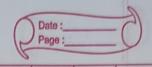
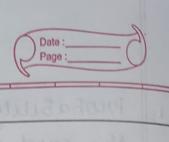
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	BE COMPS 2018130057		Date :Page :		
	Tuton	cial 7			
	A STATE OF THE STA	of actors			-
	Exercise		١٠٠٤ن٥٠	3x3	
	Network Structure	Tres			
	2/	A		an elle	
	Erozud	> Foreign	1 Purch	ase	
	Travel		7		
	Fraud				
	Bank Brewer and Brewer	le catte			
	i) Travel and fraud can each cause foreign				
	purchase Travel explains foreign purchase				
	and so is evident against fraud				
	ii) Increased probability of travel makes fraud				
	more likely. Travel				
	iii) Increased probability of foreign purchase				
	makes fraud more like	•			
	evidence for fraud.				
	Conditional Probabiliti	.es :			
	Travel - Foreign Purchase -				
	True False	Travel	Fraud	True	
	0.05 0.95	True	True	0.90	0.10
		False	True	0.10	0.90
	Fraud -	True	False	0.90	0.10
	Travel True False	False	False	0.01	0.99
	True 0.01 0.99				
	False 0.002 0.998				
The second secon					THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER.



Probability of a fraud if we don't know whether the card holder is traveling or not? Classify with hidden variables travel = ?, foreign purchase = true, fraud = ? P (fraud = true | foreign purchase = true) = a* [P (fraud = true | travel) * P (foreign purchase = true I travel, fraud = true) * P(travel)] d* [PC fraud = true | travel = true) * PCforeign purchase = true | travel = true, fraud = true)* PCtravel = true) + PCfraud = true | travel = false) * P (foreign purchase = true travel = false, fraud = true) * P(travel = false)] L*[0.01*0.90*0.05+0.002*0.10*0.95] d* [0.00045+0.00019] 0.000642 P(fraud = false | foreign purchase = true) = d*[PCfraud = false | travel = true) * P (foreign purchase) = true | travel = true, fraud = false) * p (travel = true) + P (fraud = false | travel = false) * P (foreign purchase = true | travel = false, fraud = false) * P(travel = false) 2* [0.99 * 0.90 * 0.05 + 0.998 * 0.01 * 0.95] d * [0.04455 + 0.009481] 0.0540312 Thus



ability of a fraudoif we don't I have verther (0.00064 + 0.054031)

€ = 18.2912 N ASSESSED ASSESSED

bravel ? Foreign purchase true fra P(fraud = true | foreign purchase = true) = 0.00064 (18.2912)

* [107110.014 Itravel) * PC foreign purce

travel . FTI. == true) + PCtravel) I

Probability of fraud charges 2. P(fraud = true | foreign purchase = true travel = true) = d * 0.00045

AT [PC Fraud = true | travel - true) *

P (fraud = false | foreign purchase = true travel = true) = x * 0.04455

Thus

L = 1

(0.00045+0.04455)

22. 2222 salet a bunt 197 x 6

true I travel - true, frand - false) & PC travel - true)

P C fraud = true / foreign purchase = true / (saluf 15 vs +) 4 * travel = true) [28] 0 x = d(a.00045)

= 22.2222 (0.00045)

- 0.01

= 1%.