```
109
110 def UnsupervisedPreds(df,samples,clt,components):
111
112     import warnings
113     warnings.filterwarnings("ignore")
114
115     for comp in components:
116         clt.n_components = comp
117         clusterer = clt.fit(df)
118         preds = clusterer.predict(df)
119         centers = clusterer.means_
120         sample_preds = clusterer.predict(samples)  #
    pca_samples
121         score = silhouette_score(df, preds)
122     print("score para {} componentes: {}".format(comp,
    score))
123
124     return (clusterer,preds)
125
126 def UnsupervidedKmens(df, sample):
127
128     from sklearn.cluster import KMeans
129     dadosPaa = df
130     components = int(dadosPaa.shape[0]/300)
131     print(components)
132     startpts = np.zeros((components, dadosPaa.shape[1]))
133     for i in range(0, components):
134         startpts[i] = dadosPaa.iloc[150 + i * 300, :]
135
136     kmeans = KMeans(n_clusters=components, init=startpts)
137     kmeans.fit(dadosPaa)
138     #print(kmeans.cluster_centers_)
139     distance = kmeans.fit_transform(dadosPaa)
140     labels = kmeans.labels_
141     import collections
142     lab = collections.Counter(labels)
143     #print(lab)
144
145     #print("kmeans")
146     pred = kmeans.predict(sample)
147
148     return (pred,kmeans)
149
```