```
In [1]: import pandas as pd
In [2]: data=pd.read csv("/home/placement/Downloads/rainfall in india 1901-2015.csv")
In [3]: data.isna().sum()
Out[3]: SUBDIVISION
                         0
        YEAR
        JAN
        FEB
                         6
        MAR
        APR
        MAY
        JUN
        JUL
        AUG
        SEP
        0CT
        NOV
                        11
        DEC
                        10
        ANNUAL
                        26
        Jan-Feb
                         6
        Mar-May
                         9
        Jun-Sep
                        10
        Oct-Dec
                        13
        dtype: int64
In [4]: data1=data.loc[(data.YEAR<=2010)]</pre>
```

6]:	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC	ANNUAL	Jan- Feb	Mar- May	Jun- Sep	Oct Dec
4106	LAKSHADWEEP	2006	20.1	0.0	33.0	0.3	327.9	286.9	172.3	150.7	318.5	119.1	158.9	10.9	1598.6	20.1	361.2	928.4	288.9
4107	LAKSHADWEEP	2007	2.5	4.2	0.2	22.2	166.2	573.4	427.4	294.7	457.5	256.1	47.6	109.6	2361.6	6.7	188.6	1753.0	413.3
4108	LAKSHADWEEP	2008	5.5	19.8	120.7	15.8	180.4	254.6	363.9	206.6	108.9	252.9	67.6	130.1	1726.8	25.3	316.9	934.0	450.6
4109	LAKSHADWEEP	2009	4.7	1.5	0.1	18.1	162.1	401.2	266.4	185.0	145.1	87.4	166.2	132.3	1570.1	6.2	180.3	997.7	385.9
4110	LAKSHADWEEP	2010	18.8	0.0	1.2	35.6	79.0	318.9	336.7	335.1	161.5	155.4	201.5	81.5	1725.2	18.8	115.8	1152.2	438.4
: data	2=data.drop(['ANNU	AL',	'Jan-	Feb',	'Mar	-May'	,'Jun	-Sep'	, '0ct	-Dec'],axi	s=1)						
: data	2																		
· uucu																			

	SODDIVISION	ILAII	UAIT	ILD	IVIAII	A1 11	IVIAI	0014	UUL	AUG	JLI	001	1401	DLO
0	ANDAMAN & NICOBAR ISLANDS	1901	49.2	87.1	29.2	2.3	528.8	517.5	365.1	481.1	332.6	388.5	558.2	33.6
1	ANDAMAN & NICOBAR ISLANDS	1902	0.0	159.8	12.2	0.0	446.1	537.1	228.9	753.7	666.2	197.2	359.0	160.5
2	ANDAMAN & NICOBAR ISLANDS	1903	12.7	144.0	0.0	1.0	235.1	479.9	728.4	326.7	339.0	181.2	284.4	225.0
3	ANDAMAN & NICOBAR ISLANDS	1904	9.4	14.7	0.0	202.4	304.5	495.1	502.0	160.1	820.4	222.2	308.7	40.1
4	ANDAMAN & NICOBAR ISLANDS	1905	1.3	0.0	3.3	26.9	279.5	628.7	368.7	330.5	297.0	260.7	25.4	344.7
4111	LAKSHADWEEP	2011	5.1	2.8	3.1	85.9	107.2	153.6	350.2	254.0	255.2	117.4	184.3	14.9
4112	LAKSHADWEEP	2012	19.2	0.1	1.6	76.8	21.2	327.0	231.5	381.2	179.8	145.9	12.4	8.8
4113	LAKSHADWEEP	2013	26.2	34.4	37.5	5.3	88.3	426.2	296.4	154.4	180.0	72.8	78.1	26.7
4114	LAKSHADWEEP	2014	53.2	16.1	4.4	14.9	57.4	244.1	116.1	466.1	132.2	169.2	59.0	62.3
4115	LAKSHADWEEP	2015	2.2	0.5	3.7	87.1	133.1	296.6	257.5	146.4	160.4	165.4	231.0	159.0

4116 rows × 14 columns

In [18]: cor=data4.corr()

In [12]: data2['ANNUAL RAIN']=data2.apply(lambda row:row.JAN+row.FEB+row.MAR+row.APR+row.MAY+row.JUN+row.JUL+row.AUG-In [13]: data2 Out[13]: SUBDIVISION YEAR JAN APR JUN JUL AUG NOV **DEC ANNUAL RAIN** FEB MAR MAY SEP OCT 0 ANDAMAN & NICOBAR ISLANDS 1901 49.2 87.1 29.2 2.3 528.8 517.5 365.1 481.1 332.6 388.5 558.2 33.6 3373.2 3520.7 1 ANDAMAN & NICOBAR ISLANDS 1902 0.0 159.8 12.2 0.0 446.1 537.1 228.9 753.7 666.2 197.2 359.0 160.5 2 ANDAMAN & NICOBAR ISLANDS 1903 12.7 144.0 0.0 235.1 479.9 728.4 326.7 339.0 181.2 284.4 225.0 2957.4 3 ANDAMAN & NICOBAR ISLANDS 1904 9.4 14.7 202.4 304.5 495.1 502.0 160.1 820.4 222.2 308.7 3079.6 0.0 4 ANDAMAN & NICOBAR ISLANDS 1905 1.3 0.0 26.9 279.5 628.7 368.7 330.5 297.0 260.7 2566.7 3.3 4111 LAKSHADWEEP 5.1 3.1 153.6 350.2 254.0 255.2 117.4 184.3 1533.7 2011 2.8 85.9 107.2 14.9 LAKSHADWEEP 4112 2012 19.2 0.1 1.6 76.8 21.2 327.0 231.5 381.2 179.8 145.9 12.4 8.8 1405.5 4113 LAKSHADWEEP 2013 26.2 34.4 37.5 5.3 88.3 426.2 296.4 154.4 180.0 78.1 26.7 1426.3 72.8 4114 LAKSHADWEEP 2014 53.2 16.1 4.4 14.9 57.4 244.1 116.1 466.1 132.2 169.2 59.0 62.3 1395.0 4115 LAKSHADWEEP 2.2 87.1 133.1 296.6 257.5 146.4 160.4 165.4 231.0 159.0 1642.9 2015 0.5 3.7 4116 rows × 15 columns data3=data.loc[(data.SUBDIVISION=='ARUNACHAL PRADESH')] In [17]: data4=data3.drop(['SUBDIVISION'],axis=1)

In	[1 Q]	 cor
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Out[19]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DE
YEAR	1.000000	-0.176300	-0.213918	-0.157302	-0.253946	-0.401934	-0.626889	-0.494607	-0.394066	-0.396480	-0.325208	-0.096053	-0.07089
JAN	-0.176300	1.000000	0.083391	0.099054	0.256921	0.217524	0.208187	0.071617	0.193102	0.189419	0.169379	0.162395	0.28677
FEB	-0.213918	0.083391	1.000000	0.321564	0.205643	-0.027577	0.111802	0.140842	0.063751	0.154883	-0.024632	0.159914	0.05008
MAR	-0.157302	0.099054	0.321564	1.000000	0.307354	0.023099	0.111475	0.047547	0.058362	0.054761	-0.137731	-0.048569	0.06536
APR	-0.253946	0.256921	0.205643	0.307354	1.000000	0.097526	0.290472	0.238319	0.132668	0.198362	0.054994	0.295455	0.32906
MAY	-0.401934	0.217524	-0.027577	0.023099	0.097526	1.000000	0.398268	0.510852	0.367445	0.246939	0.141720	0.040734	0.09353
JUN	-0.626889	0.208187	0.111802	0.111475	0.290472	0.398268	1.000000	0.540408	0.426753	0.354854	0.217141	0.124429	0.05496
JUL	-0.494607	0.071617	0.140842	0.047547	0.238319	0.510852	0.540408	1.000000	0.218016	0.380741	0.173107	-0.137416	0.09124
AUG	-0.394066	0.193102	0.063751	0.058362	0.132668	0.367445	0.426753	0.218016	1.000000	0.259420	0.293511	0.062165	0.00814
SEP	-0.396480	0.189419	0.154883	0.054761	0.198362	0.246939	0.354854	0.380741	0.259420	1.000000	0.241075	-0.040257	0.08006
ост	-0.325208	0.169379	-0.024632	-0.137731	0.054994	0.141720	0.217141	0.173107	0.293511	0.241075	1.000000	-0.047687	-0.01307
NOV	-0.096053	0.162395	0.159914	-0.048569	0.295455	0.040734	0.124429	-0.137416	0.062165	-0.040257	-0.047687	1.000000	0.31224
DEC	-0.070899	0.286771	0.050085	0.065364	0.329066	0.093530	0.054968	0.091248	0.008145	0.080062	-0.013078	0.312240	1.00000
ANNUAL	-0.709544	0.325117	0.223998	0.227488	0.439047	0.634682	0.793095	0.762012	0.624845	0.626636	0.406220	0.076944	0.16810
Jan-Feb	-0.266442	0.634518	0.823129	0.303319	0.305895	0.102570	0.205393	0.150032	0.159517	0.228104	0.077493	0.216565	0.20226
Mar-May	-0.480430	0.300178	0.202870	0.500652	0.636367	0.759252	0.462125	0.498620	0.348350	0.284368	0.080929	0.159040	0.22914
Jun-Sep	-0.673985	0.216207	0.164077	0.107055	0.314862	0.542457	0.827003	0.785435	0.636887	0.624762	0.321843	-0.000532	0.08937
Oct-Dec	-0.346587	0.249172	0.022492	-0.126796	0.175082	0.156031	0.241761	0.147782	0.299315	0.241389	0.946660	0.236445	0.22396

In [20]: import seaborn as sns

```
In [21]: sns.heatmap(cor,vmax=1,vmin=-1,annot=True,linewidths=.5,cmap='bwr')
Out[21]: <Axes: >
                                                                                               - 1.00
                 YEAR - 1 0.10.20.10.25.40.68.49.30.40.38096070.70.20.48.60.35
                   JAN -0.1 1 .083099 26.2 0.2010 702 19.1 0.1 6.2 9.3 0.6 0.30.2 0.25
                                                                                              - 0.75
                   FEB -0.20108 1 0.310.201.02081 0.1040 604 105.02051 6.010.22.820.20.106022
                  MAR -0.1060 90932 1 0.3010 203 1010 480 1080 505.104 04.99 605 2 30.3 0.50.1-10.13
                   APR -0.25.26.20.31 11.092829.24.130.20.055.30.38.44.30.60.30.18
                                                                                              - 0.50
                   MAY -0.0.20.00.80 0 30 9 81 0.40.50.3 0.2 0.1040 0 109 46 0.10.7 0.50.16
                   JUN -0.60.20.10.10.290.4 1 0.5 0.4 0.3 0.20.10205 0.7 0.2 0.4 0.8 0.24
                                                                                              - 0.25
                   JUL -0.0.070210404082-0.50.54 1 0.20.38.1-70.10409 0.70.150.50.70.15
                  AUG -)30.109064050818.30.48.2210.26.209006203.60.16.35.640.3
                                                                                              - 0.00
                   SEP - 0.0.19.10505 b.20.2 b.3 b.3 b.3 b.2 6 1 0.2 0.0 4.0 0.6 0.2 b.2 0.6 0.2 4
                   OCT -0.30.107.0205 D40505 140.20.107.29.24 10.0480 D3401.00708013(0.95
                  NOV-9.09061 6.105.04 9.15.04 01.1-20.1040 602.004 04 11 0.301.0 707.2 12-01.00 0005234
                                                                                              - -0.25
                  DEC-9.070129.0050605308094055009008198.01033110.170.20.208080922
              ANNUAL -0.70.38.28.28.49.68.79.76.68.60.40.0707.17 1 0.36.78.90.44
                                                                                              - -0.50
               Jan-Feb -0.2 1.6 1.8 2 0.3 0.3 10.1 0.2 10.1 15.1 16.2 0 8 0 7 0 7.2 2 0.3 6 1 1 0.3 15.2 15.1 6
              Mar-May -0.4 0.3 0.2 0.5 0.6 0.7 0.4 0.5 0.3 0.2080 80.1 0.2 0.7 0.3 1 0.5 0.15
                                                                                              - -0.75
              Jun-Sep - 0.60.20.10.10.30.5 4.8 3.7 9.6 4.6 0.03.000.5 8 9.9 0.2 5.57 1 0.32
              Oct-Dec -0.35.25022.16.18.16.24.150.30.24.90.24.20.44.16.15.32 1
                                                                                                -1.00
                                              N
N
                                                     AUG
 In [ ]:
```