008	76.7	39.7	122.6	192.4	185.0	423.6	456.1	439.3	189.7	115.1	1.7	2.6	2244.4	116.4	499.9	150
90	200	ARUNACHAL PRADESH	2009	18.0	92.8	72.1	132.7	189.9	259.1	329.9	370.3	152.5	82.9	33.9	15.9	1749.9	110.8	394.7	111

In [6]:
```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 91 entries, 0 to 90
Data columns (total 20 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   Unnamed: 0   91 non-null     int64  
 1   SUBDIVISION  91 non-null     object 
 2   YEAR         91 non-null     int64  
 3   JAN          90 non-null     float64
 4   FEB          90 non-null     float64
 5   MAR          89 non-null     float64
 6   APR          91 non-null     float64
 7   MAY          91 non-null     float64
 8   JUN          90 non-null     float64
 9   JUL          90 non-null     float64
 10  AUG          91 non-null     float64
 11  SEP          91 non-null     float64
 12  OCT          89 non-null     float64
 13  NOV          89 non-null     float64
 14  DEC          89 non-null     float64
 15  ANNUAL       85 non-null     float64
 16  Jan-Feb      90 non-null     float64
 17  Mar-May      89 non-null     float64
 18  Jun-Sep      89 non-null     float64
 19  Oct-Dec      88 non-null     float64
dtypes: float64(17), int64(2), object(1)
memory usage: 14.3+ KB
```

In [7]:
```
list(data.columns) #making the list for columns
```

Out[7]:
```
['Unnamed: 0',
 'SUBDIVISION',
 'YEAR',
 'JAN',
 'FEB',
 'MAR',
 'APR',
 'MAY',
 'JUN',
 'JUL',
 'AUG',
 'SEP',
 'OCT',
 'NOV',
 'DEC',
 'ANNUAL',
 'Jan-Feb',
 'Mar-May',
 'Jun-Sep',
 'Oct-Dec']
```

In [8]:
```
data1=data.drop(["Unnamed: 0"],axis=1) #droping the column
```

In [9]:
```
data1
```

Out[9]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	Jan-Feb	Mar-May	Jun-Sep	Oct-De
0	ARUNACHAL PRADESH	1916	48.1	69.8	71.1	316.1	424.6	1124.9	NaN	629.7	333.9	NaN	NaN	NaN	NaN	117.9	811.8	NaN	Nal
1	ARUNACHAL PRADESH	1917	21.4	164.5	NaN	269.6	107.9	823.8	909.1	628.4	411.5	199.3	63.5	0.0	NaN	185.9	NaN	2772.8	262.
2	ARUNACHAL PRADESH	1918	10.4	11.0	191.2	144.6	861.1	1609.9	1303.0	692.6	515.8	125.2	7.8	13.7	5486.3	21.4	1196.9	4121.3	146.
3	ARUNACHAL PRADESH	1919	34.5	67.8	28.5	256.9	420.6	973.6	999.0	286.7	628.7	948.3	40.7	8.6	4693.9	102.3	706.0	2888.0	997.
4	ARUNACHAL PRADESH	1920	14.0	196.3	605.6	364.7	173.6	840.6	535.4	896.5	376.7	103.3	0.0	0.0	4106.7	210.3	1143.9	2649.2	103.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.
86	ARUNACHAL PRADESH	2005	48.4	167.6	229.5	195.3	179.8	269.3	430.8	400.0	243.6	139.3	28.6	3.3	2335.5	216.0	604.6	1343.7	171.
87	ARUNACHAL PRADESH	2006	6.0	103.7	63.3	202.7	321.7	520.4	382.2	227.6	263.2	77.2	69.7	21.7	2259.6	109.7	587.7	1393.5	168.
88	ARUNACHAL PRADESH	2007	13.4	97.4	48.1	292.4	250.4	530.2	761.0	364.6	529.3	102.6	24.3	6.9	3020.7	110.8	590.9	2185.1	133.
89	ARUNACHAL PRADESH	2008	76.7	39.7	122.6	192.4	185.0	423.6	456.1	439.3	189.7	115.1	1.7	2.6	2244.4	116.4	499.9	1508.7	119.
90	ARUNACHAL PRADESH	2009	18.0	92.8	72.1	132.7	189.9	259.1	329.9	370.3	152.5	82.9	33.9	15.9	1749.9	110.8	394.7	1111.8	132.

91 rows × 19 columns

In [10]:
```
data1.isna().sum() #getting the null values
```

Out[10]:
```
SUBDIVISION    0
YEAR           0
JAN            1
FEB            1
MAR            2
APR            0
MAY            0
JUN            1
JUL            1
AUG            0
SEP            0
OCT            2
NOV            2
DEC            2
ANNUAL         6
Jan-Feb        1
Mar-May        2
Jun-Sep        2
Oct-Dec        3
dtype: int64
```

In [18]:
```
data1=pd.get_dummies(data1) #creating the dummies
data1
```

Out[18]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	Jan-Feb	Mar-May	Jun-Sep	Oct-Dec	SUBDIVISIOI
0	1916	48.1	69.8	71.1	316.1	424.6	1124.9	NaN	629.7	333.9	NaN	NaN	NaN	NaN	117.9	811.8	NaN	NaN	
1	1917	21.4	164.5	NaN	269.6	107.9	823.8	909.1	628.4	411.5	199.3	63.5	0.0	NaN	185.9	NaN	2772.8	262.8	
2	1918	10.4	11.0	191.2	144.6	861.1	1609.9	1303.0	692.6	515.8	125.2	7.8	13.7	5486.3	21.4	1196.9	4121.3	146.7	
3	1919	34.5	67.8	28.5	256.9	420.6	973.6	999.0	286.7	628.7	948.3	40.7	8.6	4693.9	102.3	706.0	2888.0	997.6	
4	1920	14.0	196.3	605.6	364.7	173.6	840.6	535.4	896.5	376.7	103.3	0.0	0.0	4106.7	210.3	1143.9	2649.2	103.3	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
86	2005	48.4	167.6	229.5	195.3	179.8	269.3	430.8	400.0	243.6	139.3	28.6	3.3	2335.5	216.0	604.6	1343.7	171.2	
87	2006	6.0	103.7	63.3	202.7	321.7	520.4	382.2	227.6	263.2	77.2	69.7	21.7	2259.6	109.7	587.7	1393.5	168.7	
88	2007	13.4	97.4	48.1	292.4	250.4	530.2	761.0	364.6	529.3	102.6	24.3	6.9	3020.7	110.8	590.9	2185.1	133.9	
89	2008	76.7	39.7	122.6	192.4	185.0	423.6	456.1	439.3	189.7	115.1	1.7	2.6	2244.4	116.4	499.9	1508.7	119.4	
90	2009	18.0	92.8	72.1	132.7	189.9	259.1	329.9	370.3	152.5	82.9	33.9	15.9	1749.9	110.8	394.7	1111.8	132.7	

91 rows × 19 columns

In [19]:
```
import warnings
```

In [21]:
```
warnings.filterwarnings("ignore") #making the warnings off
```

In [22]:
```
data1
```

Out[22]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	Jan-Feb	Mar-May	Jun-Sep	Oct-Dec	SUBDIVISIO
0	1916	48.1	69.8	71.1	316.1	424.6	1124.9	NaN	629.7	333.9	NaN	NaN	NaN	NaN	117.9	811.8	NaN	NaN	
1	1917	21.4	164.5	NaN	269.6	107.9	823.8	909.1	628.4	411.5	199.3	63.5	0.0	NaN	185.9	NaN	2772.8	262.8	
2	1918	10.4	11.0	191.2	144.6	861.1	1609.9	1303.0	692.6	515.8	125.2	7.8	13.7	5486.3	21.4	1196.9	4121.3	146.7	
3	1919	34.5	67.8	28.5	256.9	420.6	973.6	999.0	286.7	628.7	948.3	40.7	8.6	4693.9	102.3	706.0	2888.0	997.6	
4	1920	14.0	196.3	605.6	364.7	173.6	840.6	535.4	896.5	376.7	103.3	0.0	0.0	4106.7	210.3	1143.9	2649.2	103.3	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
86	2005	48.4	167.6	229.5	195.3	179.8	269.3	430.8	400.0	243.6	139.3	28.6	3.3	2335.5	216.0	604.6	1343.7	171.2	
87	2006	6.0	103.7	63.3	202.7	321.7	520.4	382.2	227.6	263.2	77.2	69.7	21.7	2259.6	109.7	587.7	1393.5	168.7	
88	2007	13.4	97.4	48.1	292.4	250.4	530.2	761.0	364.6	529.3	102.6	24.3	6.9	3020.7	110.8	590.9	2185.1	133.9	
89	2008	76.7	39.7	122.6	192.4	185.0	423.6	456.1	439.3	189.7	115.1	1.7	2.6	2244.4	116.4	499.9	1508.7	119.4	
90	2009	18.0	92.8	72.1	132.7	189.9	259.1	329.9	370.3	152.5	82.9	33.9	15.9	1749.9	110.8	394.7	1111.8	132.7	

91 rows × 19 columns

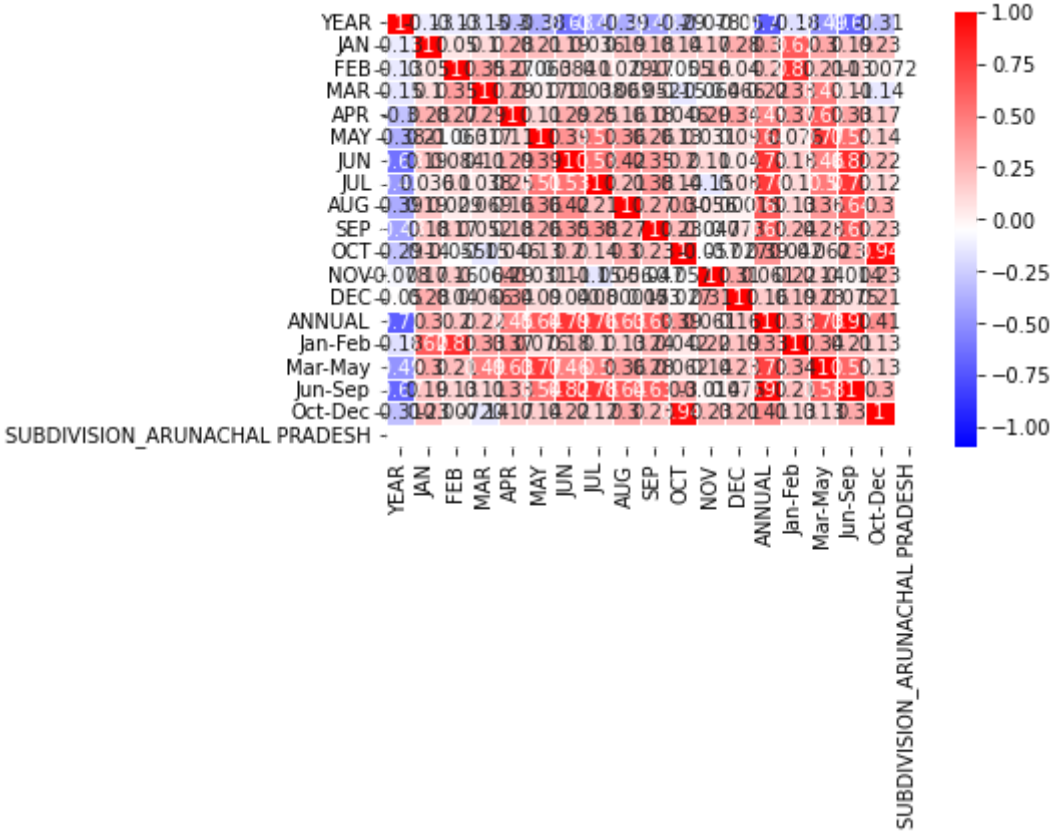
In [23]:
```
cor_mat=data1.corr() #getting the correlation
cor_mat
```

Out[23]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
YEAR	1.000000	-0.129778	-0.134399	-0.153629	-0.301073	-0.384602	-0.630502	-0.465649	-0.394444	-0.431541	-0.294323
JAN	-0.129778	1.000000	0.049703	0.102652	0.275465	0.213443	0.187899	0.036231	0.186397	0.180209	0.144752
FEB	-0.134399	0.049703	1.000000	0.346448	0.268504	-0.063280	0.084133	0.102494	0.028861	0.168561	-0.054956
MAR	-0.153629	0.102652	0.346448	1.000000	0.292072	0.017182	0.110014	0.038299	0.068542	0.052330	-0.149850
APR	-0.301073	0.275465	0.268504	0.292072	1.000000	0.114128	0.293255	0.252243	0.157620	0.176335	0.046071
MAY	-0.384602	0.213443	-0.063280	0.017182	0.114128	1.000000	0.393818	0.506982	0.363992	0.258744	0.127951
JUN	-0.630502	0.187899	0.084133	0.110014	0.293255	0.393818	1.000000	0.530709	0.417914	0.347814	0.196709
JUL	-0.465649	0.036231	0.102494	0.038299	0.252243	0.506982	0.530709	1.000000	0.210551	0.381137	0.144704
AUG	-0.394444	0.186397	0.028861	0.068542	0.157620	0.363992	0.417914	0.210551	1.000000	0.269123	0.298151
SEP	-0.431541	0.180209	0.168561	0.052330	0.176335	0.258744	0.347814	0.381137	0.269123	1.000000	0.227402
OCT	-0.294323	0.144752	-0.054956	-0.149850	0.046071	0.127951	0.196709	0.144704	0.298151	0.227402	1.000000
NOV	-0.077531	0.165928	0.161269	-0.064477	0.288974	0.031498	0.112004	-0.151322	0.055768	-0.046554	-0.056758
DEC	-0.049529	0.278733	0.040352	0.065763	0.337653	0.090154	0.039772	0.079795	-0.000150	0.073240	-0.026855
ANNUAL	-0.707321	0.302965	0.195393	0.224677	0.452677	0.636692	0.785994	0.755075	0.629581	0.629303	0.386400
Jan-Feb	-0.181229	0.624899	0.810800	0.328052	0.371263	0.075644	0.175961	0.101354	0.131852	0.237410	0.041995
Mar-May	-0.489779	0.304862	0.213342	0.488820	0.634203	0.768722	0.458884	0.499358	0.361450	0.281479	0.062468
Jun-Sep	-0.674418	0.189839	0.129691	0.106128	0.327513	0.542572	0.821251	0.780854	0.635934	0.627832	0.302192
Oct-Dec	-0.310688	0.226917	-0.007222	-0.142865	0.168442	0.141096	0.217790	0.115559	0.303420	0.226139	0.944980
SUBDIVISION_ARUNACHAL PRADESH	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

In [26]:
```
import seaborn as sns
sns.heatmap(cor_mat,vmax=-1,vmin=1,annot=True,linewidth=.5,cmap='bwr')#plotting of graph using seaborn
```

Out[26]: <Axes: >



In [25]:
```
data.isna().sum()
```

Out[25]:
```
Unnamed: 0     0
SUBDIVISION    0
YEAR           0
JAN            1
FEB            1
MAR            2
APR            0
MAY            0
JUN            1
JUL            1
AUG            0
SEP            0
OCT            2
NOV            2
DEC            2
ANNUAL         6
Jan-Feb        1
Mar-May        2
Jun-Sep        2
Oct-Dec        3
dtype: int64
```

In [ ]:
```

```