DA Assignment 1

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Q1

Attribute	outline	late	very late	Cancelled
Days :-				
Weekday	0.64	0.5	1	0
Saturday	0.14	0.5	0	1
Sunday	0.07	0	0	0
Holiday	0.14	0	0	0
Season				
Winter	0.14	1	0.67	0
Autumn	0.14	0	0.33	0
Summer	0.43	0	0	0
Spring	0.29	0	0	0
Fog				
Normal	0.36	0.5	0.67	0
High	0.29	0.5	0.33	1
None	0.36	0	0	0
Rain				
None	0.36	0.5	0.33	0
Slight	0.07	0	0	0
Heavy	0.07	0.5	0.67	1

Prior

| Probability | 0.70 | 0.1 | 0.15 | 0.05 |

Case 1

Class : Late

$= 0.1 \times 0.5 \times 1 \times 0.5 \times 0.5$

$= 0.0125$

Case 2 :

class : on time

$= 0.7 \times 0.64 \times 0.14 \times 0.29 \times 0.36$

$= 6.547 \times 10^{-3}$

Case 3 -

Class : Very late

$= 0.15 \times 1 \times 0.67 \times 0.33 \times 0.33$

$= 0.0109$

Case 4   class : cancelled

$= 0.05 \times 0.0 \times 0.0 \times 1 \times 0$

$= 0$

As case 1 is high $\therefore$ Instance will be categorized under class late

§2 x^2 test

Degree of freedom :- $(2-1)(2-1)$

Now, $x^2 = \sum\limits_{i=1}^{m} \sum\limits_{j=1}^{n} \left(\dfrac{q_{ij} - e_{ij}}{e_{ij}} \right)^2$

$x^2 = \dfrac{(250-90)^2}{90} + \dfrac{(50-210)^2}{210} + \dfrac{(200-360)^2}{360}$

$x^2 = 507.93$

Degree of freedom $= 1$

$\therefore$ x^2 value needed $= 2.706$

but $507.93 >> 2.706$

$\therefore$ Null hypothesis of indepedent is rejected with a confidence level of 0.1