

## EMERGINGMETHODS

### FOREARLYDETECTIONOFFORESTFIRESPROJECTDEVELOPMENT

#### PHASE

#### SPRINT2

Date	05.11.2022
TeamID	PNT2022TMID80386
ProjectName	EmergingMethodsForEarlyDetectionOfForest Fires
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```
In[4]: import matplotlib.pyplot as
pltimportnumpyasnpimportpandas
spdimportseabornassns
from sklearn import metrics from sklearn.metrics import
classification_report,confusion_matrix
```

```
In[5]: importwarningswarnings.filterwarnings(action="ignore")
%matplotlib inline
sns.set_style('darkgrid')pd.set_option("disp
lay.max_rows",1000)pd.set_option("display.ma
x_columns",1000)
```

```
In[6]: fires=pd.read_csv(r"C:\Users\dhine\Downloads\forestfires.csv\forestfires.csv")
#showthefirst15instanceofdatasetfires.head(15)
```

Out[6]:

	XYmonth			day	FFMC	DMC	DC	ISI	temp	RH	wind	rain	area
0	75	mar	fri		86.2	26.2	94.3	5.1	8.2	51	6.7	0.0	0.0
1	7 4	oct	tue		90.6	35.4	669.1	6.7	18.0	33	0.9	0.0	0.0
2	74	oct	sat		90.6	43.7	686.9	6.7	14.6	33	1.3	0.0	0.0
3	8 6	mar	fri		91.7	33.3	77.5	9.0	8.3	97	4.0	0.2	0.0
4	86	mar	sun		89.3	51.3	102.2	9.6	11.4	99	1.8	0.0	0.0
5	8 6	aug	sun		92.3	85.3	488.0	14.7	22.2	29	5.4	0.0	0.0
6	86	aug	mon		92.3	88.9	495.6	8.5	24.1	27	3.1	0.0	0.0
7	8 6	aug	mon		91.5	145.4	608.2	10.7	8.0	86	2.2	0.0	0.0
8	86	sep	tue		91.0	129.5	692.6	7.0	13.1	63	5.4	0.0	0.0
9	7 5	sep	sat		92.5	88.0	698.6	7.1	22.8	40	4.0	0.0	0.0
10	7 5	sep	sat		92.5	88.0	698.6	7.1	17.8	51	7.2	0.0	0.0
11	7 5	sep	sat		92.8	73.2	713.0	22.6	19.3	38	4.0	0.0	0.0
12	6 5	aug	fri		63.5	70.8	665.3	0.8	17.0	72	6.7	0.0	0.0
13	6 5	sep	mon		90.9	126.5	686.5	7.0	21.3	42	2.2	0.0	0.0
14	6 5	sep	wed		92.9	133.3	699.6	9.2	26.4	21	4.5	0.0	0.0

```
In[7]: fires.shape
```

(517,13)

Out[7]:

```
In[8]: #show the last 10 instances of dataset fires.tail(10)
```

Out[8]:

	X	Y	month	day	FFMC	DMC	DC	ISI	temp	RH	wind	rain	area
502	4	4	aug	tue	96.1	181.1	671.2	14.3	20.7	69	4.9	0.4	0.00
503	2	4	aug	wed	94.5	139.4	689.1	20.0	29.2	30	4.9	0.0	1.95
504	4	3	aug	wed	94.5	139.4	689.1	20.0	28.9	29	4.9	0.0	49.59
505	1	2	aug	thu	91.0	163.2	744.4	10.1	26.7	35	1.8	0.0	5.80
506	1	2	aug	fri	91.0	166.9	752.6	7.1	18.5	73	8.5	0.0	0.00
507	2	4	aug	fri	91.0	166.9	752.6	7.1	25.9	41	3.6	0.0	0.00
508	1	2	aug	fri	91.0	166.9	752.6	7.1	25.9	41	3.6	0.0	0.00
509	5	4	aug	fri	91.0	166.9	752.6	7.1	21.1	71	7.6	1.4	2.17
510	6	5	aug	fri	91.0	166.9	752.6	7.1	18.2	62	5.4	0.0	0.43
511	8	6	aug	sun	81.6	56.7	665.6	1.9	27.8	35	2.7	0.0	0.00
512	4	3	aug	sun	81.6	56.7	665.6	1.9	27.8	32	2.7	0.0	6.44
513	2	4	aug	sun	81.6	56.7	665.6	1.9	21.9	71	5.8	0.0	54.29
514	7	4	aug	sun	81.6	56.7	665.6	1.9	21.2	70	6.7	0.0	11.16
515	1	4	aug	sat	94.4	146.0	614.7	11.3	25.6	42	4.0	0.0	0.00
5166	3	nov	tue		79.5	3.0106.7		1.1	11.8	31	4.5	0.0	0.00

```
In[9]: fires.info()
```

```
<class
'pandas.core.frame.DataFrame'>RangeIn
dex:517entries,0to516Datacolumns(tota
l13columns):
#ColumnNon-NullCountDtype

-----
0    X517non-nullint64
1    Y517non-nullint64
2    month517non-nullobject
3    day517non-nullobject
4    FFMC517non-nullfloat64DMC517non-nullfloat64
6    DC517non-nullfloat64
7    ISI517non-nullfloat64
8    temp517non-nullfloat64
9    RH517non-nullint64
10   wind517non-nullfloat64
```

```
11 rain517non-nullfloat64
12 area517non-nullfloat64dtypes:float64(8),int64(3),object(2)memoryusage:52.6+KB
```

```
In[10]: #generatedescriptivestatisticsofeachattribute fires.describe().T
Out[10]:
count
```

<b>X</b>	517.0	4.669246	2.313778	1.0	3.0	4.00	7.00	9.00
<b>Y</b>	517.0	4.299807	1.229900	2.0	4.0	4.00	5.00	9.00
<b>FFMC</b>	517.0	90.644681	5.520111	18.7	90.2	91.60	92.90	96.20

```
DMC517.0110.87234064.0464821.168.6108.30142.40291.30DC517.0
547.940039248.0661927.9437.7664.20713.90860.60
```

```
fires['area'].values[fires['area'].values>0]=1
#renamingtheareaattributetooutputforclearunderstanding
fires=fires.rename(columns={'area':'output'})fires.head(10)
```

<b>ISI</b>	517.0	9.021663	4.559477	0.0	6.5	8.40	10.80	56.10
<b>temp</b>	517.0	18.889168	5.806625	2.2	15.5	19.30	22.80	33.30
<b>RH</b>	517.0	44.288201	16.317469	15.0	33.0	42.00	53.00	100.00
<b>wind</b>	517.0	4.017602	1.791653	0.4	2.7	4.00	4.90	9.40
<b>rain</b>	517.0	0.021663	0.295959	0.0	0.0	0.00	0.00	6.40
<b>area</b>	517.0	12.847292	63.655818	0.0	0.0	0.52	6.57	1090.84

In[11]:

```
Out[11]:
XYmonth      dayFFMC DMC      DC  ISItemp RH  windrain  output
```

```

07      5    mar    fri    86.2    26.2    94.3    5.1    8.2    51    6.7    0.0    0.0
17      4    octtue oct    90.6    35.4669.1    6.7    18.0    33    0.9    0.0    0.0
      4    satmarfrim    90.6    43.7686.9    6.7    14.6    33    1.3    0.0    0.0
27      6    arsunaugs    91.7    33.3    77.5    9.0    8.3    97    4.0    0.2    0.0
38      6    un    89.3    51.3102.2    9.6    11.4    99    1.8    0.0    0.0
48      6    augmonau    92.3    85.3488.014.7    22.2    29    5.4    0.0    0.0
      6    g mon    92.3    88.9495.6    8.5    24.1    27    3.1    0.0    0.0
58      6    sep tue    91.5145.4608.210.7    8.0    86    2.2    0.0    0.0
      6    sepsat
68      6    91.0129.5692.6    7.0    13.1    63    5.4    0.0    0.0
      5    92.5    88.0698.6    7.1    22.8    40    4.0    0.0    0.0
88
97

```

```

In[12]: fires.corr()
Out[12]:

```

X	Y	FFMC	DMC	DC	ISI	temp	RH	wind		
X	1.000000	0.539548	-0.021039	-0.048384	-0.085916	0.006210	-0.051258	0.085223	0.018798	0.065
	0.539548	1.000000	-0.046308	0.007782	-0.10117	-0.024488	-0.024103	0.062221	-0.02034	0.033
FFMC	-0.021039	-0.046308	1.000000	0.382619	0.330512	0.531805	0.431532	-0.300995	-0.028485	0.056
	0.007782	0.382619	1.000000	0.682192	0.305128	0.469594	0.073795	-0.10534	0.074	
DC	-0.085916	-0.101178	0.330512	0.682192	1.000000	0.229154	0.496208	-0.039192	-0.203466	0.035
	0.006210	-0.024488	0.531805	0.305128	0.229154	1.000000	0.394287	-0.132517	0.10682	0.067
temp	-0.051258	-0.024103	0.431532	0.469594	0.496208	0.394287	1.000000	-0.527390	-0.227116	0.069
	0.085223	0.062221	-0.300995	0.073795	-0.03919	-0.132517	-0.527390	1.000000	0.06941	0.099
wind	0.018798	-0.020341	-0.028485	-0.105342	-0.203466	0.106826	-0.227116	0.069410	1.000000	0.061
	0.065387	0.033234	0.056702	0.074790	0.035861	0.067668	0.069491	0.099751	0.06111	1.000
output	0.062491	0.056892	0.073823	0.062672	0.096724	0.035663	0.076047	-0.035587	0.055702	0.025

```

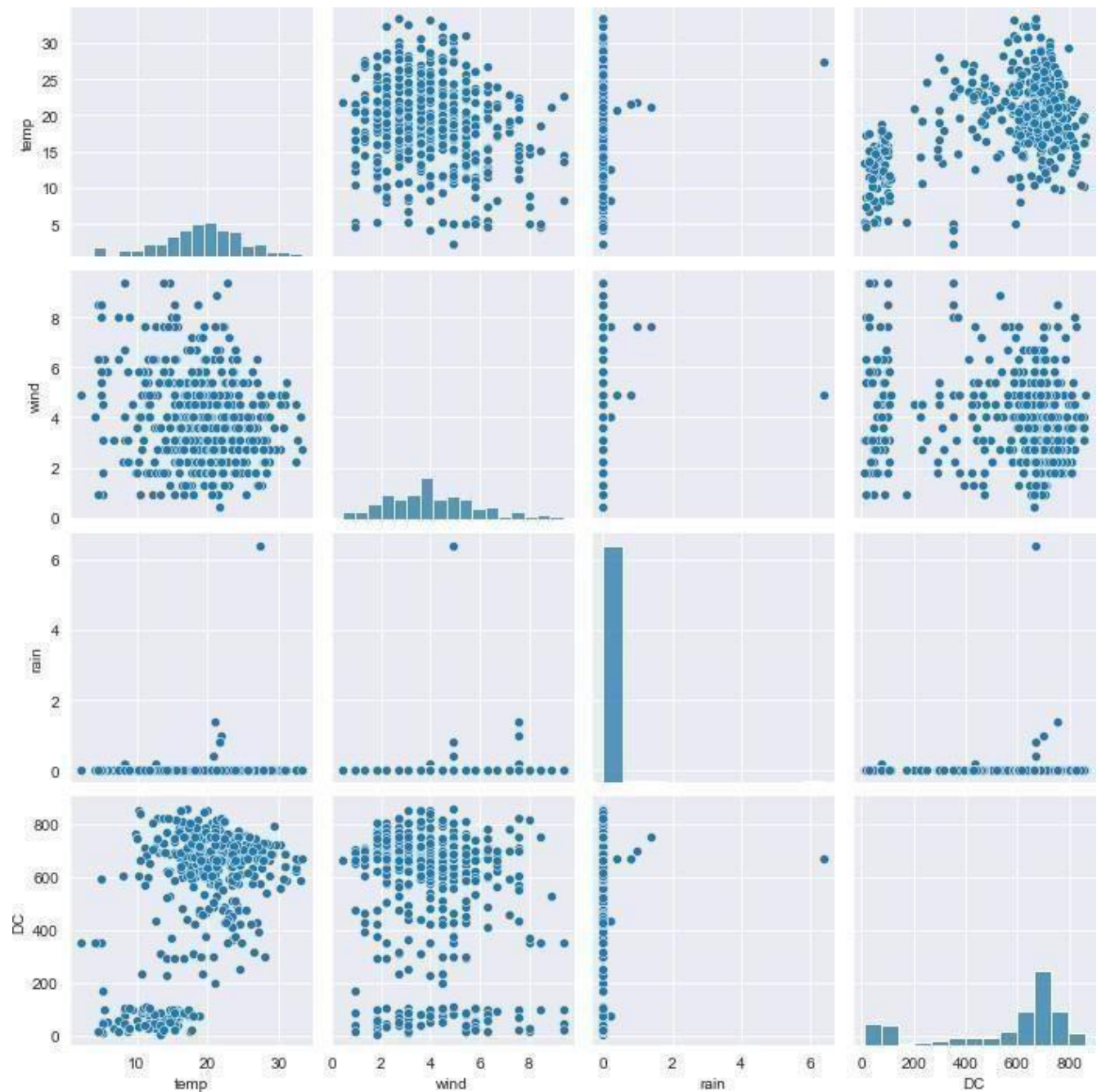
In[15]: numerical_feature=fires.describe(include=["int", "float"]).columns

#Printitinlisttype..
print(list(numerical_feature))

['X', 'Y', 'FFMC', 'DMC', 'DC', 'ISI', 'temp', 'RH', 'wind', 'rain', 'output']

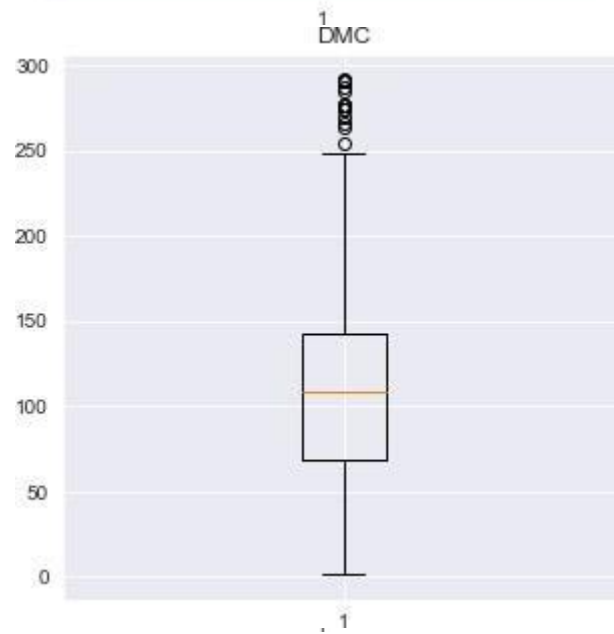
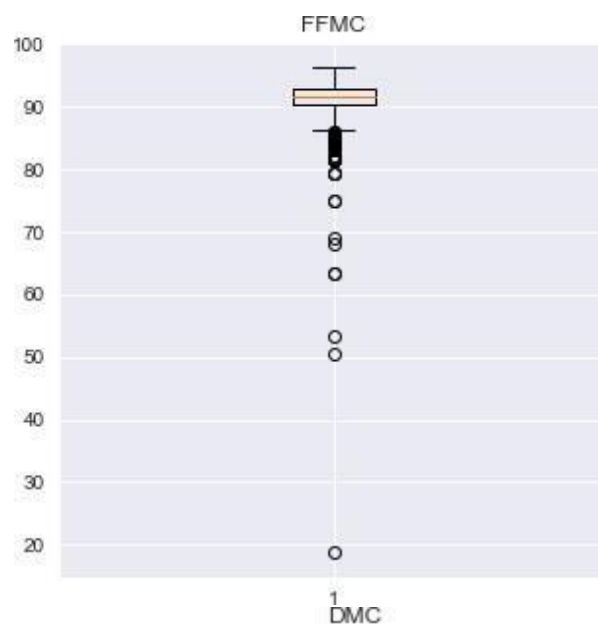
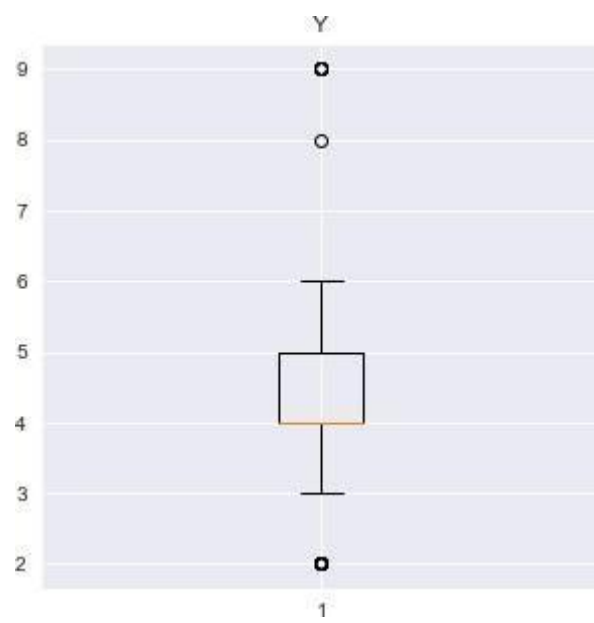
```

```
In[16]: sns.set_style('darkgrid')
#Findtherelation#plt.subplot
lot(fires)
sns.pairplot(fires[["temp", "wind", "
rain", "DC"]])plt.show()
```

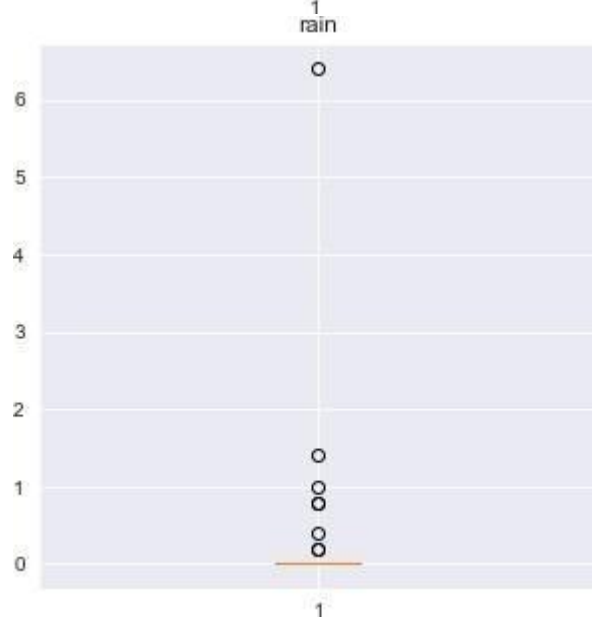
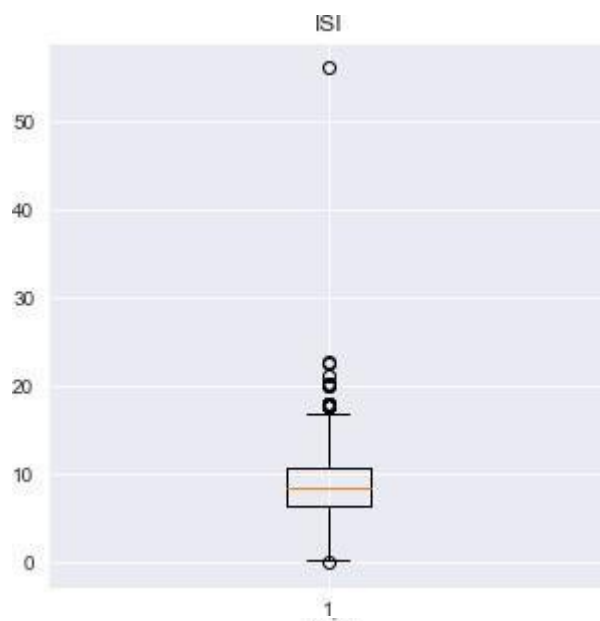
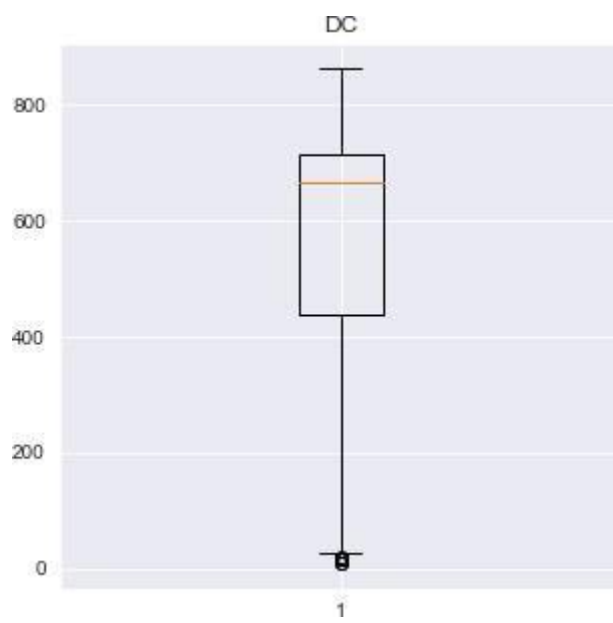


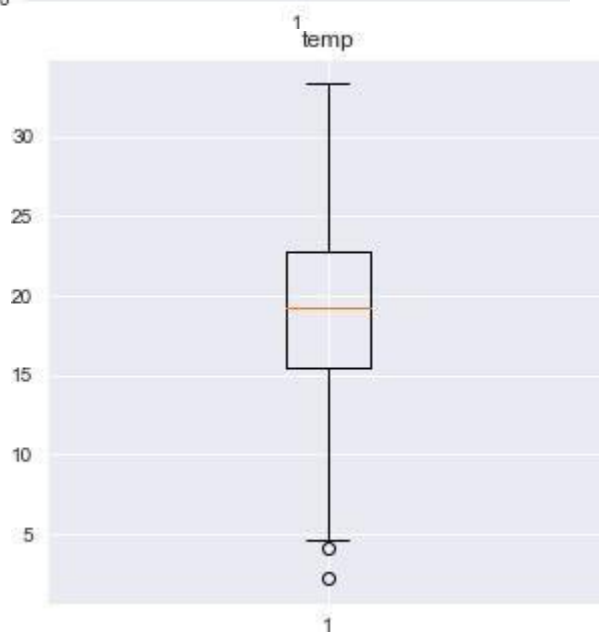
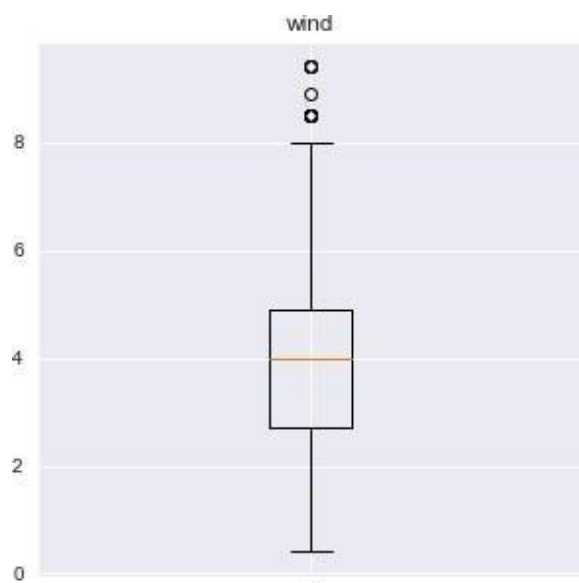
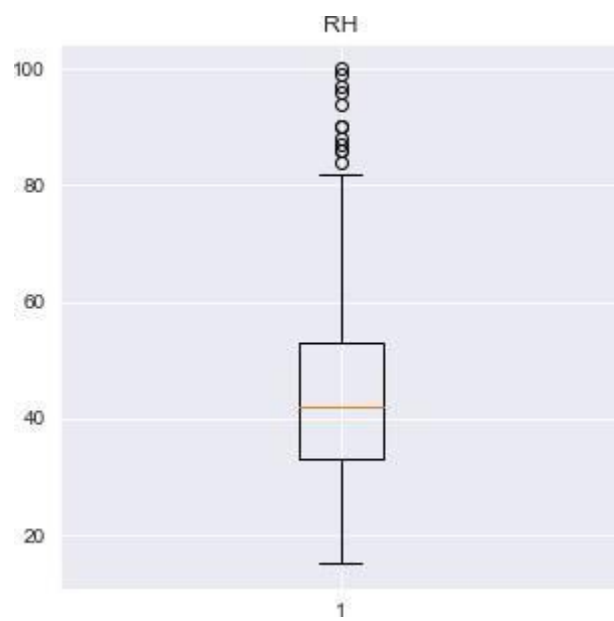
```
In[17]: for idx, col in enumerate(numerical_feature,
1):plt.figure(figsize=(5,5))

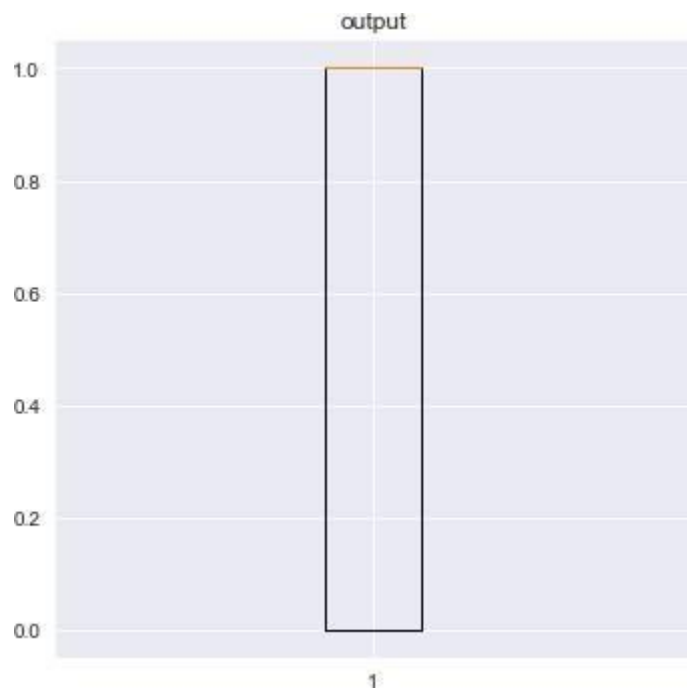
# plt.subplot(len(numerical_feature) // 2, 3, idx)
plt.boxplot(fires[col])plt.title(col)
#
plt.hist(fires[col])
plt.tight_layout()plt.show
(plt)
```



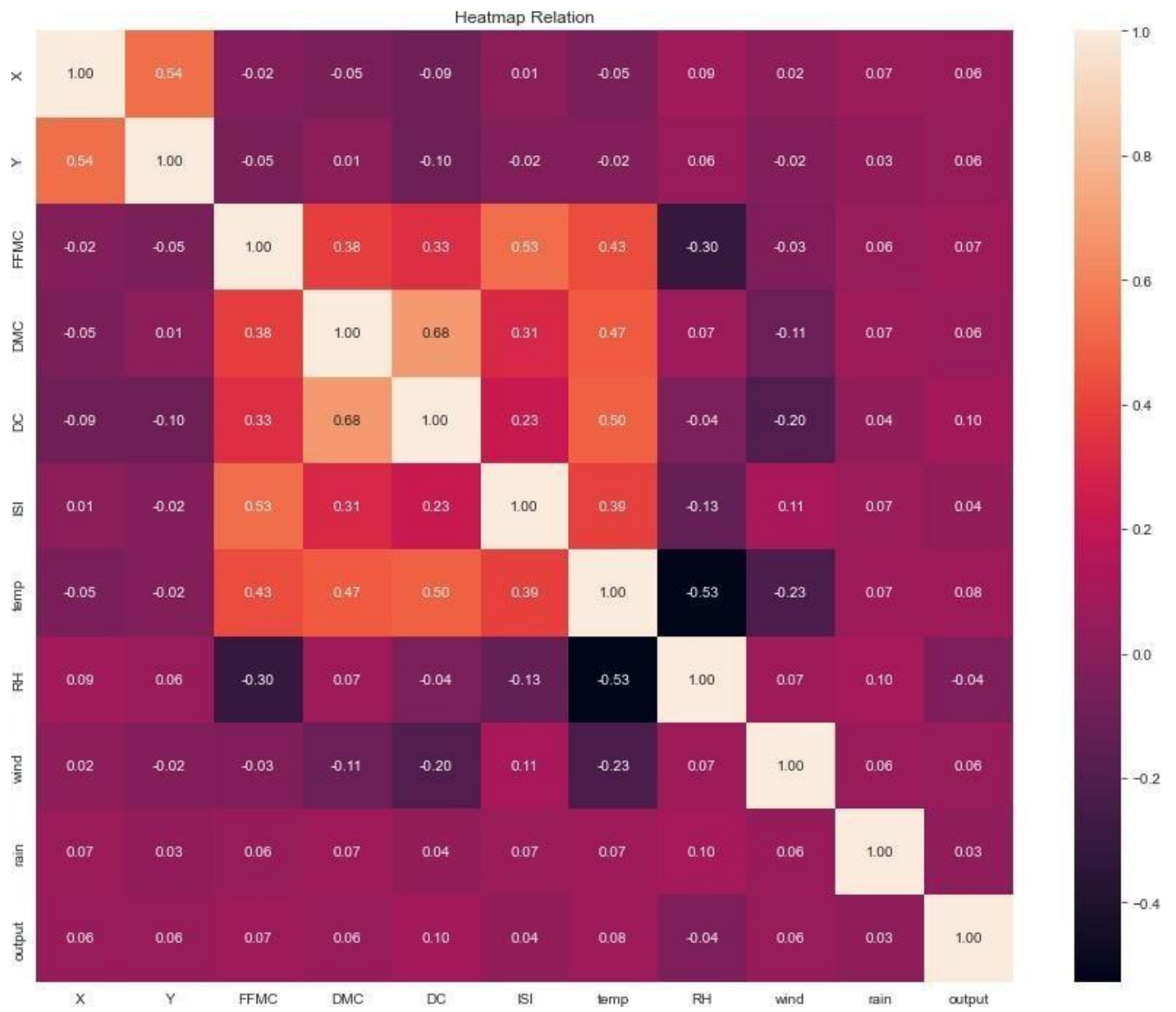








```
In[18]: plt.figure(figsize=(15, 12))    plt.title("Heatmap Relation")
sns.heatmap(fires[numerical_feature].corr(),annot=True,fmt='.2f');
```



```
In[19]: highest_rain = fires.sort_values(by='rain', ascending=False)[['month', 'day', 'rain']].head()highest_rain
```

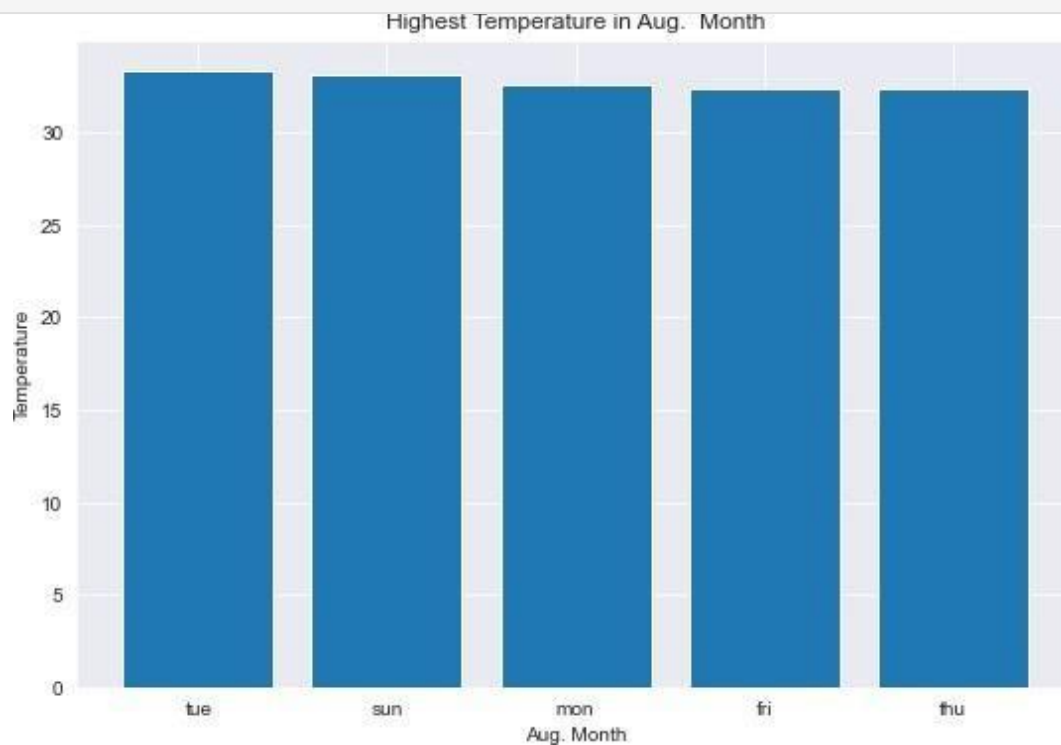
```
Out[19]:
```

	month	day	rain
499	aug	tue	6.4
509	aug	fri	1.4
243	aug	sun	1.0
500	aug	tue	0.8
501	aug	tue	0.8

```
In[20]: highest_temp=fires.sort_values(by='temp',ascending=False)[['month','day','temp']].head()plt.figure(figsize=(9,6))
plt.title("HighestTemperatureinAug.Month")plt.bar(highest_temp['day'],highest_temp['temp'])

plt.xlabel("Day")plt.xlabel("Aug.Month")

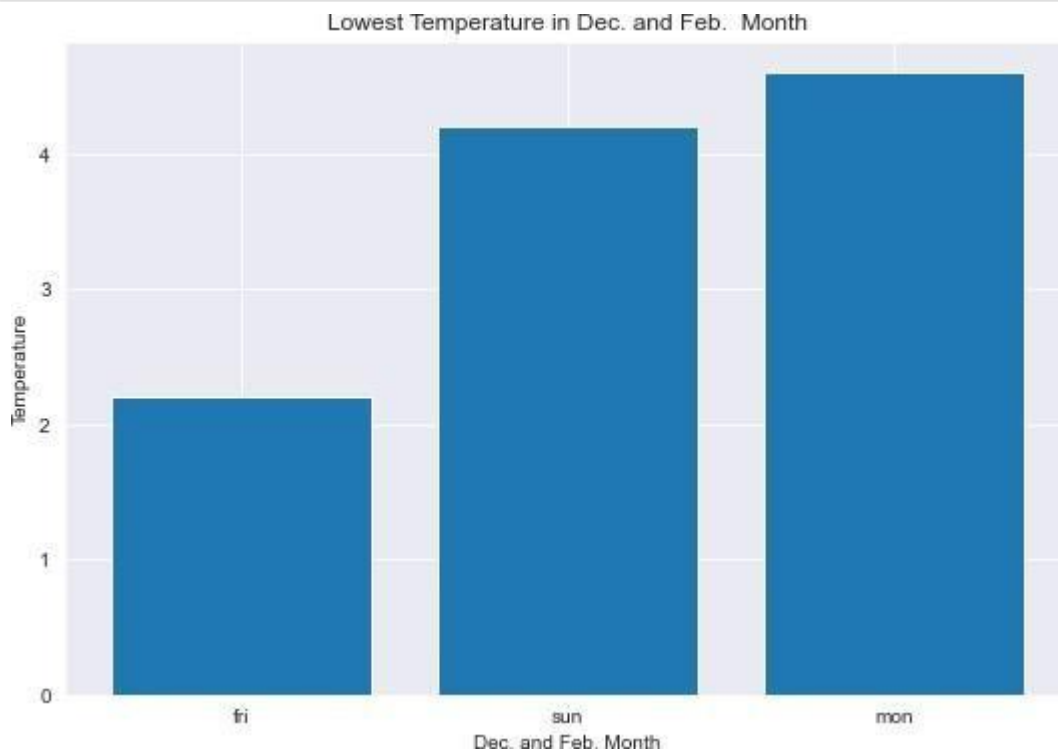
plt.ylabel("Temperature")
plt.show()
```



In[21]:

```
lowest_temp=fires.sort_values(by='temp',ascending=True)[['month','day','temp']].head()plt.figure(figsize=(9,6))
plt.title("LowestTemperatureinDec.andFeb.Month")plt.bar(lowest_temp['day'],
lowest_temp['temp'])

plt.xlabel("Day")plt.xlabel("Dec.
andFeb.Month")
plt.ylabel("Temperature")plt.show()
```



In[22]:

```
fires
```

Out[22]:

XY			month	day	FFMC	DMC	DC	ISI	temp	RH	wind	rain	output
0	7	5	mar	fri	86.2	26.2	94.3	5.1	8.2	51	6.7	0.0	0.0
1	7	4	oct	tue	90.6	35.4	669.1	6.7	18.0	33	0.9	0.0	0.0
2	7	4	oct	sat	90.6	43.7	686.9	6.7	14.6	33	1.3	0.0	0.0
3	3	6	mar	fri	91.7	33.3	77.5	9.0	8.3	97	4.0	0.2	0.0
4	8	6	mar	sun	89.3	51.3	102.2	9.6	11.4	99	1.8	0.0	0.0
5	3	6	aug	sun	92.3	85.3	488.0	14.7	22.2	29	5.4	0.0	0.0
6	8	6	aug	mon	92.3	88.9	495.6	8.5	24.1	27	3.1	0.0	0.0
7	3	6	aug	mon	91.5	145.4	608.2	10.7	8.0	86	2.2	0.0	0.0
8	8	6	sep	tue	91.0	129.5	692.6	7.0	13.1	63	5.4	0.0	0.0
9	7	5	sep	sat	92.5	88.0	698.6	7.1	22.8	40	4.0	0.0	0.0
10	7	5	sep	sat	92.5	88.0	698.6	7.1	17.8	51	7.2	0.0	0.0
11	7	5	sep	sat	92.8	73.2	713.0	22.6	19.3	38	4.0	0.0	0.0
12	6	5	aug	fri	63.5	70.8	665.3	0.8	17.0	72	6.7	0.0	0.0
13	5	5	sep	mon	90.9	126.5	686.5	7.0	21.3	42	2.2	0.0	0.0
14	6	5	sep	wed	92.9	133.3	699.6	9.2	26.4	21	4.5	0.0	0.0
15	5	5	sep	fri	93.3	141.2	713.9	13.9	22.9	44	5.4	0.0	0.0
16	5	5	mar	sat	91.7	35.8	80.8	7.8	15.1	27	5.4	0.0	0.0
17	3	5	oct	mon	84.9	32.8	664.2	3.0	16.7	47	4.9	0.0	0.0
18	6	4	mar	wed	89.2	27.9	70.8	6.3	15.9	35	4.0	0.0	0.0
19	5	4	apr	sat	86.3	27.4	97.1	5.1	9.3	44	4.5	0.0	0.0
20	6	4	sep	tue	91.0	129.5	692.6	7.0	18.3	40	2.7	0.0	0.0
21	5	4	sep	mon	91.8	78.5	724.3	9.2	19.1	38	2.7	0.0	0.0
22	7	4	jun	sun	94.3	96.3	200.0	56.1	21.0	44	4.5	0.0	0.0
23	7	4	aug	sat	90.2	110.9	537.4	6.2	19.5	43	5.8	0.0	0.0
24	7	4	aug	sat	93.5	139.4	594.2	20.3	23.7	32	5.8	0.0	0.0
25	7	4	aug	sun	91.4	142.4	601.4	10.6	16.3	60	5.4	0.0	0.0
26	7	4	sep	fri	92.4	117.9	668.0	12.2	19.0	34	5.8	0.0	0.0
27	7	4	sep	mon	90.9	126.5	686.5	7.0	19.4	48	1.3	0.0	0.0

0.0

286	3	sep	sat	93.4	145.4	721.4	8.1	30.2	24	2.7	0.0	0.0	
29	5	3	sep	sun	93.5	149.3	728.6	8.1	22.8	39	3.6	0.0	0.0
306	3	sep	fri	94.3	85.1	692.3	15.9	25.4	24	3.6	0.0	0.0	
31	5	3	sep	mon	88.6	91.8	709.9	7.1	11.2	78	7.6	0.0	0.0
326	3	sep	fri	88.6	69.7	706.8	5.8	20.6	37	1.8	0.0	0.0	
33	5	3	sep	sun	91.7	75.6	718.3	7.8	17.7	39	3.6	0.0	0.0
346	3	sep	mon	91.8	78.5	724.3	9.2	21.2	32	2.7	0.0	0.0	
35	5	3	sep	tue	90.3	80.7	730.2	6.3	18.2	62	4.5	0.0	0.0
36	6	3	oct	tue	90.6	35.4	669.1	6.7	21.7	24	4.5		0.0

	X	Y	month	day	FFMC	DMC	DC	ISI	temp	RH	wind	rain	output
	377	4	oct	fri	90.0	41.5	682.6	8.7	11.3	60	5.4	0.0	0.0
	387	3	oct	sat	90.6	43.7	686.9	6.7	17.8	27	4.0	0.0	0.0
	394	4	mar	tue	88.1	25.7	67.6	3.8	14.1	43	2.7	0.0	0.0
	404	4	jul	tue	79.5	60.6	366.7	1.5	23.3	37	3.1	0.0	0.0
	414	4	aug	sat	90.2	96.9	624.2	8.9	18.4	42	6.7	0.0	0.0
	424	4	aug	tue	94.8	108.3	647.1	17.0	16.6	54	5.4	0.0	0.0
	434	4	sep	sat	92.5	88.0	698.6	7.1	19.6	48	2.7	0.0	0.0
	444	4	sep	wed	90.1	82.9	735.7	6.2	12.9	74	4.9	0.0	0.0
	455	6	sep	wed	94.3	85.1	692.3	15.9	25.9	24	4.0	0.0	0.0
	465	6	sep	mon	90.9	126.5	686.5	7.0	14.7	70	3.6	0.0	0.0
	476	6	jul	mon	94.2	62.3	442.9	11.0	23.0	36	3.1	0.0	0.0
	484	4	mar	mon	87.2	23.9	64.7	4.1	11.8	35	1.8	0.0	0.0
	494	4	mar	mon	87.6	52.2	103.8	5.0	11.0	46	5.8	0.0	0.0
	504	4	sep	thu	92.9	137.0	706.4	9.2	20.8	17	1.3	0.0	0.0
	514	3	aug	sun	90.2	99.6	631.2	6.3	21.5	34	2.2	0.0	0.0
	524	3	aug	wed	92.1	111.2	654.1	9.6	20.4	42	4.9	0.0	0.0
	534	3	aug	wed	92.1	111.2	654.1	9.6	20.4	42	4.9	0.0	0.0
	544	3	aug	thu	91.7	114.3	661.3	6.3	17.6	45	3.6	0.0	0.0
	554	3	sep	thu	92.9	137.0	706.4	9.2	27.7	24	2.2	0.0	0.0
	564	3	sep	tue	90.3	80.7	730.2	6.3	17.8	63	4.9	0.0	0.0
	574	3	oct	sun	92.6	46.5	691.8	8.8	13.8	50	2.7	0.0	0.0



582	2	feb	mon	84.0	9.3	34.0	2.1	13.9	40	5.4	0.0	0.0
592	2	feb	fri	86.6	13.2	43.0	5.3	12.3	51	0.9	0.0	0.0
602	2	mar	sun	89.3	51.3	102.2	9.6	11.5	39	5.8	0.0	0.0
612	2	mar	sun	89.3	51.3	102.2	9.6	5.5	59	6.3	0.0	0.0
622	2	aug	thu	93.0	75.3	466.6	7.7	18.8	35	4.9	0.0	0.0
632	2	aug	sun	90.2	99.6	631.2	6.3	20.8	33	2.7	0.0	0.0
642	2	aug	mon	91.1	103.2	638.8	5.8	23.1	31	3.1	0.0	0.0
652	2	aug	thu	91.7	114.3	661.3	6.3	18.6	44	4.5	0.0	0.0
662	2	sep	fri	92.4	117.9	668.0	12.2	23.0	37	4.5	0.0	0.0
672	2	sep	fri	92.4	117.9	668.0	12.2	19.6	33	5.4	0.0	0.0
682	2	sep	fri	92.4	117.9	668.0	12.2	19.6	33	6.3	0.0	0.0
694	5	mar	fri	91.7	33.3	77.5	9.0	17.2	26	4.5	0.0	0.0
704	5	mar	fri	91.2	48.3	97.8	12.5	15.8	27	7.6	0.0	0.0
714	5	sep	fri	94.3	85.1	692.3	15.9	17.7	37	3.6	0.0	0.0
725	4	mar	fri	91.7	33.3	77.5	9.0	15.6	25	6.3	0.0	0.0
735	4	aug	tue	88.8	147.3	614.5	9.0	17.3	43	4.5	0.0	0.0
74	54	sep	fri	93.3	141.2	713.9	13.9	27.6	30	1.3	0.0	0.0
75	99	feb	thu	84.2	6.8	26.6	7.7	6.7	79	3.1	0.0	0.0
76	99	feb	fri	86.6	13.2	43.0	5.3	15.7	43	3.1	0.0	0.0
77	13	mar	mon	87.6	52.2	103.8	5.0	8.3	72	3.1	0.0	0.0
78	12	aug	fri	90.1	108.0	529.8	12.5	14.7	66	2.7	0.0	0.0
79	12	aug	tue	91.0	121.2	561.6	7.0	21.6	19	6.7	0.0	0.0
80	12	aug	sun	91.4	142.4	601.4	10.6	19.5	39	6.3	0.0	0.0
81	12	aug	sun	90.2	99.6	631.2	6.3	17.9	44	2.2	0.0	0.0
82	12	aug	tue	94.8	108.3	647.1	17.0	18.6	51	4.5	0.0	0.0
83	12	aug	wed	92.1	111.2	654.1	9.6	16.6	47	0.9	0.0	0.0
84	12	aug	thu	91.7	114.3	661.3	6.3	20.2	45	3.6	0.0	0.0
85	12	sep	thu	92.9	137.0	706.4	9.2	21.5	15	0.9	0.0	0.0
86	12	sep	thu	92.9	137.0	706.4	9.2	25.4	27	2.2	0.0	0.0
87	12	sep	thu	92.9	137.0	706.4	9.2	22.4	34	2.2	0.0	0.0
88	12	sep	sun	93.5	149.3	728.6	8.1	25.3	36	3.6	0.0	0.0
89	65	mar	sat	91.7	35.8	80.8	7.8	17.4	25	4.9	0.0	0.0
90	65	aug	sat	90.2	96.9	624.2	8.9	14.7	59	5.8	0.0	0.0
91	86	mar	fri	91.7	35.8	80.8	7.8	17.4	24	5.4	0.0	0.0
92	86	aug	sun	92.3	85.3	488.0	14.7	20.8	32	6.3	0.0	0.0

0.0

<b>93</b>	86	aug	sun	91.4	142.4	601.4	10.6	18.2	43	4.9	0.0	0.0
<b>94</b>	86	aug	mon	91.1	103.2	638.8	5.8	23.4	22	2.7	0.0	0.0
<b>95</b>	44	sep	sun	89.7	90.0	704.4	4.8	17.8	64	1.3	0.0	0.0
<b>96</b>	34	feb	sat	83.9	8.0	30.2	2.6	12.7	48	1.8	0.0	0.0
<b>97</b>	34	mar	sat	69.0	2.4	15.5	0.7	17.4	24	5.4	0.0	0.0
<b>98</b>	34	aug	sun	91.4	142.4	601.4	10.6	11.6	87	4.5	0.0	0.0
<b>99</b>	34	aug	sun	91.4	142.4	601.4	10.6	19.8	39	5.4	0.0	0.0
<b>1003</b>	4	aug	sun	91.4	142.4	601.4	10.6	19.8	39	5.4	0.0	0.0
<b>1013</b>	4	aug	tue	88.8	147.3	614.5	9.0	14.4	66	5.4	0.0	0.0
<b>1022</b>	4	aug	tue	94.8	108.3	647.1	17.0	20.1	40	4.0	0.0	0.0
<b>1032</b>	4	sep	sat	92.5	121.1	674.4	8.6	24.1	29	4.5	0.0	0.0
<b>1042</b>	4	jan	sat	82.1	3.7	9.3	2.9	5.3	78	3.1	0.0	0.0
<b>1054</b>	5	mar	fri	85.9	19.5	57.3	2.8	12.7	52	6.3	0.0	0.0
<b>1064</b>	5	mar	thu	91.4	30.7	74.3	7.5	18.2	29	3.1	0.0	0.0
<b>1074</b>	5	aug	sun	90.2	99.6	631.2	6.3	21.4	33	3.1	0.0	0.0
<b>1084</b>	5	sep	sat	92.5	88.0	698.6	7.1	20.3	45	3.1	0.0	0.0
<b>1094</b>	5	sep	mon	88.6	91.8	709.9	7.1	17.4	56	5.4	0.0	0.0
<b>110</b>	4	4	mar	fri	85.9	19.5	57.3	2.8	13.7	43	5.8	0.0

RHwindrainoutput												
1113	4	mar	fri	91.7	33.3	77.5	9.0	18.8	18	4.5	0.0	0.0
1123	4	sep	sun	89.7	90.0	704.4	4.8	22.8	39	3.6	0.0	0.0
1133	4	sep	mon	91.8	78.5	724.3	9.2	18.9	35	2.7	0.0	0.0
1143	4	mar	tue	88.1	25.7	67.6	3.8	15.8	27	7.6	0.0	0.0
1153	5	mar	tue	88.1	25.7	67.6	3.8	15.5	27	6.3	0.0	0.0
1163	4	mar	sat	91.7	35.8	80.8	7.8	11.6	30	6.3	0.0	0.0
1173	4	mar	sat	91.7	35.8	80.8	7.8	15.2	27	4.9	0.0	0.0
1183	4	mar	mon	90.1	39.7	86.6	6.2	10.6	30	4.0	0.0	0.0
1193	4	aug	thu	93.0	75.3	466.6	7.7	19.6	36	3.1	0.0	0.0
1203	4	aug	mon	91.5	145.4	608.2	10.7	10.3	74	2.2	0.0	0.0
1213	4	aug	mon	91.5	145.4	608.2	10.7	17.1	43	5.4	0.0	0.0
1223	4	sep	sun	92.4	124.1	680.7	8.5	22.5	42	5.4	0.0	0.0
1233	4	sep	tue	84.4	73.4	671.9	3.2	17.9	45	3.1	0.0	0.0
1243	4	sep	fri	94.3	85.1	692.3	15.9	19.8	50	5.4	0.0	0.0
1253	4	oct	sun	92.6	46.5	691.8	8.8	20.6	24	5.4	0.0	0.0
1263	5	mar	mon	87.6	52.2	103.8	5.0	9.0	49	2.2	0.0	0.0
1273	5	sep	fri	93.5	149.3	728.6	8.1	17.2	43	3.1	0.0	0.0
1283	5	oct	wed	91.4	37.9	673.8	5.2	15.9	46	3.6	0.0	0.0
1292	5	oct	sun	92.6	46.5	691.8	8.8	15.4	35	0.9	0.0	0.0
1304	6	feb	sat	68.2	21.5	87.2	0.8	15.4	40	2.7	0.0	0.0
1314	6	mar	mon	87.2	23.9	64.7	4.1	14.0	39	3.1	0.0	0.0
1324	6	mar	sun	89.3	51.3	102.2	9.6	10.6	46	4.9	0.0	0.0
1334	6	sep	thu	93.7	80.9	685.2	17.9	17.6	42	3.1	0.0	0.0
1343	5	mar	tue	88.1	25.7	67.6	3.8	14.9	38	2.7	0.0	0.0
1353	5	aug	sat	93.5	139.4	594.2	20.3	17.6	52	5.8	0.0	0.0
1363	6	sep	sun	92.4	124.1	680.7	8.5	17.2	58	1.3	0.0	0.0
1373	6	sep	mon	90.9	126.5	686.5	7.0	15.6	66	3.1	0.0	0.0
1389	9	jul	tue	85.8	48.3	313.4	3.9	18.0	42	2.7	0.0	1.0
1391	4	sep	tue	91.0	129.5	692.6	7.0	21.7	38	2.2	0.0	1.0

	XYmonth			dayFFMC DMC		DC	ISI temp					
1402	5	sep	mon	90.9	126.5	686.5	7.0	21.9	39	1.8	0.0	1.0
1411	2	aug	wed	95.5	99.9	513.3	13.2	23.3	31	4.5	0.0	1.0
1428	6	aug	fri	90.1	108.0	529.8	12.5	21.2	51	8.9	0.0	1.0
1431	2	jul	sat	90.0	51.3	296.3	8.7	16.6	53	5.4	0.0	1.0
1442	5	aug	wed	95.5	99.9	513.3	13.2	23.8	32	5.4	0.0	1.0
1456	5	aug	thu	95.2	131.7	578.8	10.4	27.4	22	4.0	0.0	1.0
1465	4	mar	mon	90.1	39.7	86.6	6.2	13.2	40	5.4	0.0	1.0
1478	3	sep	tue	84.4	73.4	671.9	3.2	24.2	28	3.6	0.0	1.0
1482	2	aug	tue	94.8	108.3	647.1	17.0	17.4	43	6.7	0.0	1.0
1498	6	sep	thu	93.7	80.9	685.2	17.9	23.7	25	4.5	0.0	1.0
1506	5	jun	fri	92.5	56.4	433.3	7.1	23.2	39	5.4	0.0	1.0
1519	9	jul	sun	90.1	68.6	355.2	7.2	24.8	29	2.2	0.0	1.0
1523	4	jul	sat	90.1	51.2	424.1	6.2	24.6	43	1.8	0.0	1.0
1535	4	sep	fri	94.3	85.1	692.3	15.9	20.1	47	4.9	0.0	1.0
1541	5	sep	sat	93.4	145.4	721.4	8.1	29.6	27	2.7	0.0	1.0
1557	4	aug	sun	94.8	108.3	647.1	17.0	16.4	47	1.3	0.0	1.0
1562	4	sep	sat	93.4	145.4	721.4	8.1	28.6	27	2.2	0.0	1.0
1572	2	aug	wed	92.1	111.2	654.1	9.6	18.4	45	3.6	0.0	1.0
1582	4	aug	wed	92.1	111.2	654.1	9.6	20.5	35	4.0	0.0	1.0
1597	4	sep	fri	92.4	117.9	668.0	12.2	19.0	34	5.8	0.0	1.0
1607	4	mar	mon	90.1	39.7	86.6	6.2	16.1	29	3.1	0.0	1.0
1616	4	aug	thu	95.2	131.7	578.8	10.4	20.3	41	4.0	0.0	1.0
1626	3	mar	sat	90.6	50.1	100.4	7.8	15.2	31	8.5	0.0	1.0
1638	6	sep	sat	92.5	121.1	674.4	8.6	17.8	56	1.8	0.0	1.0
1648	5	sep	sun	89.7	90.0	704.4	4.8	17.8	67	2.2	0.0	1.0
1656	5	mar	thu	84.9	18.2	55.0	3.0	5.3	70	4.5	0.0	1.0
1666	5	aug	wed	92.1	111.2	654.1	9.6	16.6	47	0.9	0.0	1.0
1676	5	aug	wed	96.0	127.1	570.5	16.5	23.4	33	4.5	0.0	1.0
1686	5	mar	fri	91.2	48.3	97.8	12.5	14.6	26	9.4	0.0	1.0
1698	6	aug	thu	95.2	131.7	578.8	10.4	20.7	45	2.2	0.0	1.0
1705	4	sep	wed	92.9	133.3	699.6	9.2	21.9	35	1.8	0.0	1.0
1718	6	aug	wed	85.6	90.4	609.6	6.6	17.4	50	4.0	0.0	1.0
1727	4	aug	sun	91.4	142.4	601.4	10.6	20.1	39	5.4	0.0	1.0
1734	4	sep	mon	90.9	126.5	686.5	7.0	17.7	39	2.2	0.0	1.0

1741	4	aug	sat	90.2	96.9	624.2	8.9	14.2	53	1.8	0.0	1.0
1751	4	aug	sat	90.2	96.9	624.2	8.9	20.3	39	4.9	0.0	1.0
1766	5	apr	thu	81.5	9.1	55.2	2.7	5.8	54	5.8	0.0	1.0
1772	5	aug	sun	90.2	99.6	631.2	6.3	19.2	44	2.7	0.0	1.0
1782	5	sep	wed	90.1	82.9	735.7	6.2	18.3	45	2.2	0.0	1.0
1798	6	aug	tue	88.8	147.3	614.5	9.0	14.4	66	5.4	0.0	1.0
1801	3	sep	sun	92.4	124.1	680.7	8.5	23.9	32	6.7	0.0	1.0
1818	6	oct	mon	84.9	32.8	664.2	3.0	19.1	32	4.0	0.0	1.0
1825	4	feb	sun	86.8	15.6	48.3	3.9	12.4	53	2.2	0.0	1.0
1837	4	oct	mon	91.7	48.5	696.1	11.1	16.8	45	4.5	0.0	1.0
184	8	6	aug	fri	93.9	135.7	586.7	15.1	20.8	34		
	4.9	1.0	RH	windrainoutput								
1852	5	sep	tue	91.0	129.5	692.6	7.0	17.6	46	3.1	0.0	1.0
1868	6	mar	sun	89.3	51.3	102.2	9.6	11.5	39	5.8	0.0	1.0
1871	5	sep	mon	90.9	126.5	686.5	7.0	21.0	42	2.2	0.0	1.0
1886	4	mar	sat	90.8	41.9	89.4	7.9	13.3	42	0.9	0.0	1.0
1897	4	mar	sun	90.7	44.0	92.4	5.5	11.5	60	4.0	0.0	1.0
1906	5	mar	fri	91.2	48.3	97.8	12.5	11.7	33	4.0	0.0	1.0
1912	5	aug	thu	95.2	131.7	578.8	10.4	24.2	28	2.7	0.0	1.0
1922	2	aug	tue	94.8	108.3	647.1	17.0	24.6	22	4.5	0.0	1.0
1934	5	sep	wed	92.9	133.3	699.6	9.2	24.3	25	4.0	0.0	1.0
1942	2	aug	tue	94.8	108.3	647.1	17.0	24.6	22	4.5	0.0	1.0
1952	5	aug	fri	93.9	135.7	586.7	15.1	23.5	36	5.4	0.0	1.0
1966	5	apr	thu	81.5	9.1	55.2	2.7	5.8	54	5.8	0.0	1.0
1974	5	sep	thu	92.9	137.0	706.4	9.2	21.5	15	0.9	0.0	1.0
1983	4	sep	tue	91.0	129.5	692.6	7.0	13.9	59	6.3	0.0	1.0
1992	4	sep	mon	63.5	70.8	665.3	0.8	22.6	38	3.6	0.0	1.0
2001	5	sep	tue	91.0	129.5	692.6	7.0	21.6	33	2.2	0.0	1.0
2016	5	mar	sun	90.1	37.6	83.7	7.2	12.4	54	3.6	0.0	1.0
2027	4	feb	sun	83.9	8.7	32.1	2.1	8.8	68	2.2	0.0	1.0
2038	6	oct	wed	91.4	37.9	673.8	5.2	20.2	37	2.7	0.0	1.0
2045	6	mar	sat	90.6	50.1	100.4	7.8	15.1	64	4.0	0.0	1.0

XYmonth			day	FFMC	DMC	DC	ISI temp					
2054	5	sep	thu	92.9	137.0	706.4	9.2	22.1	34	1.8	0.0	1.0
2062	2	aug	sat	93.5	139.4	594.2	20.3	22.9	31	7.2	0.0	1.0
2077	5	sep	tue	91.0	129.5	692.6	7.0	20.7	37	2.2	0.0	1.0
2086	5	sep	fri	92.4	117.9	668.0	12.2	19.6	33	6.3	0.0	1.0
2098	3	sep	thu	93.7	80.9	685.2	17.9	23.2	26	4.9	0.0	1.0
2104	4	oct	sat	90.6	43.7	686.9	6.7	18.4	25	3.1	0.0	1.0
2117	4	aug	sat	93.5	139.4	594.2	20.3	5.1	96	5.8	0.0	1.0
2127	4	sep	fri	94.3	85.1	692.3	15.9	20.1	47	4.9	0.0	1.0
2137	3	marmon		87.6	52.2	103.8	5.0	11.0	46	5.8	0.0	1.0
2144	4	mar	sat	91.7	35.8	80.8	7.8	17.0	27	4.9	0.0	1.0
2154	4	mar	sat	91.7	35.8	80.8	7.8	17.0	27	4.9	0.0	1.0
2164	4	sep	sun	92.4	124.1	680.7	8.5	16.9	60	1.3	0.0	1.0
2171	3	sepmon		88.6	91.8	709.9	7.1	12.4	73	6.3	0.0	1.0
2184	5	sep	wed	92.9	133.3	699.6	9.2	19.4	19	1.3	0.0	1.0
2196	5	marmon		90.1	39.7	86.6	6.2	15.2	27	3.1	0.0	1.0
2208	6	aug	sun	90.2	99.6	631.2	6.3	16.2	59	3.1	0.0	1.0
2213	4	sep	fri	93.3	141.2	713.9	13.9	18.6	49	3.6	0.0	1.0



	XY	month	day	FF	MC	DMC	DC	ISI	temp	RH	wind	rain	output
2493	4	aug	wed	93.1	157.3	666.7	13.5	21.7	40	0.4	0.0	1.0	
2508	5	aug	wed	93.1	157.3	666.7	13.5	26.8	25	3.1	0.0	1.0	
2518	5	aug	wed	93.1	157.3	666.7	13.5	24.0	36	3.1	0.0	1.0	
2526	5	aug	wed	93.1	157.3	666.7	13.5	22.1	37	3.6	0.0	1.0	
2537	4	aug	thu	91.9	109.2	565.5	8.0	21.4	38	2.7	0.0	1.0	
2546	3	aug	thu	91.6	138.1	621.7	6.3	18.9	41	3.1	0.0	1.0	
2552	5	aug	thu	87.5	77.0	694.8	5.0	22.3	46	4.0	0.0	0.0	
2568	6	aug	sat	94.2	117.2	581.1	11.0	23.9	41	2.2	0.0	1.0	
2574	3	aug	sat	94.2	117.2	581.1	11.0	21.4	44	2.7	0.0	1.0	
2583	4	aug		91.8	170.9	692.3	13.7	20.6	59	0.9		0.0	
2597	4	aug	sat	91.8	170.9	692.3	13.7	23.7	40	1.8	0.0	1.0	
2602	4	aug	mon	93.6	97.9	542.0	14.4	28.3	32	4.0	0.0	1.0	
2613	4	aug	fri	91.6	112.4	573.0	8.9	11.2	84	7.6	0.0	1.0	
2622	4	aug	fri	91.6	112.4	573.0	8.9	21.4	42	3.1	0.0	1.0	
2636	3	aug	fri	91.1	141.1	629.1	7.1	19.3	39	3.6	0.0	1.0	
2644	4	aug	fri	94.3	167.6	684.4	13.0	21.8	53	3.1	0.0	1.0	
2654	4	aug	tue	93.7	102.2	550.3	14.6	22.1	54	7.6	0.0	1.0	
2666	5	aug	tue	94.3	131.7	607.1	22.7	19.4	55	4.0	0.0	1.0	
2672	2	aug	tue	92.1	152.6	658.2	14.3	23.7	24	3.1	0.0	0.0	
2683	4	aug	tue	92.1	152.6	658.2	14.3	21.0	32	3.1	0.0	0.0	
2694	4	aug	tue	92.1	152.6	658.2	14.3	19.1	53	2.7	0.0	1.0	
2702	2	aug	tue	92.1	152.6	658.2	14.3	21.8	56	3.1	0.0	1.0	
2718	6	aug	tue	92.1	152.6	658.2	14.3	20.1	58	4.5	0.0	1.0	
2722	5	aug	tue	92.1	152.6	658.2	14.3	20.2	47	4.0	0.0	1.0	
2734	6	dec	sun	84.4	27.2	353.5	6.8	4.8	57	8.5	0.0	1.0	
2748	6	dec	wed	84.0	27.8	354.6	5.3	5.1	61	8.0	0.0	1.0	
2754	6	dec	thu	84.6	26.4	352.0	2.0	5.1	61	4.9	0.0	1.0	



	X	Y	month	day	F	M	C	DMC	DC	ISI	temp	RH	wind	rain	output
2764	4		dec	mon	85.4	25.4	349.7	2.6	4.6	21	8.5	0.0			1.0
2773	4		dec	mon	85.4	25.4	349.7	2.6	4.6	21	8.5	0.0			1.0
2784	4		dec	mon	85.4	25.4	349.7	2.6	4.6	21	8.5	0.0			1.0
2794	4		dec	mon	85.4	25.4	349.7	2.6	4.6	21	8.5	0.0			1.0
2804	6		dec	fri	84.7	26.7	352.6	4.1	2.2	59	4.9	0.0			1.0
2816	5		dec	tue	85.4	25.4	349.7	2.6	5.1	24	8.5	0.0			1.0
2826	3		feb	sun	84.9	27.5	353.5	3.4	4.2	51	4.0	0.0			0.0
2833	4		feb	wed	86.9	6.6	18.7	3.2	8.8	35	3.1	0.0			1.0
2845	4		feb	fri	85.2	4.9	15.8	6.3	7.5	46	8.0	0.0			1.0
2852	5		jul	sun	93.9	169.7	411.8	12.3	23.4	40	6.3	0.0			0.0
2867	6		jul	wed	91.2	183.1	437.7	12.5	12.6	90	7.6	0.2			0.0
2877	4		jul	sat	91.6	104.2	474.9	9.0	22.1	49	2.7	0.0			0.0
2887	4		jul	sat	91.6	104.2	474.9	9.0	24.2	32	1.8	0.0			0.0
2897	4		jul	sat	91.6	104.2	474.9	9.0	24.3	30	1.8	0.0			0.0
2902	5		jul	sat	91.6	104.2	474.9	9.0	18.7	53	1.8	0.0			0.0
2919	4		jul	sat	91.6	104.2	474.9	9.0	25.3	39	0.9	0.0			1.0
2924	5		jul	fri	91.6	100.2	466.3	6.3	22.9	40	1.3	0.0			1.0
2937	6		jul	tue	93.1	180.4	430.8	11.0	26.9	28	5.4	0.0			1.0
2948	6		jul	tue	92.3	88.8	440.9	8.5	17.1	67	3.6	0.0			1.0
2957	5		jun	sun	93.1	180.4	430.8	11.0	22.2	48	1.3	0.0			0.0
2966	4		jun	sun	90.4	89.5	290.8	6.4	14.3	46	1.8	0.0			1.0
2978	6		jun	sun	90.4	89.5	290.8	6.4	15.4	45	2.2	0.0			0.0
2988	6		jun	wed	91.2	147.8	377.2	12.7	19.6	43	4.9	0.0			0.0
2996	5		jun	sat	53.4	71.0	233.8	0.4	10.6	90	2.7	0.0			0.0
3006	5		jun	mon	90.4	93.3	298.1	7.5	20.7	25	4.9	0.0			0.0
3016	5		jun	mon	90.4	93.3	298.1	7.5	19.1	39	5.4	0.0			1.0
3023	6		jun	fri	91.1	94.1	232.1	7.1	19.2	38	4.5	0.0			0.0
3033	6		jun	sat	91.1	94.1	232.1	7.1	19.2	38	4.5	0.0			1.0

XYmonth			day	FFMC	DMC	DC	ISI	temp	RH	wind	rain	output
3033	6	jun	fri	91.1	94.1	232.1	7.1	19.2	38	4.5	0.0	0.0
3046	5	may	sat	85.1	28.0	113.8	3.5	11.3	94	4.9	0.0	0.0
3051	4	sep	sun	89.6	84.1	714.3	5.7	19.0	52	2.2	0.0	0.0
3067	4	sep	sun	89.6	84.1	714.3	5.7	17.1	53	5.4	0.0	1.0
3073	4	sep	sun	89.6	84.1	714.3	5.7	23.8	35	3.6	0.0	1.0
3082	4	sep	sun	92.4	105.8	758.1	9.9	16.0	45	1.8	0.0	0.0
3092	4	sep	sun	92.4	105.8	758.1	9.9	24.9	27	2.2	0.0	0.0
3107	4	sep	sun	92.4	105.8	758.1	9.9	25.3	27	2.7	0.0	0.0
3116	3	sep	sun	92.4	105.8	758.1	9.9	24.8	28	1.8	0.0	1.0
3122	4	sep	sun	50.4	46.2	706.6	0.4	12.2	78	6.3	0.0	0.0
3136	5	sep	wed	92.6	115.4	777.1	8.8	24.3	27	4.9	0.0	0.0
3144	4	sep	wed	92.6	115.4	777.1	8.8	19.7	41	1.8	0.0	1.0
3153	4	sep	wed	91.2	134.7	817.5	7.2	18.5	30	2.7	0.0	0.0
3164	5	sep	thu	92.4	96.2	739.4	8.6	18.6	24	5.8	0.0	0.0
3174	4	sep	thu	92.4	96.2	739.4	8.6	19.2	24	4.9	0.0	1.0
3186	5	sep	thu	92.8	119.0	783.5	7.5	21.6	27	2.2	0.0	0.0
3195	4	sep	thu	92.8	119.0	783.5	7.5	21.6	28	6.3	0.0	1.0
3206	3	sep	thu	92.8	119.0	783.5	7.5	18.9	34	7.2	0.0	1.0
3211	4	sep	thu	92.8	119.0	783.5	7.5	16.8	28	4.0	0.0	1.0
3226	5	sep	thu	92.8	119.0	783.5	7.5	16.8	28	4.0	0.0	1.0
3233	5	sep	thu	90.7	136.9	822.8	6.8	12.9	39	2.7	0.0	1.0
3246	5	sep	thu	88.1	53.3	726.9	5.4	13.7	56	1.8	0.0	1.0
3251	4	sep	sat	92.2	102.3	751.5	8.4	24.2	27	3.1	0.0	0.0
3265	4	sep	sat	92.2	102.3	751.5	8.4	24.1	27	3.1	0.0	0.0
3276	5	sep	sat	92.2	102.3	751.5	8.4	21.2	32	2.2	0.0	0.0
3286	5	sep	sat	92.2	102.3	751.5	8.4	19.7	35	1.8	0.0	0.0
3294	3	sep	sat	92.2	102.3	751.5	8.4	23.5	27	4.0	0.0	1.0

[illegible]

XYmonth			day	FFMC	DMC	DC	ISI	temp	RHwindrainoutput			
3576	3	sep	fri	92.5	122.0	789.7	10.2	15.9	55	3.6	0.0	0.0
3586	3	sep	fri	92.5	122.0	789.7	10.2	19.7	39	2.7	0.0	0.0
3591	4	sep	fri	92.5	122.0	789.7	10.2	21.1	39	2.2	0.0	1.0
3606	5	sep	fri	92.5	122.0	789.7	10.2	18.4	42	2.2	0.0	1.0
3614	3	sep	fri	92.5	122.0	789.7	10.2	17.3	45	4.0	0.0	1.0
3627	4	sep	fri	88.2	55.2	732.3	11.6	15.2	64	3.1	0.0	1.0
3634	3	sep	tue	91.9	111.7	770.3	6.5	15.9	53	2.2	0.0	1.0
3646	5	sep	tue	91.9	111.7	770.3	6.5	21.1	35	2.7	0.0	1.0
3656	5	sep	tue	91.9	111.7	770.3	6.5	19.6	45	3.1	0.0	1.0
3664	5	sep	tue	91.1	132.3	812.1	12.5	15.9	38	5.4	0.0	1.0
3674	5	sep	tue	91.1	132.3	812.1	12.5	16.4	27	3.6	0.0	0.0
3686	5	sep	sat	91.2	94.3	744.4	8.4	16.8	47	4.9	0.0	1.0
3694	5	sep	sun	91.0	276.3	825.1	7.1	13.8	77	7.6	0.0	0.0

		month			DMC	DC							
X	Y		day	FFMC			ISI	temp					
			RH	winidndrainnaionutpout									
370	7 4	sep	sun	91.0	276.3	825.1	7.1	13.8	77	7.6	0.0	1.0	
371	3 4	jul	wed	91.9	133.6	520.5	8.0	14.2	58	4.0	0.0	0.0	
372	4 5	aug	sun	92.0	203.2	664.5	8.1	10.4	75	0.9	0.0	0.0	
373	5 4	aug	thu	94.8	222.4	698.6	13.9	20.3	42	2.7	0.0	0.0	
374	6 5	sep	fri	90.3	290.0	855.3	7.4	10.3	78	4.0	0.0	1.0	
375	6 5	sep	sat	91.2	94.3	744.4	8.4	15.4	57	4.9	0.0	1.0	
376	8 6	aug	mon	92.1	207.0	672.6	8.2	21.1	54	2.2	0.0	0.0	
377	2 2	aug	sat	93.7	231.1	715.1	8.4	21.9	42	2.2	0.0	1.0	
378	6 5	mar	thu	90.9	18.9	30.6	8.0	8.7	51	5.8	0.0	0.0	
379	4 5	jan	sun	18.7	1.1	171.4	0.0	5.2	100	0.9	0.0	0.0	
380	5 4	jul	wed	93.7	101.3	458.8	11.9	19.3	39	7.2	0.0	1.0	
381	8 6	aug	thu	90.7	194.1	643.0	6.8	16.2	63	2.7	0.0	1.0	
382	8 6	aug	wed	95.2	217.7	690.0	18.0	28.2	29	1.8	0.0	1.0	
383	9 6	aug	thu	91.6	248.4	753.8	6.3	20.5	58	2.7	0.0	1.0	
384	8 4	aug	sat	91.6	273.8	819.1	7.7	21.3	44	4.5	0.0	1.0	
385	2 4	aug	sun	91.6	181.3	613.0	7.6	20.9	50	2.2	0.0	1.0	
386	3 4	sep	sun	90.5	96.7	750.5	11.4	20.6	55	5.4	0.0	1.0	
387	5 5	mar	thu	90.9	18.9	30.6	8.0	11.6	48	5.4	0.0	0.0	
388	6 4	aug	fri	94.8	227.0	706.7	12.0	23.3	34	3.1	0.0	1.0	
389	7 4	aug	fri	94.8	227.0	706.7	12.0	23.3	34	3.1	0.0	0.0	
390	7 4	feb	mon	84.7	9.5	58.3	4.1	7.5	71	6.3	0.0	1.0	
391	8 6	sep	fri	91.1	91.3	738.1	7.2	20.7	46	2.7	0.0	1.0	
392	1 3	sep	sun	91.0	276.3	825.1	7.1	21.9	43	4.0	0.0	1.0	
393	2 4	mar	tue	93.4	15.0	25.6	11.4	15.2	19	7.6	0.0	0.0	
394	6 5	feb	mon	84.1	4.6	46.7	2.2	5.3	68	1.8	0.0	0.0	
395	4 5	feb	sun	85.0	9.0	56.9	3.5	10.1	62	1.8	0.0	1.0	

sat 1.0

396	4 3	sep	sun	90.5	96.7	750.5	11.4	20.4	55	4.9	0.0	1.0
397	5 6	aug	sun	91.6	181.3	613.0	7.6	24.3	33	3.6	0.0	1.0
398	1 2	aug	sat	93.7	231.1	715.1	8.4	25.9	32	3.1	0.0	0.0
399	9 5	jun	wed	93.3	49.5	297.7	14.0	28.0	34	4.5	0.0	0.0
400	9 5	jun	wed	93.3	49.5	297.7	14.0	28.0	34	4.5	0.0	1.0
401	3 4	sep	thu	91.1	88.2	731.7	8.3	22.8	46	4.0	0.0	1.0
402	9 9	aug	fri	94.8	227.0	706.7	12.0	25.0	36	4.0	0.0	0.0
403	8 6	aug	thu	90.7	194.1	643.0	6.8	21.3	41	3.6	0.0	0.0
404	2 4	sep	wed	87.9	84.8	725.1	3.7	21.8	34	2.2	0.0	1.0
405	2 2	aug	tue	94.6	212.1	680.9	9.5	27.9	27	2.2	0.0	0.0
406	65	sep		87.12	91.38	60.6	4.0	17.0	67	4.9	0.0	
4074	5	feb	sat	84.7	8.2	55.0	2.9	14.2	46	4.0	0.0	0.0
4084	3	sep	fri	90.3	290.0	855.3	7.4	19.9	44	3.1	0.0	1.0
4091	4	jul	tue	92.3	96.2	450.2	12.1	23.4	31	5.4	0.0	0.0
4106	3	feb	fri	84.1	7.3	52.8	2.7	14.7	42	2.7	0.0	0.0
4117	4	feb	fri	84.6	3.2	43.6	3.3	8.2	53	9.4	0.0	1.0
4129	4	jul	mon	92.3	92.1	442.1	9.8	22.8	27	4.5	0.0	1.0
4137	5	aug	sat	93.7	231.1	715.1	8.4	26.4	33	3.6	0.0	0.0
4145	4	aug	sun	93.6	235.1	723.1	10.1	24.1	50	4.0	0.0	0.0
4158	6	aug	thu	94.8	222.4	698.6	13.9	27.5	27	4.9	0.0	1.0
4166	3	jul	tue	92.7	164.1	575.8	8.9	26.3	39	3.1	0.0	1.0
4176	5	mar	wed	93.4	17.3	28.3	9.9	13.8	24	5.8	0.0	0.0
4182	4	aug	sun	92.0	203.2	664.5	8.1	24.9	42	5.4	0.0	1.0
4192	5	aug	sun	91.6	181.3	613.0	7.6	24.8	36	4.0	0.0	1.0
4208	8	aug	wed	91.7	191.4	635.9	7.8	26.2	36	4.5	0.0	1.0
4212	4	aug	wed	95.2	217.7	690.0	18.0	30.8	19	4.5	0.0	0.0
4228	6	jul	sun	88.9	263.1	795.9	5.2	29.3	27	3.6	0.0	1.0

4231	3	sep	sat	91.2	94.3	744.4	8.4	22.3	48	4.0	0.0	1.0
4248	6	aug	sat	93.7	231.1	715.1	8.4	26.9	31	3.6	0.0	1.0
4252	2	aug	thu	91.6	248.4	753.8	6.3	20.4	56	2.2	0.0	0.0
4268	6	aug	thu	91.6	248.4	753.8	6.3	20.4	56	2.2	0.0	0.0
4272	4	aug	mon	92.1	207.0	672.6	8.2	27.9	33	2.2	0.0	1.0
4281	3	aug	thu	94.8	222.4	698.6	13.9	26.2	34	5.8	0.0	0.0
4293	4	aug	sun	91.6	181.3	613.0	7.6	24.6	44	4.0	0.0	1.0
4307	4	sep	thu	89.7	287.2	849.3	6.8	19.4	45	3.6	0.0	0.0
4311	3	aug	sat	92.1	178.0	605.3	9.6	23.3	40	4.0	0.0	1.0
4328	6	aug	thu	94.8	222.4	698.6	13.9	23.9	38	6.7	0.0	0.0
4332	4	aug	sun	93.6	235.1	723.1	10.1	20.9	66	4.9	0.0	1.0
4341	4	aug	fri	90.6	269.8	811.2	5.5	22.2	45	3.6	0.0	0.0
4352	5	jul	sat	90.8	84.7	376.6	5.6	23.8	51	1.8	0.0	0.0
4368	6	aug	mon	92.1	207.0	672.6	8.2	26.8	35	1.3	0.0	1.0
4378	6	aug	sat	89.4	253.6	768.4	9.7	14.2	73	2.7	0.0	0.0
4382	5	aug	sat	93.7	231.1	715.1	8.4	23.6	53	4.0	0.0	1.0
4391	3	sep	fri	91.1	91.3	738.1	7.2	19.1	46	2.2	0.0	1.0
4405	4	sep	fri	90.3	290.0	855.3	7.4	16.2	58	3.6	0.0	0.0
4418	6	aug	mon	92.1	207.0	672.6	8.2	25.5	29	1.8	0.0	1.0
4426	5	apr	mon	87.9	24.9	41.6	3.7	10.9	64	3.1	0.0	1.0
4431	2	jul	fri	90.7	80.9	368.3	16.8	14.8	78	8.0	0.0	0.0
	X Y	month	day	FFMC	DMC	DC	ISI	temp				
				RH	winidndrainnaion	output						
444	2 5	sep	fri	90.3	290.0	855.3	7.4	16.2	58	3.6	0.0	1.0
445	5 5	aug	sun	94.0	47.9	100.7	10.7	17.3	80	4.5	0.0	0.0
446	6 5	aug	sun	92.0	203.2	664.5	8.1	19.1	70	2.2	0.0	0.0
447	3 4	mar	wed	93.4	17.3	28.3	9.9	8.9	35	8.0	0.0	0.0

448	7 4	sep	wed	89.7	284.9	844.0	10.1	10.5	77	4.0	0.0	0.0
449	7 4	aug	sun	91.6	181.3	613.0	7.6	19.3	61	4.9	0.0	0.0
450	4 5	aug	wed	95.2	217.7	690.0	18.0	23.4	49	5.4	0.0	1.0
451	1 4	aug	fri	90.5	196.8	649.9	16.3	11.8	88	4.9	0.0	1.0
452	7 4	aug	mon	91.5	238.2	730.6	7.5	17.7	65	4.0	0.0	0.0
453	4 5	aug	thu	89.4	266.2	803.3	5.6	17.4	54	3.1	0.0	0.0
454	3 4	aug	thu	91.6	248.4	753.8	6.3	16.8	56	3.1	0.0	0.0
455	3 4	jul	mon	94.6	160.0	567.2	16.7	17.9	48	2.7	0.0	0.0
456	2 4	aug	thu	91.6	248.4	753.8	6.3	16.6	59	2.7	0.0	0.0
457	1 4	aug	wed	91.7	191.4	635.9	7.8	19.9	50	4.0	0.0	1.0
458	8 6	aug	sat	93.7	231.1	715.1	8.4	18.9	64	4.9	0.0	1.0
459	7 4	aug	sat	91.6	273.8	819.1	7.7	15.5	72	8.0	0.0	1.0
460	2 5	aug	sat	93.7	231.1	715.1	8.4	18.9	64	4.9	0.0	0.0
461	8 6	aug	sat	93.7	231.1	715.1	8.4	18.9	64	4.9	0.0	0.0
462	1 4	sep	sun	91.0	276.3	825.1	7.1	14.5	76	7.6	0.0	1.0
463	6 5	feb	tue	75.1	4.4	16.2	1.9	4.6	82	6.3	0.0	1.0
464	6 4	feb	tue	75.1	4.4	16.2	1.9	5.1	77	5.4	0.0	1.0
465	2 2	feb	sat	79.5	3.6	15.3	1.8	4.6	59	0.9	0.0	1.0
466	6 5	mar	mon	87.2	15.1	36.9	7.1	10.2	45	5.8	0.0	1.0
467	3 4	mar	wed	90.2	18.5	41.1	7.3	11.2	41	5.4	0.0	1.0
468	6 5	mar	thu	91.3	20.6	43.5	8.5	13.3	27	3.6	0.0	1.0
469	6 3	apr	sun	91.0	14.6	25.6	12.3	13.7	33	9.4	0.0	1.0
470	5 4	apr	sun	91.0	14.6	25.6	12.3	17.6	27	5.8	0.0	0.0
471	4 3	may	fri	89.6	25.4	73.7	5.7	18.0	40	4.0	0.0	1.0
472	8 3	jun	mon	88.2	96.2	229.0	4.7	14.3	79	4.0	0.0	1.0
473	9 4	jun	sat	90.5	61.1	252.6	9.4	24.5	50	3.1	0.0	1.0
474	4 3	jun	thu	93.0	103.8	316.7	10.8	26.4	35	2.7	0.0	1.0



475	2 5	jun	thu	93.7	121.7	350.2	18.0	22.7	40	9.4	0.0	1.0
476	4 3	jul	thu	93.5	85.3	395.0	9.9	27.2	28	1.3	0.0	1.0
477	4 3	jul	sun	93.7	101.3	423.4	14.7	26.1	45	4.0	0.0	1.0
478	7 4	jul	sun	93.7	101.3	423.4	14.7	18.2	82	4.5	0.0	1.0
479	7 4	jul	mon	89.2	103.9	431.6	6.4	22.6	57	4.9	0.0	1.0
480	99	jul	thu	93.2	114.4	560.0	9.5	30.2	25	4.5	0.0	
	XY	month	day	FFMC	DMC	DC	ISI	temp	RH	wind	rain	output
4814	3	jul	thu	93.2	114.4	560.0	9.5	30.2	22	4.9	0.0	0.0
4823	4	aug	sun	94.9	130.3	587.1	14.1	23.4	40	5.8	0.0	1.0
4838	6	aug	sun	94.9	130.3	587.1	14.1	31.0	27	5.4	0.0	0.0
4842	5	aug	sun	94.9	130.3	587.1	14.1	33.1	25	4.0	0.0	1.0
4852	4	aug	mon	95.0	135.5	596.3	21.3	30.6	28	3.6	0.0	1.0
4865	4	aug	tue	95.1	141.3	605.8	17.7	24.1	43	6.3	0.0	1.0
4875	4	aug	tue	95.1	141.3	605.8	17.7	26.4	34	3.6	0.0	1.0
4884	4	aug	tue	95.1	141.3	605.8	17.7	19.4	71	7.6	0.0	1.0
4894	4	aug	wed	95.1	141.3	605.8	17.7	20.6	58	1.3	0.0	0.0
4904	4	aug	wed	95.1	141.3	605.8	17.7	28.7	33	4.0	0.0	0.0
4914	4	aug	thu	95.8	152.0	624.1	13.8	32.4	21	4.5	0.0	0.0
4921	3	aug	fri	95.9	158.0	633.6	11.3	32.4	27	2.2	0.0	0.0
4931	3	aug	fri	95.9	158.0	633.6	11.3	27.5	29	4.5	0.0	1.0
4946	6	aug	sat	96.0	164.0	643.0	14.0	30.8	30	4.9	0.0	1.0
4956	6	aug	mon	96.2	175.5	661.8	16.8	23.9	42	2.2	0.0	0.0
4964	5	aug	mon	96.2	175.5	661.8	16.8	32.6	26	3.1	0.0	1.0
4973	4	aug	tue	96.1	181.1	671.2	14.3	32.3	27	2.2	0.0	1.0
4986	5	aug	tue	96.1	181.1	671.2	14.3	33.3	26	2.7	0.0	1.0
4997	5	aug	tue	96.1	181.1	671.2	14.3	27.3	63	4.9	6.4	1.0
5008	6	aug	tue	96.1	181.1	671.2	14.3	21.6	65	4.9	0.8	0.0
5017	5	aug	tue	96.1	181.1	671.2	14.3	21.6	65	4.9	0.8	0.0
5024	4	aug	tue	96.1	181.1	671.2	14.3	20.7	69	4.9	0.4	0.0

5032	4	aug	wed	94.5	139.4	689.1	20.0	29.2	30	4.9	0.0	1.0
5044	3	aug	wed	94.5	139.4	689.1	20.0	28.9	29	4.9	0.0	1.0
5051	2	aug	thu	91.0	163.2	744.4	10.1	26.7	35	1.8	0.0	1.0
5061	2	aug	fri	91.0	166.9	752.6	7.1	18.5	73	8.5	0.0	0.0
5072	4	aug	fri	91.0	166.9	752.6	7.1	25.9	41	3.6	0.0	0.0
5081	2	aug	fri	91.0	166.9	752.6	7.1	25.9	41	3.6	0.0	0.0
5095	4	aug	fri	91.0	166.9	752.6	7.1	21.1	71	7.6	1.4	1.0
5106	5	aug	fri	91.0	166.9	752.6	7.1	18.2	62	5.4	0.0	1.0
5118	6	aug	sun	81.6	56.7	665.6	1.9	27.8	35	2.7	0.0	0.0
5124	3	aug	sun	81.6	56.7	665.6	1.9	27.8	32	2.7	0.0	1.0
5132	4	aug	sun	81.6	56.7	665.6	1.9	21.9	71	5.8	0.0	1.0
5147	4	aug	sun	81.6	56.7	665.6	1.9	21.2	70	6.7	0.0	1.0
5151	4	aug	sat	94.4	146.0	614.7	11.3	25.6	42	4.0	0.0	0.0
51663		nov	tue	79.5	3.0	106.7	1.1	11.8	31	4.5	0.0	0.0

In[]:

```
In[1]:import keras
from keras.preprocessing.image import
ImageDataGenerator
```

```
In[2]: #Definetheparameters/argumentsforImageDataGeneratorclass
train_datagen=ImageDataGenerator(rescale=1./255, shear_range=0.2, rotation_range=180, zoom_range
```

```
test_datagen=ImageDataGenerator(rescale=1./255)
```

```
In[3]: #ApplyingImageDataGeneratorfunctionalitytotrainset
x_train=train_datagen.flow_from_directory(r'C:\Users\dhine\Downloads\archive\Dataset\Dataset\
target_size=(128,128), batch_size=32, class_
mode='binary')
```

Found 436 images belonging to 2 classes.

```
In[4]: #ApplyingImageDataGeneratorfunctionalitytotestset
x_test=test_datagen.flow_from_directory(r'C:\Users\dhine\Downloads\archive\Dataset\Dataset\te
target_size=(128,128), batch_size=32, class_mo
de='binary')
```

Found 121 images belonging to 2 classes.

```
In[5]: #import model building libraries

#To define Linear initialisation import Sequential from
keras.models import
Sequential #To add layers import Den
se from keras.layers import Dense
#To create Convolution kernel import Convolution2D
from keras.layers import
Convolution2D #import
Maxpooling layer
from keras.layers import MaxPo
oling2D #import flatten layer from keras.layer
import Flatten import
```

```
In[7]: #initializing the model model=Sequential()
```

```
In[8]: #add convolutional layer
model.add(Convolution2D(32,(3,3), input_shape=(128,128,3), activation='relu')) #add
maxpooling layer model.add(MaxPooling2D(pool_size=(2,2)))
#add flatten layer model.add(Flatten())
```

```
In[9]: #add hidden
In[10]: layermodel.add(Dense(150,activation='relu'))#addoutputlayermodel.add(Dense(1,activation='sigmoid'))
In[11]:

#configurethelearningprocessmodel.compile(loss='binary_crossentropy',optimizer="adam",metrics=["accuracy"])

#Trainingthemodelmodel.fit(generator(x_train,steps_per_epoch=14,epochs=10,validation_data=x_test,validation_steps=10))
```

```
Epoch1/10
14/14 [=====] - 84s 6s/step - loss: 4.2334 - accuracy: 0.5619 - val_
loss:1.3686-val_accuracy: 0.5950Epoch2/10
14/14 [=====] - 74s 5s/step - loss: 0.5689 - accuracy: 0.7362 - val_
loss:0.2423-val_accuracy: 0.8926Epoch3/10
14/14 [=====] - 123s 9s/step - loss: 0.2231 - accuracy: 0.9197 - val_
_loss:0.1323-val_accuracy: 0.9669Epoch4/10
14/14 [=====] - 75s 5s/step - loss: 0.2170 - accuracy: 0.9128 - val_
loss:0.1082-val_accuracy: 0.9669Epoch5/10
14/14[=====]-129s10s/step-loss:0.1918-accuracy:0.9151-val_
_loss:0.1145-val_accuracy:0.9669Epoch6/10
14/14 [=====] - 111s 8s/step - loss: 0.1938 - accuracy: 0.9037 - val_
_loss:0.1030-val_accuracy: 0.9669
```

```
Epoch14/14[=====7/10
-88s 6s/step - loss: 0.1756 - accuracy:0.9312 - val_ loss: 0.0831-val_accuracy:0.97528/10
```

Epoch

```
14/14[===== - 86s 6s/step -loss: 0.1564-accuracy: 0.9404-val_ loss:
====]Epoch 0.1073-val_accuracy:0.96699/10
14/14[=====
====]-77s6s/step-loss:0.1480-accuracy:0.9427-val_ loss:0.0754-val_accuracy:0.983510/10
Epoch[=====
14/14 [=====] - 81s 6s/step - loss: 0.1641 - accuracy:0.9289 -
val_loss: 0.0601-val_accuracy:0.9835
<keras.callbacks.History at 0x2546507bf10>
```

```
Out[11]:In[12]: model.save("forest1.h5")
```

```
In[13]: #importload_modelfromkeras.modelfromkeras.mode
lsimportload_model#importimageclass from keras
from tensorflow.keras.preprocessingimport image
#importnumpyimport
numpyasnp
#importcv2import
```

```
In[15]:#loadthesavedmodelmodel=
load_model("forest1.h5")
```

```
In[16]: img=image.load_img(r'C:\Users\dhine\Downloads\archive\Dataset\Dataset\test_set\withfire\skynx=imag
e.img_to_array(img) res = cv2.resize(x, dsize=(128, 128),
interpolation=cv2.INTER_CUBIC)#expandtheimageshape x=np.expand_dims(res,axis=0)
```

```
In[17]: pred=model.predict(x)

1/1[=====]-5s5s/step
```

```
pred
```

---