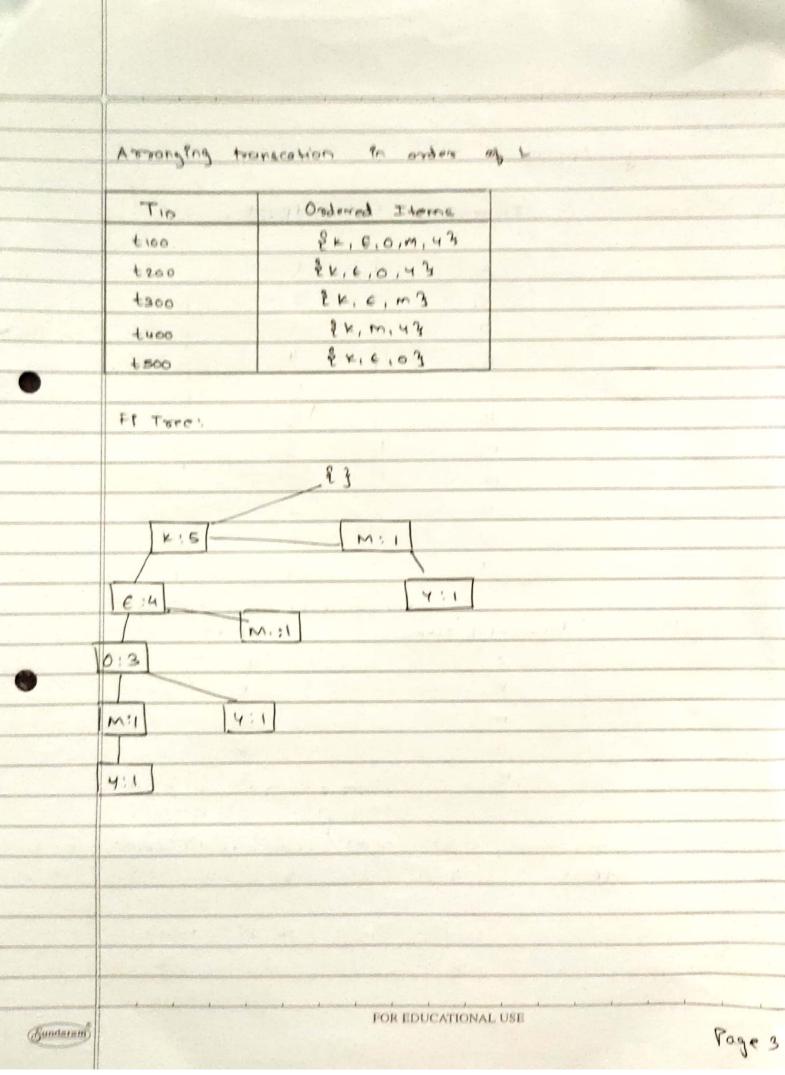
SAP ID: 60004200132 DIVIB Computer Engineering DMW - Assignment 3 1) Construct FP tree with support = 2 TID Ordered Items Items 50,63 86,93 2 85,0,03 86,0,03 89,0,03 80,0,03 3 90,010,03 Sdie, aic3 4 80,6,63 80,603 5 89,0,6,83 89,6,1,33 6 89,43 Saz 86,9,03 20,6,63 8 86,0,03 89,6,03 (cierp3 10 & bicle3 L= (a,8), (b,7), (c,6), (d,5), (e,3) FP tree : a:8 6:5 c: 1 4:1 (:2 1:1 0:1 0:1 1:1 C: 3 0:1 1:1 FOR EDUCATIONAL USE Page 1 (Sundaram)

Nome: Ayush Jain

		- 1	T 1	-	1. 1.			· · · · ·	-					
	ITEM	(	Condi Hi	ional		co	ndi	tional			F	P		
				base				ree			ae	nesate	69	
	***			12										
	e	t	a -> c	→9=	١),	Ę	a :	2			Sa,e	3,80	, ez, scez,	
			The same of	= 1),			d:	2				7,0,03		
			-	d=1)			c:	2 3						
			Y.					). IE-	6					
	9	la-	> P=1,	),(0)	» →(=1),		£a:4, b:23,					3,86,0	3, { c, d}	
					), (b) (=								٤٩،٥،٥ 3,	
Mary N							\$6:2,0:23				86,0,03			
	c	$(a \to b=3), (a=1),$					E.	9:4,6	1.53		Sa	15163	, Şq, <b>K</b> Z	
			(b=								86,03			
			18											
	Ь	(	q = 5)	,			89:53					89,53	1	
			1 1			1								
				5 6 11		1.00			(+)					
Q. 2>	min_ sup	min_supp = 601/. Support = 0.6x5=3												
	min - conf = 80.1.													
	Using F	Using FP tree:												
									1					
	Item	A	C	D	$\epsilon$	î	*	M	7	0	U	V		
	Frequency		2	1	4		5	3	5	3	1	3		
		+			1000									
	L: 2 K: 5	3 . 5	3€:4	2.8	M: 33	. \$	0:	34.	5 4.	3 7				
		, , ,		١, ١		, [	0	7 3 )	7					
									7	NA.				
								-						
Sundaram	1	-1	1	1	FOR	EDUC	CATIO	ONAL US	E					
													Page 2	



	Using	Apriori	1		1		r	
	CI:		Item set		Support	-		
			A		1			
			С	AL IN N	2			
			D		1			
			6	2. 1. 1	4			
			1		1			
		V- III	k		5			
			m		3			
			7	Ž	2			
			0		3			
			U	1000				
			Ч		3			
			A PARTY					
	Lis	Freq	uent - l Item	2	Sup	port		
			E		4		L HULL	
A STATE OF THE PARTY OF THE PAR			K			5		
			m			3	11-15	
			0			3		
			Ч			3		
	(2: Freq	(-2 I tem	g (EIK)	(e,m)	(6,0)	(6,4)	(K1W)	(4,0)
		barf	4	2	3	2	3	3
			(K,4)	(mio)	(m, y	) (0	(4)	
			3	1	2		3	
Sundaram		1 1	F	FOR EDUCAT	IONAL USE			Page 4

		-			
	Lz: Frequent 2 - Itemset (e	(K) (C.0)	(1,10)	(K,0)	(4)
		4 3	3	3	3
				100	
				1 × 1 × 1	
	13: Frequent -3 Items		Supp	ort	
	(E, k, 0)		3	3	
			514.2	w 122	
	. No more combinations a	on be for	medi	so, o f. w	
	:. L= & E, K, O}		400		
	: Association rules for	Apriori 1	111		4 - 1
- 4	0.0	All Sand	Mary Land	Andrew V	
1		config	ence =	60%	
2	\$63 -> \$0,163 = 3/4	Carl William		12.1	9/40
3		-		100 '/	
5	\$0,63 -> \x \chi = 3/3			100.1.	£
	&k, €3 → \$03 = 3/4			75 '/.	
6	€0, k3 -> \$€3 = 3/3			100 1.	
		the same	Alas S - A		
	: min - confidence = 80 %				7
	Strong Association rules	are:			
	\$0,€3 → \$K3				
	{0, k3 → \$€3				
	(0173 / 403				
Sundaram	F	FOR EDUCATIONAL	L USE	1 1,	0
Dundaram					lage 5

Scanned with CamScanner

	Strong association rules using FP tree ore:
	£43 → £k3
	$5m3 \rightarrow 2k3$
	603 -> 8K3
	foy → \$e}
	80, €3 → \$123
	803 → {K, E3
	80,163 → 8€3
	$\ell + 3 \rightarrow \ell \in 3$
	8e3 → & K3
→(26)	The resulting FP tree are similar for both FP tree and
	the Apriori algorithm. However, in terms of overall
	algorithm for finding frequent patterns among dataset PP
	tree algorithm is better than the apriori algorithm as
	it doesn't require condidate generation thus saving
	time and eface.
0.3>	A(2,10), A2(2,15), A3(8,4), B1(5,8), B2(7,5), B3(6,4), (1(1)), (2(4,9)
	let x11x21x3 represent centroids.
	: Initial controide are as follows:
	X1: A1(2110) , X2 = B1(5,8) , X3 = C1(1,2)
Sundaram	FOR EDUCATIONAL USE lage 6

		1 1	21	I Y			T	12222		T T
	First	74620	tion							
		AI	A 2	A3	В	B2	B3	C	C	2
. 41	XI	0	5	8.48	3.61	7.07	7.21	8.06	2.	24
	×2	3.61	4.24	5	0	3.61	4.12	7.21	1.	41
	×3	8.06	3.16	7.28	7.21	6.71	5.39	0	,	7.62
	The	three	closte	275 00	æ!	At 1				
			\$ A1 (2							
			-		18.47	B2 (2.	5), Ba(	E. 47.	(214	.973
	Cluste	×3 =	80,0	12) 12	(212) 4	, 52 (1	37,001	9,7)		
			1	, ,	(2/3/)					
	^ <b>\</b>	1. 6	1						,	
			tes fi	ES+ 14	EROHOV	<u> </u>				
		(3/10)				- 11- 7	- 6			
				, (8+4.	12141	9 7/5	= 6,	2)		
	X3 =	1.5,3.	5)							
	Secon	y Iten								
		A	A2	A3	BI			3	Cı	(2
	XI	0	s	8.48	3.61				8.06	2.4
	X2	5.66	4.12	2.83	2.20		2	nant.	6.4	3.61
	X3	6.52	1.58	6.52	5.7	5.7	4.5	52	1.58	6.0
	Centro	ide a	bter s	second	Herati	on :	- 14 - 14		1	
	×1 =	13,4.5	)							
		16.5 ,5	125)			4	12 16 16			
	Y2 =					THE RESERVE AND ADDRESS OF THE PERSON NAMED IN	THE RESERVE OF THE PARTY OF THE		THE RESERVE OF THE PARTY OF THE	The second secon
			.57							
		(115,3	.57							
			.57							
(Lundaram)			.57		FOR EDUC	ATIONAL U				Page =

	Third Steadtion
	A1 A2 A3 B1 B2 B3 C1 C2
	X1 1.12 2.35 7.43 2.5 6.02 6.26 7.76 1.12
	12 654 4.51 1.95 3.13 0.56 1.35 6.38 7.68
	x3 6.52 1.58 6.52 5.7 5.7 4.52 1.58 6.04
	Centrolde ofthe 3rd iteration.
2	X1 = (3.67,9)
	X2= (7, 4.33)
	x3 = (1.5,3.5)
	The state of the s
	Fourth Iteration:
	A1 A2 A3 B1 B2 B3 C1 C2
	x 1.95 4.33 6.61 1.66 5.2 5.52 7.49 0.33
	×2 6.01 5.04 1.05 4.17 0.67 1.05 6.44 5.55
	k3 6.52 1.58 6.52 5.7 5.7 4.52 158 6.04
	By comparing clusters from 3rd and wth iteration, we
	see that both clusters have some points so we can say
	that k-means reached its stability.
	. Final Clustene groups over:
	Clisters: \$ A1,B1, (2)
	Cluster 2: 2 AD, B2, B3}
	Closho3: {A2, C13
Sundaram	FOR EDUCATIONAL USE Page 8

Q . 4>											
$\rightarrow$	Single	link									
				-	are		29/20/2	•			
	11		4, 80								
			-, (								
	In m	natrix	, iter	v t	and	00	are	closest	to c	ach o	ther.
	1-e.	min-d	= +2it	0.5			1. 3			1	
•											
	Distance	ce m	ateix								
								Tee -			
	3tem		B	c	DIF		6		- 4		
	A	0									
	В	0-7	0								
			4.95		_				0.	5	
	DIF		3.54		3			•	D	1	
	E	4 24	3 3 4	1.41			٥		0	F	
			7			-					-
	71				_						
	J.B A.B	A,B 0	С	D	,	6					
	C	4.95	0					0.7		0.5	* \
	DIF	2.5	2.5	0				1	1	10.3	1
	e	3.54	1.41	1		0		A	В	P	F
										A Jal	
										1 1 1 1 1 1	- 1- 1
	8(D,F	(€),	(A,B)	= 2	.5		dati			y La A	
	9 (DIE										
									Name Land		
		1									
Sundaram					FOI	R EDUC	ATIONAL	USE			Page 9
											1-26 1

	Items AIB C DIE, F	
	A <sub>1</sub> B 0	
	C 4.95 0	
	D, E, F 2.5 1.41 0	
	0[(D,E,F,C),(A,B)] = 2.5	
	Items AIB D.E.F.C	
	AB O	
	(D, E, F 2.5	
	" Dendro gram!	
	2.50	
	1, 41	
	_0.7	0
	0.5	
	A B D F E C	
	(b) Average Inkage	
	(b) HVE sage (III) Fage	
	At level 0, EA3, SB3, SC3, SD3, SE3, SF3,	
	AT (EVOLO, EN), POS, TOS, TOS, POS,	
	At level 1, avg: 1	
	dis (DIE) EI mense (DIE)	
Sundaram	FOR EDUCATIONAL USE	Page 10

The transfer of the state of th	
Iron A B C DIF E	
A 0	
B 0.71 0	
C 5.06 4.95 O	
D.F 3.4 2.71 2.37 0	
£ 3.2 7.5 1.41 0.75 0	
dist ((DIF), B) = 2.71 , dist (DIF), ()) = 0.75	
dist (A,B) <11 , menge (A,B)	**************************************
Items AIB C DIF E	
0 814	
C 5:31 O	
DIF 3.66 2.37 0	
e 389 1.41 0.75 0	
At level 2, Aug = 2	
: avg (dist (D,F 1E) < 2	
THEMS AIB C DIEIF	
A,B O	
C 5:31 O	
DIE IF 3-335 2.05 0	
FOR EDUCATIONAL USE	Page 11
THE PERSON NAMED AND POST OF PERSON NAMED AND	B 071 0  C 506 4.15 0  D,F 34 2.71 2.37 0  E 3.2 7.5 141 0.75 0  Aist [(D,F),A] = 3.4 , dist [(D,F),C] = 7.37  Aist ((D,F),B] = 7.71 , dist ((D,F),C)] = 0.75  Aist (AB) < 11 , menge (AB)  : clusters = {AB}, {C}, {D}, {F}, {C}  AIB 0  C 5.31 0  DIF 3.06 2.37 0  E 389 1.41 0.75 0  At level 2, Arg = 2  arg (dist (D,F)C) = 2  Menge (DF,C)  Thems A,B C D,E,E  A,B O  C 5.31 O  D,E,F 3.335 2.05 0

	Y I	1 1	1 1									
	At level	3,	Avg =	3								
	: any (dis	+ (DE	F(0) 7	c. 3								
	merge 1											
	Item	AIB		c, D, e,	F							
	A,B											
	CIDIEIF	3.8	275	C			*					
	La La T		or Vity Ci									
	At level u	, Av	9 = 4					•				
	At level u	+ (A)	B, 40,	EF) E	4							
	. · cluster	: Cluster: {AB,CID, E, F}										
	Dendrogram:											
			1	(Manual Editor)		4	3					
			3.827	5								
					2. 05		4 50					
	_		. 0	0.75								
	0		0.	5								
	A	В	D	F	e	C		14				
→0.5)	Item	A	B	C	D							
	A	0										
	В	1	0	1.0		7.4						
	C	ч	2	0			100 /					
	D	5	6	3	0			1				
					E -	The same of						
Sundaram®	1			FC	DR EDUCATI	ONAL USE		Page 12				

		CARLES AND STREET
	Let Assume two mediads as A.B	
	medials: of A, B}	
	Non-modiade: &c,D3	
	Replace A -> c	
	TCAC = 1+0+(-2)+(-2) = -3	
	Reduced by +3	
	ACCOUNTS BY 13	
	Replace A ->D	
	T(AO = 1+0+0+(-5) =-4	
	Reduced by +4	
	3	
	Replace B-> C	
	TCBC = 0+1 + (-2) + (-2) = -3	
	Reduced by 3	
	Replace B -> D	
•	T(BD = 0+1+1+(-5)=-3	
	Reduce by 3	
	: cost is reduced by replacing D with A	
	.: New medibds: &D,B3	
	Non-medioda: \$ A1 (3	
	Replace D-> A	
	7(px = -1 + 0 + 0 + 5 = 4	
	Increpase by 4	
	FOR EDUCATIONAL USE	
Sundaram	TOR EDUCATIONAL USE	Page 13

