

```
student_name = "Vu Truong Nguyen" # fill your name
student_id = "225297134" # fill your student ID
print("Student name: " + student_name)
print("Student ID: " + student_id)
```

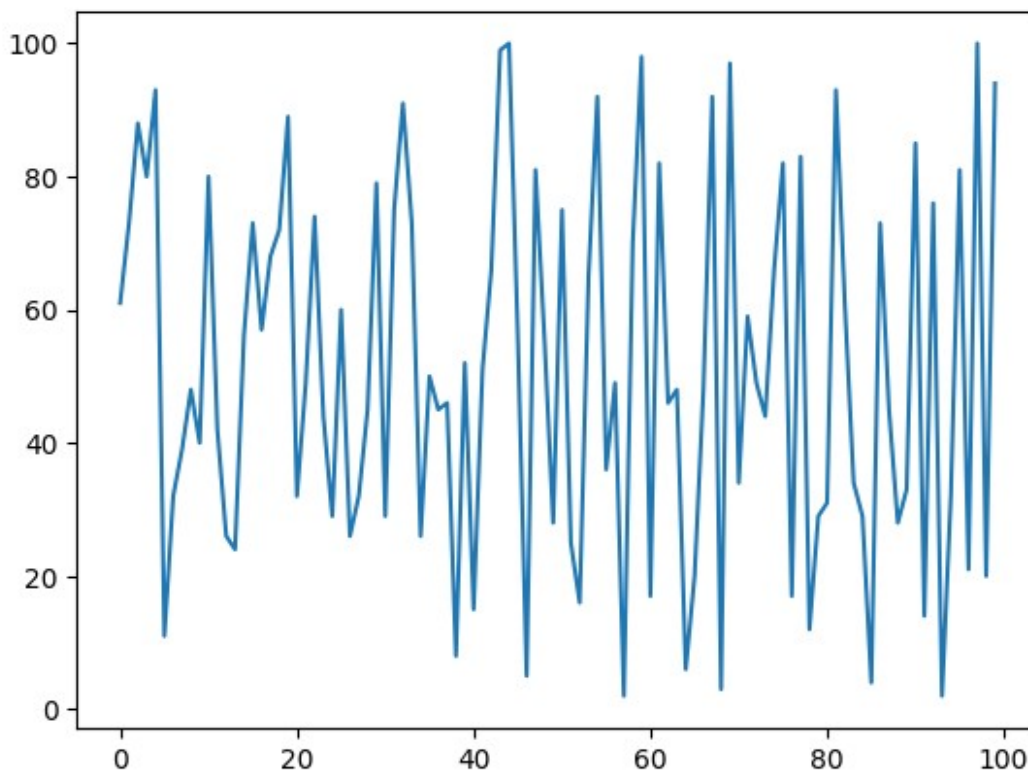
Student name: Vu Truong Nguyen
Student ID: 225297134

```
import random
import matplotlib.pyplot as plt
```

```
n_values = 100
y_values = []
```

```
# Create data (y_values) randomly between 1 and 100.
for i in range(n_values):
    y_values.append(random.randint(1, 100))
```

```
x_values = range(n_values) # X is sequence of values 0-99
plt.plot(x_values, y_values)
plt.show()
```



```
# Plot 2 variables
#
```

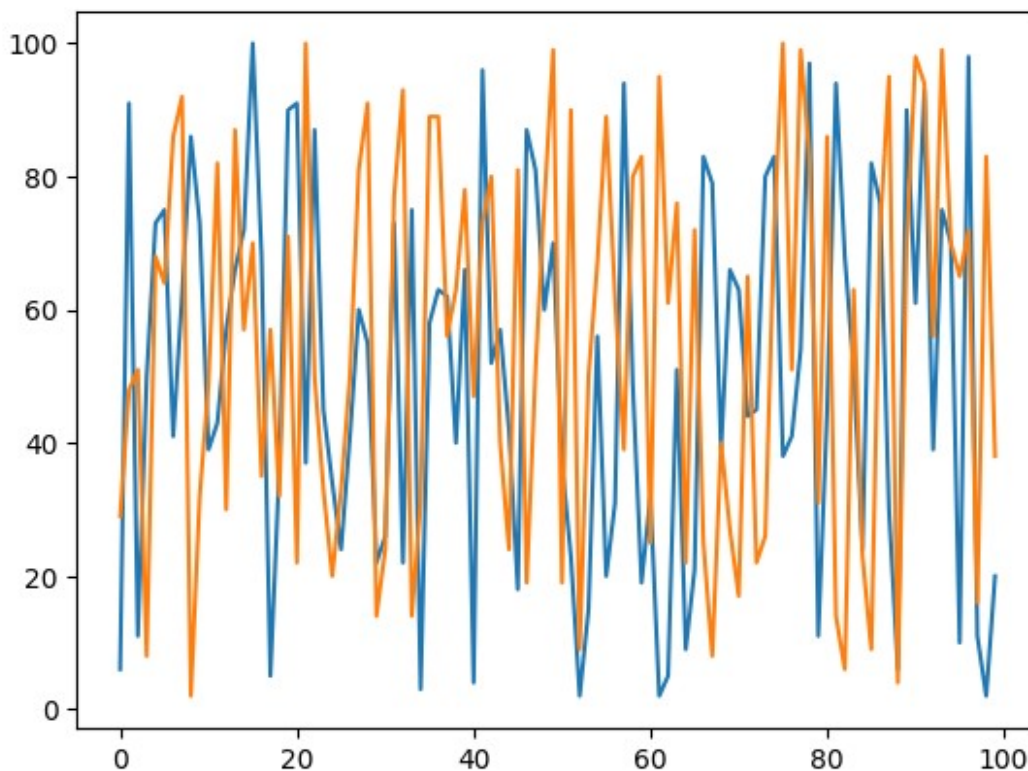
```

n_values = 100
y_values_1 = []
y_values_2 = []

# Create data (y_values) randomly between 1 and 100.
for i in range(n_values):
    y_values_1.append(random.randint(1, 100))
    y_values_2.append(random.randint(1, 100))

x_values = range(n_values) # X is sequence of values 0-99
plt.plot(x_values, y_values_1)
plt.plot(x_values, y_values_2) # call plot again draws in the same
graph.
plt.show()

```



```

#
# Activity 1: Create data so that the plot draws an
# ascending line (y_values increase at any rate).
#

import matplotlib.pyplot as plt
import math

x_values = list(range(10))

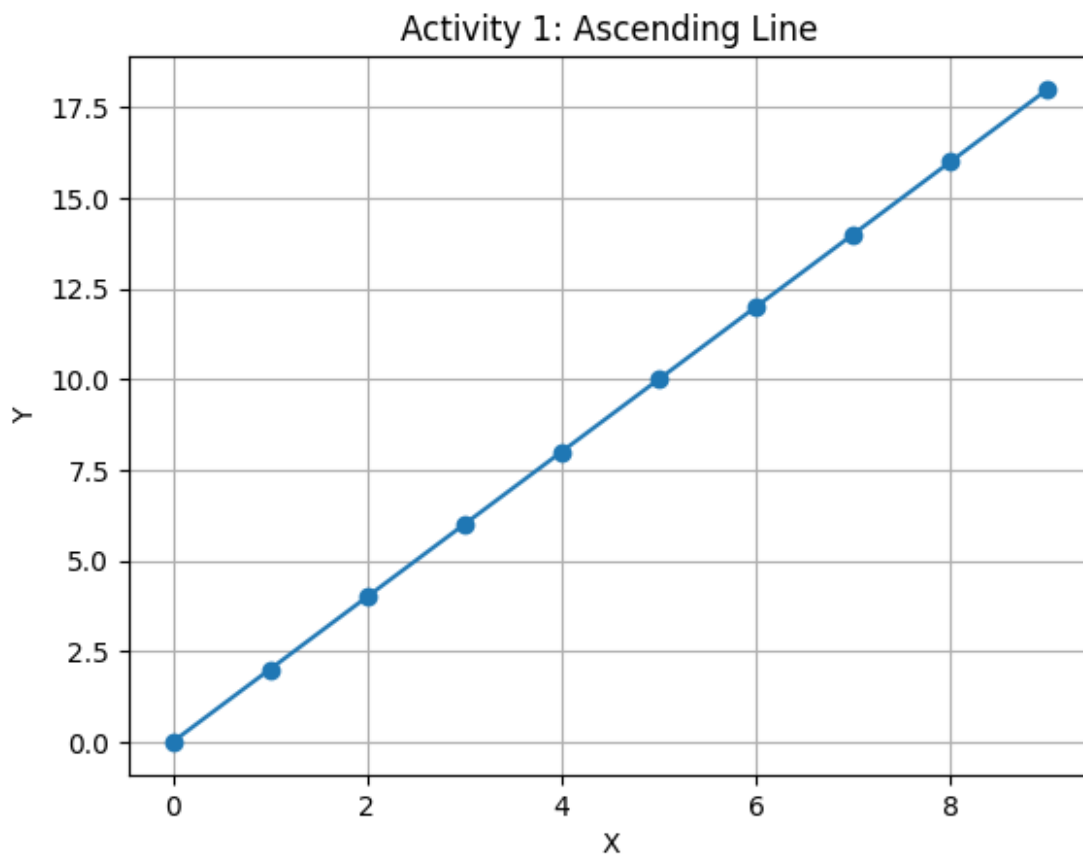
```

```

y_values = [i * 2 for i in x_values] # Increases steadily

plt.figure()
plt.plot(x_values, y_values, marker='o')
plt.title("Activity 1: Ascending Line")
plt.xlabel("X")
plt.ylabel("Y")
plt.grid(True)
plt.show()

```



```

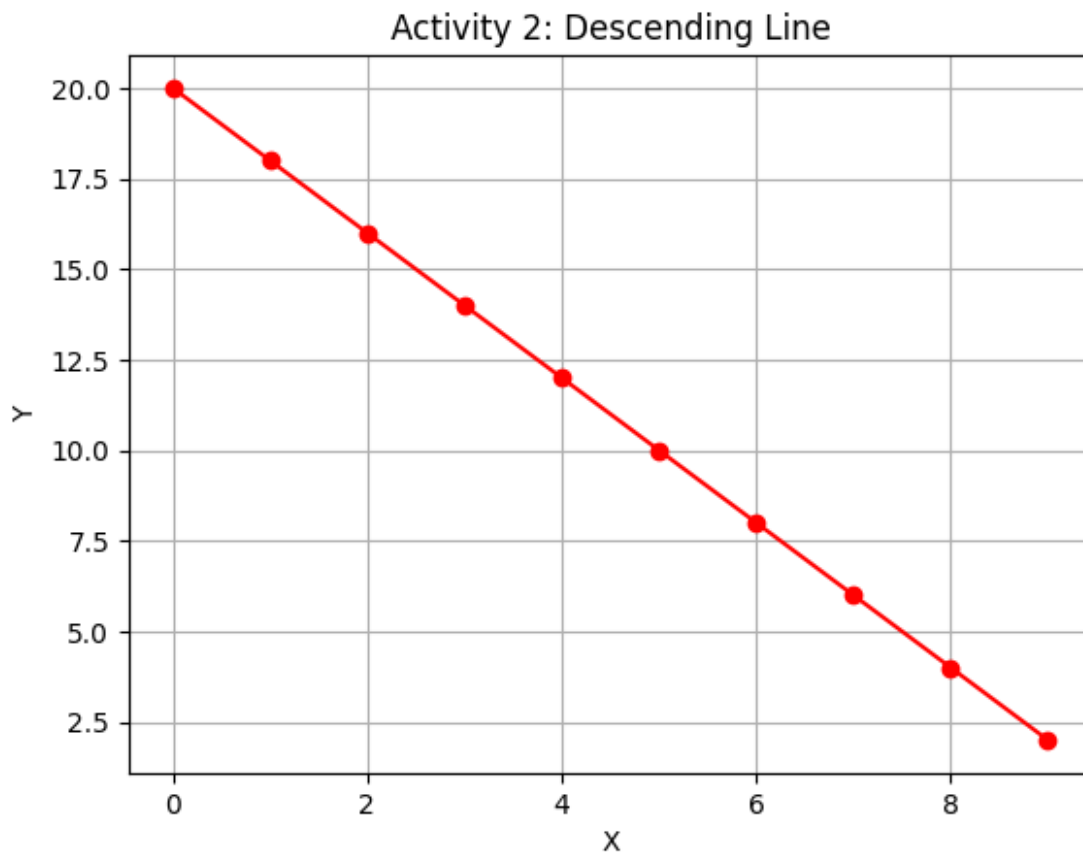
#
# Activity 2: Create data so that the plot draws a
# descending line (y_values decrease at any rate).
#
import matplotlib.pyplot as plt
import math

x_values = list(range(10))
y_values = [20 - i * 2 for i in x_values] # Decreases steadily

plt.figure()

```

```
plt.plot(x_values, y_values, marker='o', color='red')
plt.title("Activity 2: Descending Line")
plt.xlabel("X")
plt.ylabel("Y")
plt.grid(True)
plt.show()
```



```
#
# Activity 3: Create data so that the plot draws a
# wave. You can consider using Python's math library, which has
# a sin function (detail
https://www.w3schools.com/python/ref\_math\_sin.asp).
#
# Wave data using sine function
import matplotlib.pyplot as plt
import math

x_values = [i * 0.1 for i in range(100)]
y_values = [math.sin(x) for x in x_values]

plt.figure()
```

```
plt.plot(x_values, y_values, color='green')
plt.title("Activity 3: Wave (Sine Function)")
plt.xlabel("X")
plt.ylabel("sin(X)")
plt.grid(True)
plt.show()
```

