Generate 10 random numbers using numpy Close

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```
import numpy as np
import pandas as pd
```

```
df = pd.read_csv('/content/sample_data/data.csv')
df.head()
```

	id	diagnosis	radius_mean	texture_mean	perimeter_mean	area_mean	smoothness
0	842302	M	17.99	10.38	122.80	1001.0	0
1	842517	M	20.57	17.77	132.90	1326.0	0.
2	84300903	M	19.69	21.25	130.00	1203.0	0.
3	84348301	M	11.42	20.38	77.58	386.1	0.
4	84358402	M	20.29	14.34	135.10	1297.0	0.

5 rows × 33 columns

```
df.drop(columns=['id','Unnamed: 32'],inplace=True)
df.head()
```

	diagnosis	radius_mean	texture_mean	perimeter_mean	area_mean	smoothness_mean	com
0	M	17.99	10.38	122.80	1001.0	0.11840	
1	M	20.57	17.77	132.90	1326.0	0.08474	
2	M	19.69	21.25	130.00	1203.0	0.10960	
3	M	11.42	20.38	77.58	386.1	0.14250	
4	M	20.29	14.34	135.10	1297.0	0.10030	

5 rows × 31 columns

```
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(df.iloc[:,1:], df.iloc[:,0],test_size=0.
from sklearn.preprocessing import StandardScaler

scaler = StandardScaler()

X_train = scaler.fit_transform(X_train)
X_test = scaler.transform(X_test)
```

```
from sklearn.neighbors import KNeighborsClassifier

knn = KNeighborsClassifier(n_neighbors=3)
```

```
knn.fit(X_train,y_train)
```

```
▾      KNeighborsClassifier
KNeighborsClassifier(n_neighbors=3)
```

```
from sklearn.metrics import accuracy_score

y_pred = knn.predict(X_test)

accuracy_score(y_test, y_pred)
```

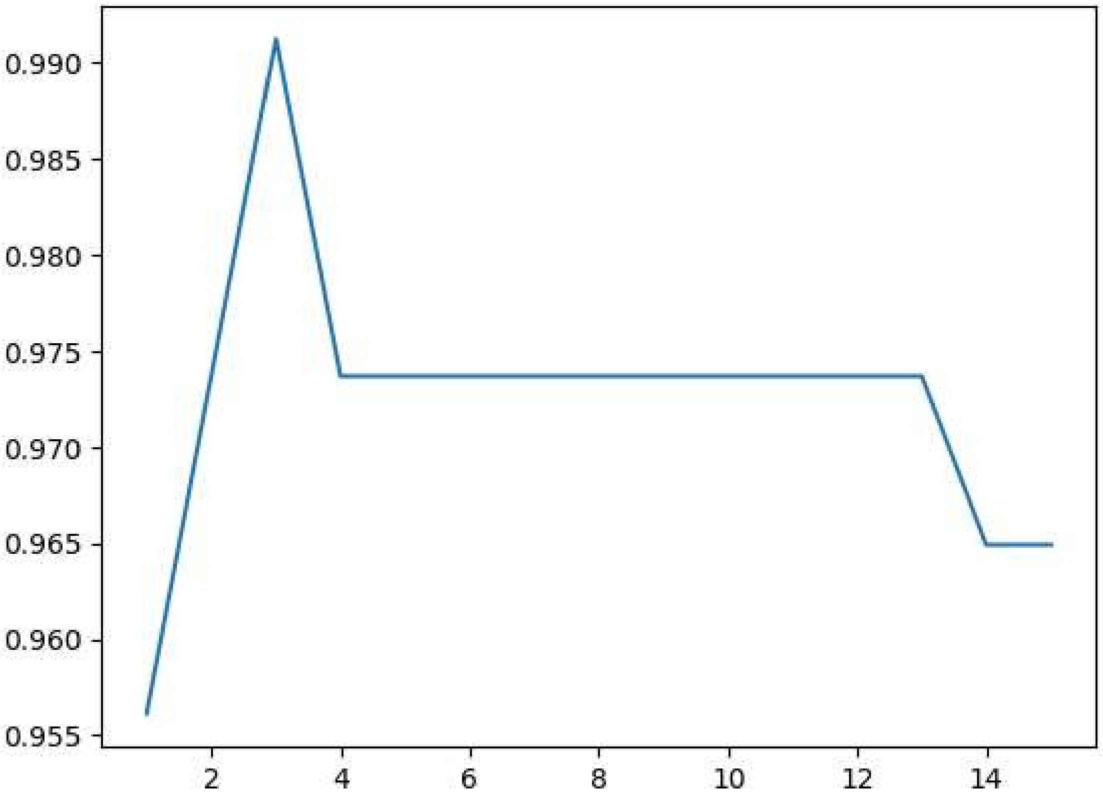
```
0.9912280701754386
```

How to select k value?

```
scores = []

for i in range(1,16):

    knn = KNeighborsClassifier(n_neighbors=i)

    knn.fit(X_train,y_train)

    y_pred = knn.predict(X_test)

    scores.append(accuracy_score(y_test, y_pred))
```

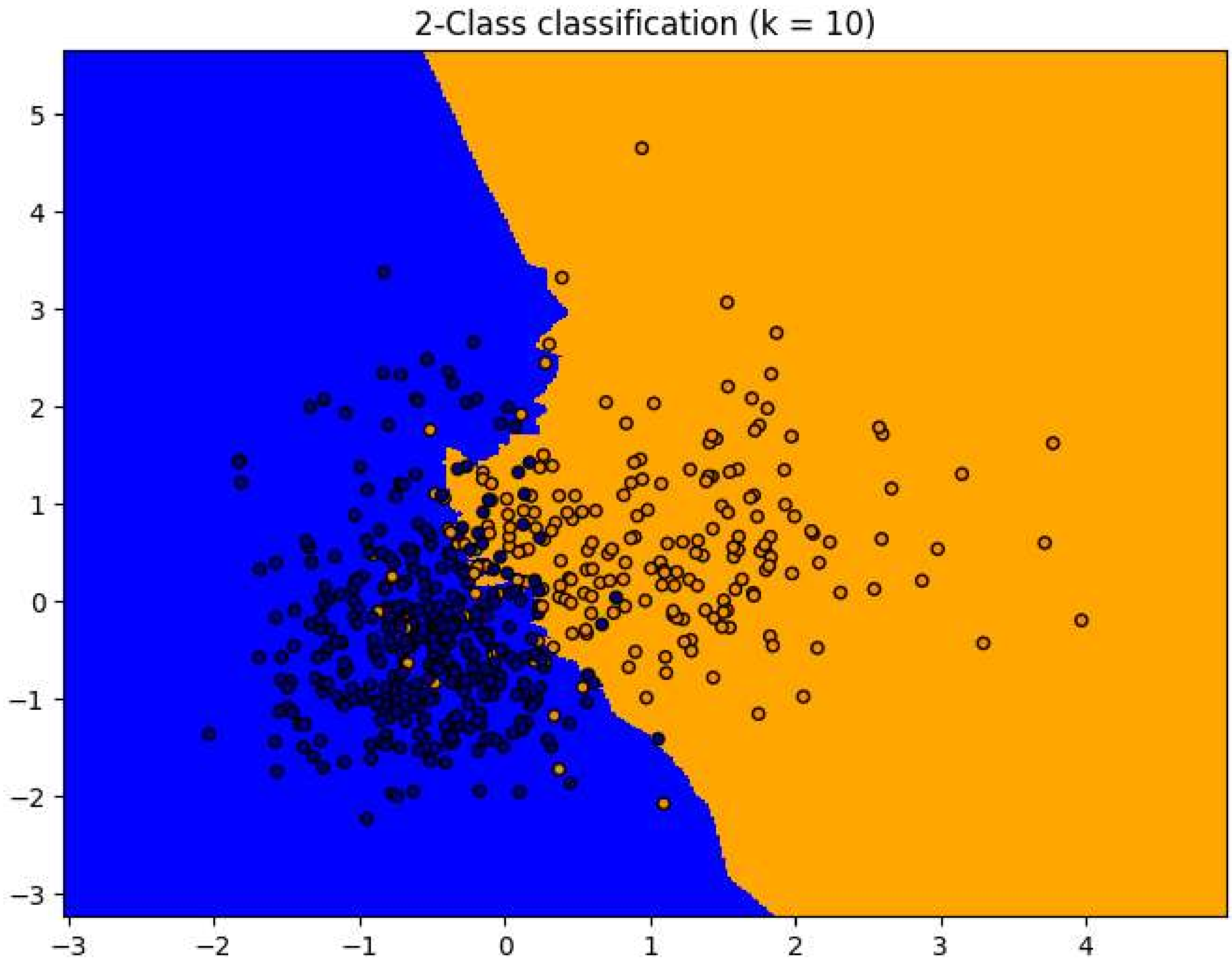
```
import matplotlib.pyplot as plt

plt.plot(range(1,16),scores)
```

```
[<matplotlib.lines.Line2D at 0x7eb3f2a2ca90>]
```



```
import numpy as np
import matplotlib.pyplot as plt
from matplotlib.colors import ListedColormap
from sklearn import neighbors, datasets
from sklearn.preprocessing import StandardScaler
from ipywidgets import interact, fixed

def load_data():
    cancer = datasets.load_breast_cancer()
    return cancer

def plot_decision_boundaries(n_neighbors, data, labels):
    h = .02
    cmap_light = ListedColormap(['orange', 'blue'])
    cmap_bold = ListedColormap(['darkorange', 'darkblue'])

    clf = neighbors.KNeighborsClassifier(n_neighbors)
    clf.fit(data, labels)

    x_min, x_max = data[:, 0].min() - 1, data[:, 0].max() + 1
    y_min, y_max = data[:, 1].min() - 1, data[:, 1].max() + 1

    xx, yy = np.meshgrid(np.arange(x_min, x_max, h), np.arange(y_min, y_max, h))
    Z = clf.predict(np.c_[xx.ravel(), yy.ravel()])

    Z = Z.reshape(xx.shape)
    plt.figure(figsize=(8, 6))
    plt.pcolormesh(xx, yy, Z, cmap=cmap_light)

    plt.scatter(data[:, 0], data[:, 1], c=labels, cmap=cmap_bold, edgecolor='k', s=
    plt.xlim(xx.min(), xx.max())
    plt.ylim(yy.min(), yy.max())
    plt.title(f'2-Class classification (k = {n_neighbors})')
    plt.show()

cancer = load_data()

# Use only the first two features and standardize them.
X = StandardScaler().fit_transform(cancer.data[:, :2])
y = cancer.target

# Interactive widget
interact(plot_decision_boundaries, n_neighbors=(1, 20), data=fixed(X), labels=fixe
```

n_neighbors 10



Start coding or generate with AI.