```
Assignment - 3 [ SKLearn & Matplotlib]
In 1]: from sklearn datasets import load-inis
 In[2] :
                inis = load-inis()
               print (inis)
             [ data': array [ 5.1, 3.5, 1.4, 0.2]
                       [4.9, 3., 1.4, 0.2]
                        [4.7, 3.2, 1.3, 0.2]
                        [4.6, 3.1, 1.5, 0.2]
                        [5.0, 3.6, 1.4, 0.2]
                         [4.8, 3.4, 1.9, 0.2],
 In[3]: import pandos as pd
 In[4]: data = pd. Data Frame (inis. data, columns = inis. feature_names)
           print (data)
                                Sepol width(cm) petal length(cm) petal width(cm)
              Sepal length (cm)
                                                                          0.2
                                         3.5
       ٥
                                                                          0.2
                                                          1.4
                                         3.0
                  4.9
                                                                          0.2
                                                          1.3
                                         3.2
                  4.7
       2
                                                         1.5
                                                                          0.2
                                         3.1
                  4.6
       3
                                                         1-4
                                                                          0.2
                                         3.6
                  5.0
                                                                         2.3
                                                         5.4
                                        3.4
      148
                  6.2
                                                                         1.8
                  5.9
                                                         5.1
                                         3.0
      149
```

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Teacher's Signature .....

In[5]: data head () sepal width(cm) petal length (cm)
3.5 1.4 Sepal length (cm)
5.1 petal width (cm) 3.5 0.2 ٥ 4.9 1 3.0 1.4 0.2 4.7 1.3 3,2 2 0.2 3.1 3 1.5 4.6 0.2 0.2 5.0 1.4 4 3.6 data ['Species'] = pd. Data Frame (inis. tonget)
print (data)

In[6]:

	Sepal length(cm) 5.1	Sepal Width (cm)	Petal Length (cm) 1.4	Petal Width (cm)
0	5.1	3.5	1.4	0.2
1	4.9	3.0	1-4	0.2
2	4-7	3.2	1.3	0.2
3	4.6	3.1	1.5	0 · 2
4	5.0	3.6	1.4	0.1
			~~	
148	6.2	3-4	5.4	2.3
149	5.9	3.0	5.1	1.8

	4
In[7]:	data head()

	Sepal length (cm)	sepal width(cm)	petal length (cm)	petal width (cm)	Species
0	5.1	3.5	1.4	0.1	0
1	4.9	3.0	1.4	७ - २	S
2	4.7	3.2	1.3	0.2	0
3	4-6	3.1	1.5	0.2	0
4	5.0	3.6	t - 44	0.2	0

$$h[8]: x = data \cdot iloc[:, :-1]$$

$$y = data \cdot iloc[:, -1]$$

```
In[13]: from motplotlib import pyplot as pt
              1. matplotlib
                           inline
              from
                         Sklearn-tree import plot-tree
 In[14]: plt figure (figsize = (25,20))
               plot - tree (model-fit, feature-names = iris feature-names)
                               class_names = inis.target_names,
                               filled = True)
                    plt.show()
                              petal width (cm) <= 0.75
                                   entropy = 1.584
                                  value = [37,34,34]
                                   Class = setosa.
                      entropy = 0.0
                                                           petal width (cm) < 1.75
                                                             entropy = 1.0
                       Samples = 37
                                                             Samples = 68
                      value = [37,00]
                                                             value= [0, 34,34]
                        class = setosa
                                                               Class = Versicolor
                                        petal length (cm) <= 5.05
                                                                            petal length (cm) <=4.85
                                           samples = 36
                                                                             entropy = 0.201
                                                                             Samples = 32
                                           value = [0, 33,3]
                                                                             value = [0,1,31]
                                           Class = Versicolon
                                                                             class = virrginica
                       entropy= 0.8
                                           15epa | length (m) <= 6.05
                                                                                        entropy=00
                                                                    Sepal length (cm) <= 5.95 [
                       Somples = 32
                                            entropy = 00.811
                                                                                        Samples =29
                                                                    entropy & 0.918
                      value = [0, 32,0]
                                             somples = 4
                                                                                        value 0,0,29
                                                                     samples = 3
                       Class = versicolor
                                             value = 0, 1, 3]
                                                                     value = [0, 1, 2]
                                                                                       clas = virginia
                                                                     Class=viriginica
                                             Class = Virginica.
                                                                                     entropy=00 C
                             entropy = 0.0
                                                  entropy = 0.0
                                                                     entropy=0.0
                                                                                      samples = 2
                             sample = 1
value = [0,1,0]
                                                  samples = 3
                                                                     samples = 1
                                                                                      value=[0,0,2]
                                                  value = [0,0,3]
                                                                     value = [0,1,0]
                                                                     Class = venticolon
                             class = vensicolon
                                                  Closs = Viriginical
```