In [1]:
```
#Importing Libraries
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline

import pandas as pd

from sklearn.preprocessing import LabelEncoder
from sklearn.utils import shuffle

#Constants

TRAIN_SIZE = 6772
TEST_SIZE = 1693

ACTIVATION_F = 'tanh'

#Import Training Set
df = pd.read_csv('SeoulBikeData.csv',engine='python')

dummies = pd.get_dummies(df.Seasons)
df= pd.concat([df,dummies],axis='columns')
df= df.drop(['Seasons','Winter'], axis='columns')

le= LabelEncoder()
dfle = df
df.Holiday=le.fit_transform(dfle.Holiday)
df['Functioning Day']=le.fit_transform(dfle['Functioning Day'])
```

In [2]:
```
df.head()
```

Out[2]:

| | Date | Rented Bike Count | Hour | Temperature(°C) | Humidity(%) | Wind speed (m/s) | Visibility (10m) | Dew point temperature(°C) | So Radiati (MJ/m |
|---|---|---|---|---|---|---|---|---|---|
| **0** | 01/12/2017 | 254 | 0 | -5.2 | 37 | 2.2 | 2000 | -17.6 | ( |
| **1** | 01/12/2017 | 204 | 1 | -5.5 | 38 | 0.8 | 2000 | -17.6 | ( |
| **2** | 01/12/2017 | 173 | 2 | -6.0 | 39 | 1.0 | 2000 | -17.7 | ( |
| **3** | 01/12/2017 | 107 | 3 | -6.2 | 40 | 0.9 | 2000 | -17.6 | ( |
| **4** | 01/12/2017 | 78 | 4 | -6.0 | 36 | 2.3 | 2000 | -18.6 | ( |

In [3]:
```
X=df
X=X.drop("Date",axis=1)
X=X.drop("Rented Bike Count",axis=1)
y = df["Rented Bike Count"]
```

In [4]:
```
X.head()
```

Out[4]:

| | Hour | Temperature(°C) | Humidity(%) | Wind speed (m/s) | Visibility (10m) | Dew point temperature(°C) | Solar Radiation (MJ/m2) | Rainfall(mm) | Sn |
|---|---|---|---|---|---|---|---|---|---|
| **0** | 0 | -5.2 | 37 | 2.2 | 2000 | -17.6 | 0.0 | 0.0 | |

| | Hour | Temperature(°C) | Humidity(%) | Wind speed (m/s) | Visibility (10m) | Dew point temperature(°C) | Solar Radiation (MJ/m2) | Rainfall(mm) | Sn |
|---|---|---|---|---|---|---|---|---|---|
| **1** | 1 | -5.5 | 38 | 0.8 | 2000 | -17.6 | 0.0 | 0.0 | |
| **2** | 2 | -6.0 | 39 | 1.0 | 2000 | -17.7 | 0.0 | 0.0 | |
| **3** | 3 | -6.2 | 40 | 0.9 | 2000 | -17.6 | 0.0 | 0.0 | |
| **4** | 4 | -6.0 | 36 | 2.3 | 2000 | -18.6 | 0.0 | 0.0 | |

In [5]:
```
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(
    X,
    y,
    test_size=0.2,
    random_state=0)

X_train.shape, X_test.shape
```

Out[5]: ((7008, 14), (1752, 14))

In [6]:
```
X_train.corr()
```

Out[6]:

| | Hour | Temperature(°C) | Humidity(%) | Wind speed (m/s) | Visibility (10m) | Dew point temperature(°C) | S Radiat (MJ/ |
|---|---|---|---|---|---|---|---|
| **Hour** | 1.000000 | 0.135492 | -0.233281 | 0.282317 | 0.096367 | 0.016132 | 0.148 |
| **Temperature(°C)** | 0.135492 | 1.000000 | 0.154051 | -0.032333 | 0.036242 | 0.912724 | 0.363 |
| **Humidity(%)** | -0.233281 | 0.154051 | 1.000000 | -0.344004 | -0.547715 | 0.532832 | -0.457 |
| **Wind speed (m/s)** | 0.282317 | -0.032333 | -0.344004 | 1.000000 | 0.176518 | -0.175369 | 0.332 |
| **Visibility (10m)** | 0.096367 | 0.036242 | -0.547715 | 0.176518 | 1.000000 | -0.176538 | 0.145 |
| **Dew point temperature(°C)** | 0.016132 | 0.912724 | 0.532832 | -0.175369 | -0.176538 | 1.000000 | 0.105 |
| **Solar Radiation (MJ/m2)** | 0.148713 | 0.363076 | -0.457705 | 0.332530 | 0.145275 | 0.105797 | 1.000 |
| **Rainfall(mm)** | 0.011442 | 0.047771 | 0.229661 | -0.020668 | -0.159169 | 0.121061 | -0.071 |
| **Snowfall (cm)** | -0.019582 | -0.218641 | 0.110899 | -0.003987 | -0.117943 | -0.150324 | -0.074 |
| **Holiday** | 0.000357 | 0.052282 | 0.051985 | -0.023402 | -0.032970 | 0.065061 | 0.003 |
| **Functioning Day** | 0.012371 | -0.049998 | -0.015002 | 0.017091 | -0.032013 | -0.050186 | -0.002 |
| **Autumn** | -0.000024 | 0.056742 | 0.036346 | -0.131273 | 0.109990 | 0.064274 | -0.042 |
| **Spring** | -0.005970 | 0.010933 | 0.014811 | 0.089861 | -0.193632 | 0.002597 | 0.093 |
| **Summer** | 0.012511 | 0.665986 | 0.187273 | -0.062988 | 0.065471 | 0.652420 | 0.134 |

In [7]:
```
import seaborn as sns
#Using Pearson Correlation
plt.figure(figsize=(12,10))
cor = X_train.corr()
sns.heatmap(cor, annot=True, cmap=plt.cm.CMRmap_r)
plt.show()
```