A1 1. P(Recommended | Thriller, Medium) = 0

Genre	Price	Class
Thriller	Low	Recommended
Thriller	High	Not Recommended
Romance	Medium	Recommended
Classic	Medium	Recommended

2. P(Not Recommended | Thriller, Medium) = 0

Not Recommended.

Thriller	Medium	T	F
T	T	(0)	1
T	F	1/2	1/2
F	T	0	1
F	F	1/4	3/4

Recommended.

Thriller	Medium	T	F
T	T	(0)	1
T	F	1/2	1/2
F	T	1	0
F	F	3/4	1/4

3. Linear Separability implies that if there are two classes then there will be a point, line, plane, or hyperplane that splits the input features in such a way that all points of one class are in one - half space and second class is in the other half space.

For example

P.T.O

feature 1	+	−
T	1/2	3/5
F	1/2	2/5

for feature 1
$P(T|+) = 1/2$
$P(+) = 2/7$
$P(-) = 5/7$.

Feature 2	+	−
T	1	0
F	0	1

for feature 2
$P(T|+) = 1$

$$P(+) = P(+)\, P(T_1|+)\, P(T_2|+)$$

$$= \frac{2}{7} \times 1/2 \times 1$$

$$= \frac{1}{7}.$$

$$P(-) = P(-)\, P(T_1|-)\, P(T_2|-)$$

$$= 5/7 \times 3/5 \times 0$$

$$= 0.$$

$P(+) > P(-)$

∴ Therefore Classified is +

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x	y	xy	x^2
0	1	0	0
1	2	2	1
2	2	4	4
3	3	9	9
4	3	12	16
5	4	20	25
Σ	$\Sigma x = 15$	$\Sigma y = 15$	$\Sigma xy = 47$	$\Sigma x^2 = 55$

By Method of least squares

$$b_1 = \frac{n\Sigma xy - \Sigma x \Sigma y}{n\Sigma x^2 - (\Sigma x)^2}$$

$$= \frac{6 \times 47 - 15 \times 15}{6 \times 55 - 15 \times 15}$$

$$\approx 0.543$$

$$b_0 = \frac{1}{n}(\Sigma y - b_1 \Sigma x)$$

$$= \frac{1}{6}(15 - 0.543 \times 15)$$

$$= 1.1425$$

$$\boxed{y = 0.543x + 1.1425}$$

when $x = 15$

$$\boxed{y = 9.2875}$$

6 - done with code and Output

7 - done with code and Output