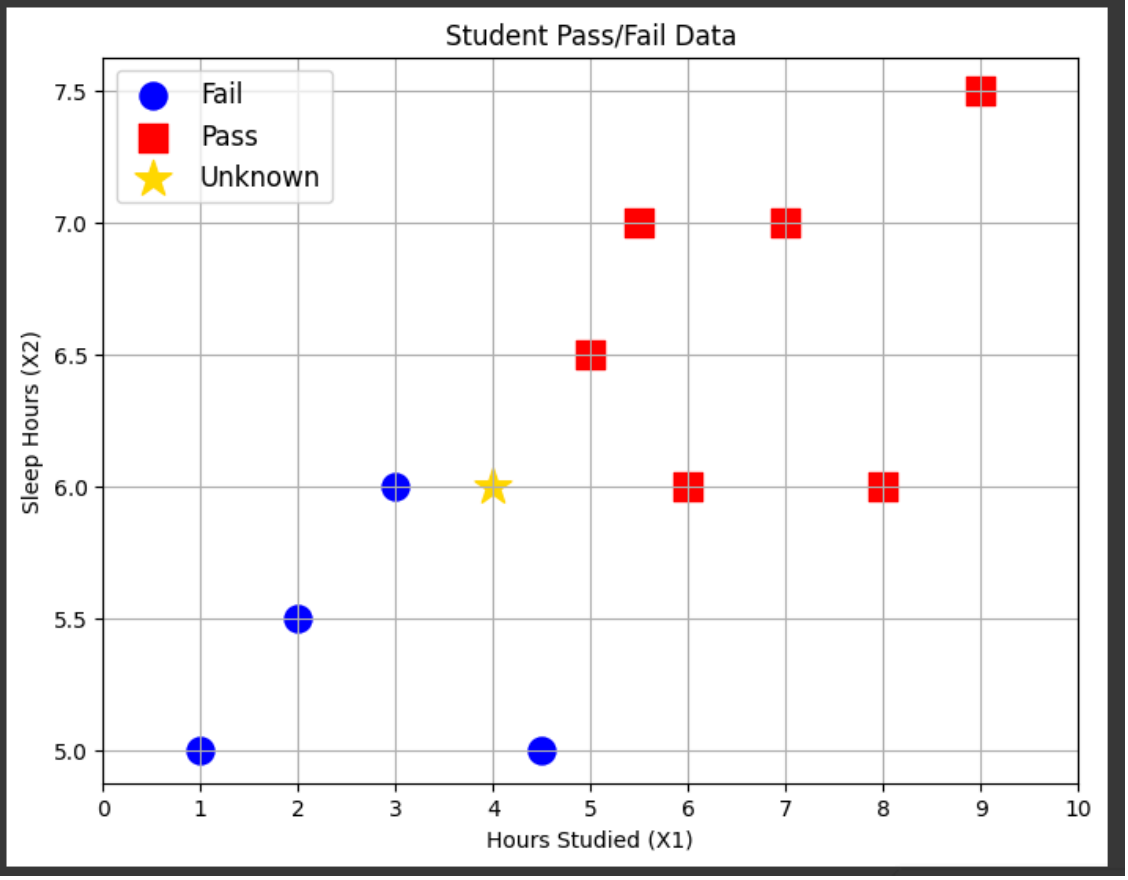
1. Plot all data points using a scatter plot

Show code



2. Compute Distances

[38] Show code

	Student	Hours Studied (X1)	Sleep Hours (X2)	Pass/Fail (Y)	Euclidean Distance
0	1	1.0	5.0	0	3.162278
1	2	2.0	5.5	0	2.061553
2	3	3.0	6.0	0	1.000000
3	4	4.5	5.0	0	1.118034
4	5	5.0	6.5	1	1.118034
5	6	5.5	7.0	1	1.802776
6	7	6.0	6.0	1	2.000000
7	8	7.0	7.0	1	3.162278
8	9	8.0	6.0	1	4.000000
9	10	9.0	7.5	1	5.220153

3. Find the 3 Nearest Neighbors

Show code

	Student	Hours Studied (X1)	Sleep Hours (X2)	Pass/Fail (Y)	Euclidean Distance
0	1	1.000000	5.000000	0	3.162278
1	2	2.000000	5.500000	0	2.061553
2	3	3.000000	6.000000	0	1.000000
3	4	4.500000	5.000000	0	1.118034
4	5	5.000000	6.500000	1	1.118034
5	6	5.500000	7.000000	1	1.802776
6	7	6.000000	6.000000	1	2.000000
7	8	7.000000	7.000000	1	3.162278
8	9	8.000000	6.000000	1	4.000000
9	10	9.000000	7.500000	1	5.220153

4. Majority Vote

[48] Show code

```
Count Pass (1): 1
Count Fail (0): 2

Prediction: A new student who studied 4 hours and slept 6 hours will **Fail** the exam.
```

Double-click (or enter) to edit

5. Discussion Questions

[50] Show code

```
Discussion Questions:
1. What was your final prediction?
   -> The prediction is: Fail

2. How would the prediction change if we used k = 5 instead of k = 3?
   -> Nearest 5 neighbors count Pass: 3, Fail: 2
   -> Prediction with k=5: Pass
```