Experiment 31

Aim:

To develop a Python program to create a stacked bar plot with error bars.

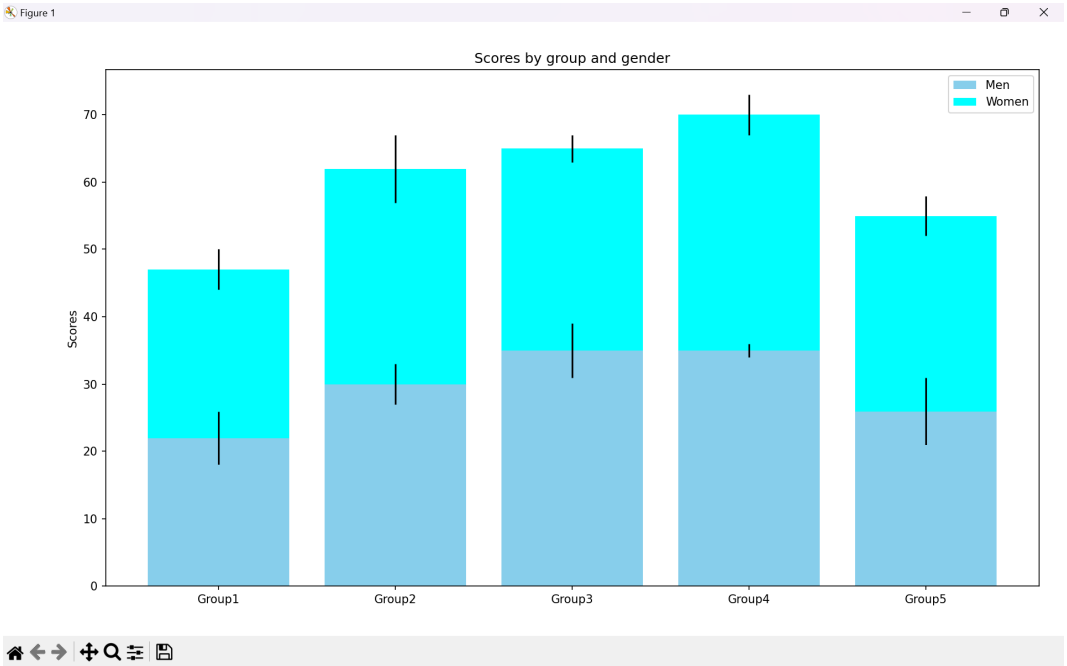
Code:

```python
import matplotlib.pyplot as plt
import numpy as np

means_men = [22, 30, 35, 35, 26]
means_women = [25, 32, 30, 35, 29]
std_men = [4, 3, 4, 1, 5]
std_women = [3, 5, 2, 3, 3]

N = len(means_men)
ind = np.arange(N)

plt.bar(ind, means_men,  color='skyblue', label='Men', yerr=std_men)

plt.bar(ind, means_women,  bottom=means_men, color='cyan', label='Women', yerr=std_wome

plt.ylabel('Scores')
plt.title('Scores by group and gender')
plt.xticks(ind, labels: ('Group1', 'Group2', 'Group3', 'Group4', 'Group5'))
```

Input:

```python
means_men = [22, 30, 35, 35, 26]
means_women = [25, 32, 30, 35, 29]
std_men = [4, 3, 4, 1, 5]
std_women = [3, 5, 2, 3, 3]
```

Output:

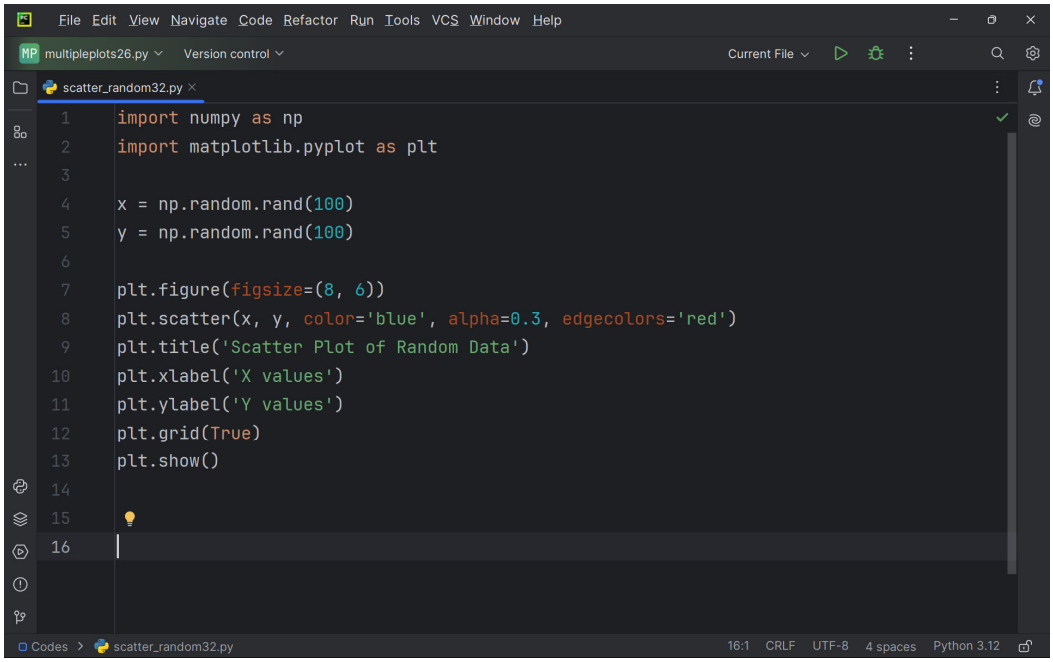


Experiment 32

Aim:

To develop a Python program to draw a scatter graph taking a random distribution in X and Y and plotted against each other.

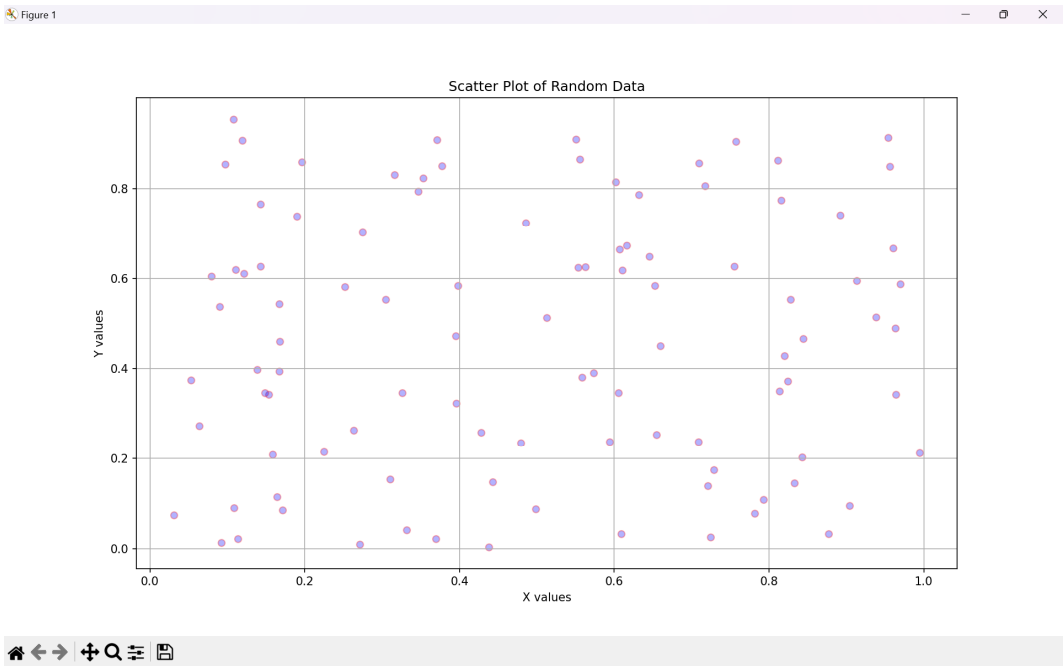
Code:



Input:

```
x = np.random.rand(100)
y = np.random.rand(100)
```

Output:



Experiment 33

Aim:

To develop a Python program to draw a scatter plot with empty circles taking a random distribution in X and Y and plotted against each other.

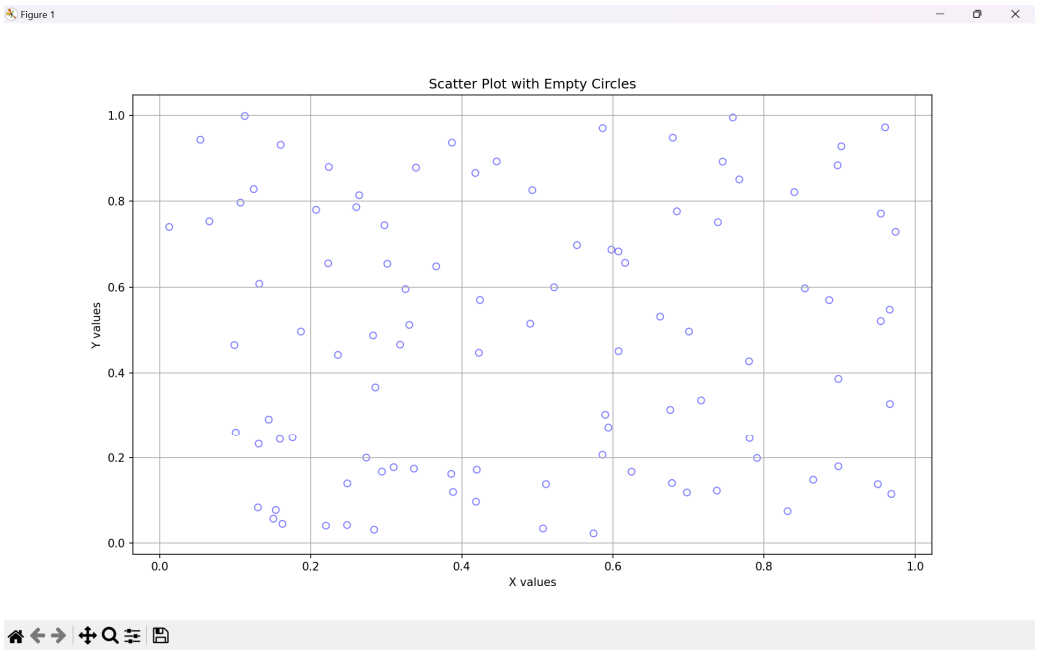
Code:

```python
import numpy as np
import matplotlib.pyplot as plt

x = np.random.rand(100)
y = np.random.rand(100)

plt.figure(figsize=(8, 6))
plt.scatter(x, y, edgecolors='blue', facecolors='none', alpha=0.5)
plt.title('Scatter Plot with Empty Circles')
plt.xlabel('X values')
plt.ylabel('Y values')
plt.grid(True)
plt.show()
```

Input:

```python
x = np.random.rand(100)
y = np.random.rand(100)
```

Output:

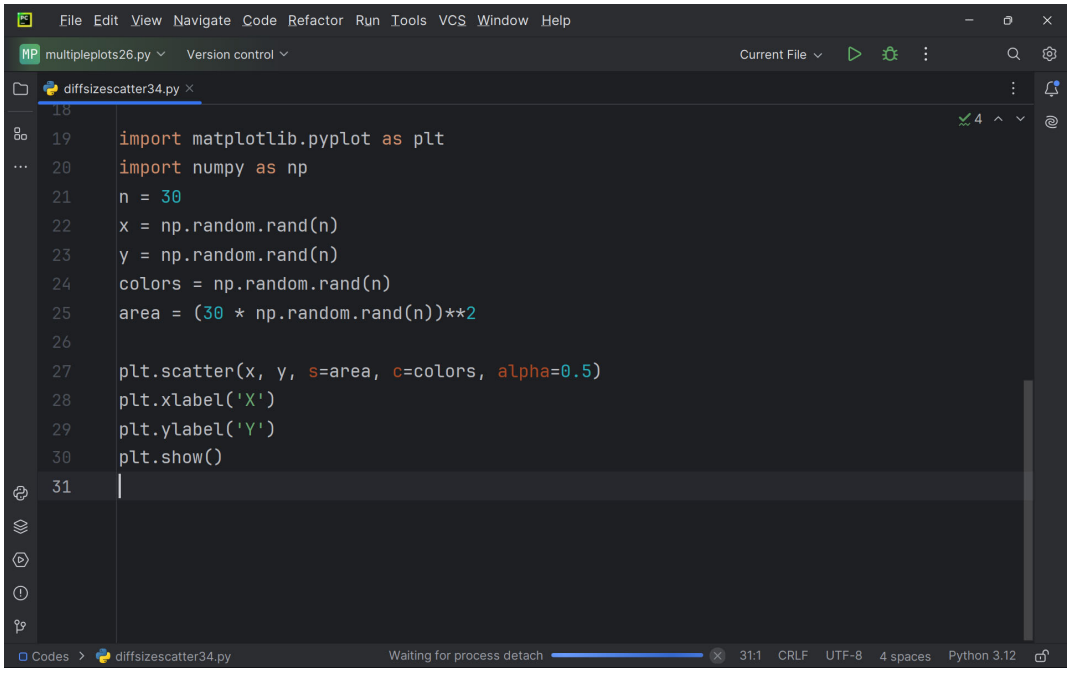


Experiment 34

Aim:

To develop a Python program to draw a scatter plot using random distributions to generate balls of different sizes.

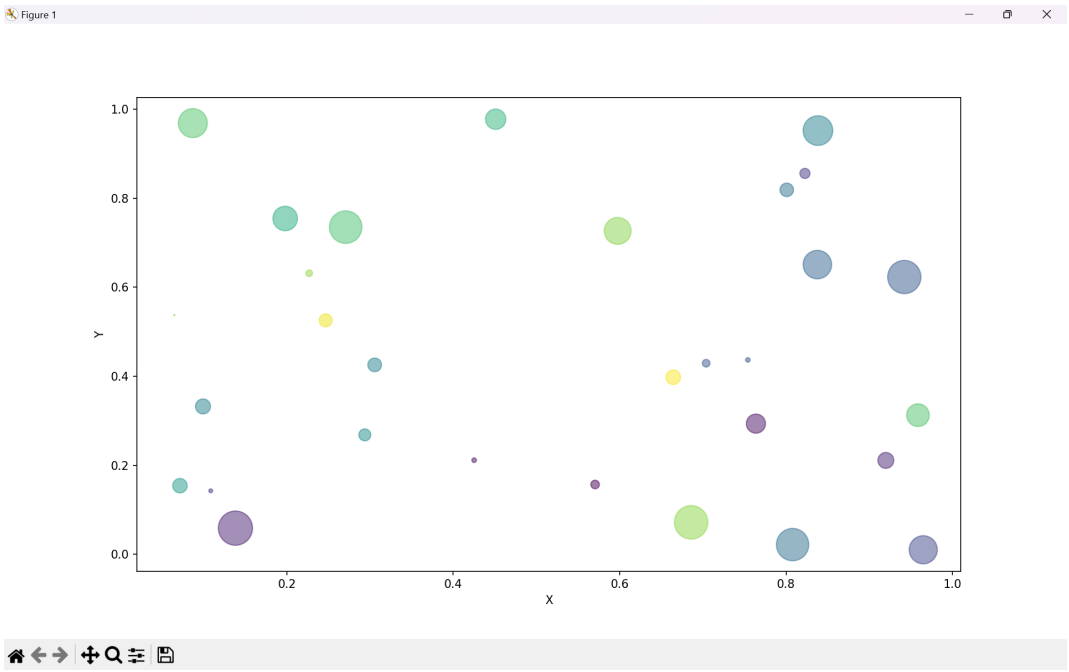
Code:



Input:

```
n = 30
x = np.random.rand(n)
y = np.random.rand(n)
```

Output:



Experiment 35

Aim:

To develop a Python program to draw a scatter plot comparing two subject marks of Mathematics and Science.

Code:

```python
import matplotlib.pyplot as plt

math_marks = [88, 92, 80, 89, 100, 80, 60, 100, 80, 34]
science_marks = [35, 79, 79, 48, 100, 88, 32, 45, 20, 30]
marks_range = [10, 20, 30, 40, 50, 60, 70, 80, 90, 100]

plt.scatter(marks_range, math_marks, color='red', alpha=0.5, label='Math marks')
plt.scatter(marks_range, science_marks, color='green', alpha=0.5, label='Science marks'

plt.xlabel('Marks Range')
plt.ylabel('Marks Scored')
plt.title('Scatter Plot of Math vs. Science Marks')

plt.legend()

plt.grid(True)
plt.show()
```

Input:

```
math_marks = [88, 92, 80, 89, 100, 80, 60, 100, 80, 34]
science_marks = [35, 79, 79, 48, 100, 88, 32, 45, 20, 30]
marks_range = [10, 20, 30, 40, 50, 60, 70, 80, 90, 100]
```

Output: