

```
# 1
import matplotlib.pyplot as plt

# Define the input data samples
data_samples = [(0, 0), (0, 1), (1, 0), (1, 1)]

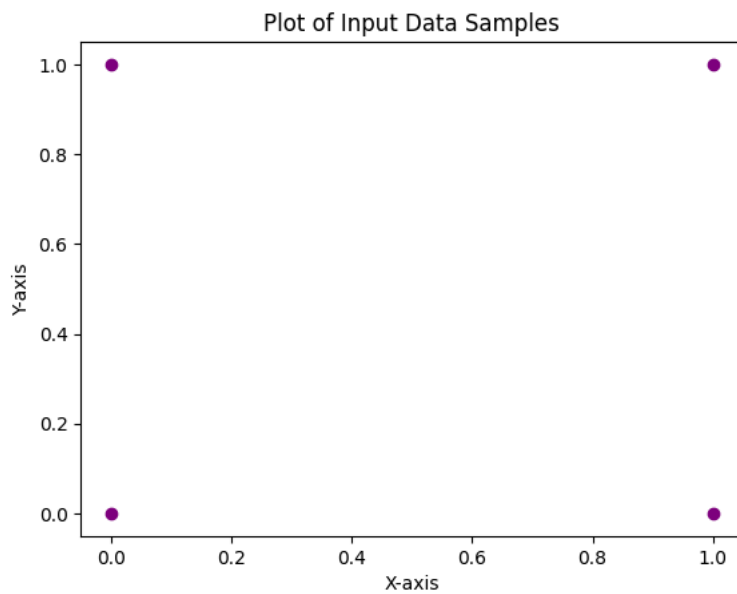
# Separate the x and y coordinates
x_coors = [0, 0, 1, 1]
y_coors = [0, 1, 0, 1]

# Create a scatter plot
plt.scatter(x_coors, y_coors, color='purple')

# Label the axes
plt.xlabel('X-axis')
plt.ylabel('Y-axis')

# Add a title
plt.title('Plot of Input Data Samples')

# Show the plot
plt.show()
```



```
# 2
def and_operation(a, b):
    if a == 1 and b == 1:
        return 1
    else:
        return 0

# 3
def or_operation(a, b):
    if a == 1 or b == 1:
        return 1
    else:
        return 0

def xor_operation(a, b):
    if (a == 1 and b == 0) or (a == 0 and b == 1):
        return 1
    else:
        return 0
```

```
# 4
data_samples = [(0, 0), (0, 1), (1, 0), (1, 1)]

for sample in data_samples:
    a, b = sample

    and_result = and_operation(a, b)
    or_result = or_operation(a, b)
    xor_result = xor_operation(a, b)

    print(f"input: ({a}, {b})")
    print(f"AND result: {and_result}")
    print(f"OR result: {or_result}")
    print(f"XOR result: {xor_result}")
    print("-" * 30)
```

```
→ input: (0, 0)
   AND result: 0
   OR result: 0
   XOR result: 0
   -----
   input: (0, 1)
   AND result: 0
   OR result: 1
   XOR result: 1
   -----
   input: (1, 0)
   AND result: 0
   OR result: 1
   XOR result: 1
   -----
   input: (1, 1)
   AND result: 1
   OR result: 1
   XOR result: 0
   -----
```

```
# 5
and_results = []
or_results = []
xor_results = []

for sample in data_samples:
    a, b = sample
    and_result = and_operation(a, b)
    or_result = or_operation(a, b)
    xor_result = xor_operation(a, b)
    and_results.append(and_result)
    or_results.append(or_result)
    xor_results.append(xor_result)

print("AND operation results:", and_results)
print("OR operation results:", or_results)
print("XOR operation results:", xor_results)
```

```
→ AND operation results: [0, 0, 0, 1]
   OR operation results: [0, 1, 1, 1]
   XOR operation results: [0, 1, 1, 0]
```

colab link: <https://colab.research.google.com/drive/12TAJ90kh02bu1vshnctCFw1aE3QsvYgo?usp=sharing>

