33304 mycompanion = Assignment - 13 Title: - Travelling balesman Problem (Branch and Bound) Broblen statement: - Write a program to write solve the travelling salesman problem and to print the path using Objective: - To understand and implement least nost bounds and bound algorithm for solving travelling salesman problem and thinky BB stratergy. Theory :- who Travelling Salesman problem - sistem Let B = (v, E) be a directed graph defining an instance TSP. let cigin be the tedge <1 - j> 1VI = n. We may assure tour starts and ends at 1. So solution space 3 - 31, T, 12 T is perintation (2,3, ... 5 may be organized into state space tree. Least cost Branch and Bound -In order to use LCBB to sourch T3P true, we need to define post function c () and two other functions ê () and U() such that ê(R) < c(R) < U(R). such that solution node with least CC. corresponds to With every node in TSP state space tree we many associate a reduced cost natrice. A be reduced matrix for K node. It is not a leaf then reduced cost notion for & may be obtained as follows: 1. Change all entries in now i and column j of A

	- F									DATE Page no	
	2000	ı,							myco	mpani	on_
	3330	# # .		ents th	ne n	se of	any	MOZ	u	edges	from
			pres	g Mus							
		8.	o i	G. A	7	1	* 1) *N	. 1.1		81,T 1	
(1.0)	1.	- · ·	:5	to a	. 1	his p	ece vent	s th	e	use	06
	2- Sel	Alf	<u>, u/</u>	W	Á	100	·: t.	, 10h	1 1.1	L.A	, e.
, : ; -	edge			+ 1	e ge	Jana	17 18	11/	policy of	T	
70K4	1 0 1	0.0		ws and	d 1	plums	in	the	٩	resultur	19
	3. Kedu	ice all	1 1	n Mou	14 04	nd	colur	ns	conta	ining	only
	Material	Bra	pt for	n Mau	<u> </u>	4	T		47 E.		12.
N- NA.	901	<u> </u>	Truck	at Renal	1	in the	.1-	konst	k	W. F.	
N. M. S. C.	, ' <u>x</u> '	11/11/11	- 1563	10/160 1	•	20		С	,_1.		
•	Algon	ithou	Jon	TSP W	sing	BB 3		11		1	
				1 :45		1 0	1.:	naturia	· uni	7	1
	1. Rond	the	No. 0	of aties	0	vo o	<u> </u>	PUMPINSU	-		
	1									-	
	حم-	+ '0	lt	MATIN	No To	one	genal	1	79 J. OVY		
<u> </u>	2. IM	har t	enuchow	natri			0	1	~	+ 1	
sand in			2711	o hoh	whit	A 50	1 1	VIT	0	141 1	
to at in			2711	ost and	whit	A 50	1 1	VIT	0	141 1	
so die	3. Fin	d nedu	icd and	inst and	d ne	duce	the	natri	n se	Death and a second	
Admi	3. Fin	d nedu	icd and	o hoh	d ne	duce	the	natri	n se	Death and a second	
malin Mark Anna P Co	3. Fin	d medu xpand	and and	inst and	d re	duce	the	natrii ve	at	the	leaf
Arine	3. Five	d mediu xpand cost o	and a	iost and	d ne	duce	the	natrii ve	at	Death and a second	leaf
Arine	3. Five	d medu xpand	and a	inst and	d re	duce	the	natrii ve	at	the	leaf
Arine	3. Five 4. 5. 11 rodes	d media  xpand  cost o  then	on the	this loal	d re	duce and beast o	the armi	natrii ve	at	the	leaf
A CO	3. Five	d media  xpand  cost o  then	and a	this loal	d re	duce and beast o	the armi	natrii ve	at	the	leaf
Tunc S CO	3. Fin	d yiedu xpand fost o then	on the	this loal	d re	duce and beast o	the armi	natrii ve	at	the	leaf
Tunc (1)	3. Five 4. 5. 11 rodes	d yiedu xpand fost o then	on the	this loal	d re	duce and beast o	the armi	natrii ve	at	the	leaf
Autor	3. Fin	A Madin  xpand  fost of  then  2 , er	on the	this load	d ree	duce and beast o	the armi	ratrii ve otla	at	the	leaf
A ding	3. Fin	A Medium xpand fort of then be , er ,	on the to	this leaf	d re	duce and beast o	the armi	ratrii ve otla	at	the	leaf
	3. Fin  4. 5  5. Il  nodes  6. Fla  France  00  15	A Medius  Aparol  Fost of  then  20  20	on the to	this load institute	d re	duce and least o	the armi	ratrii	at err	the explosion	leaf
A delay	3. Fin  4. 5  5. Il  rodes  6. Fla  Franch  00  15	A Medium xpand fort of then be , er ,	on the to	this load invinate	d ree	duce and beast o	the arviv	ratrii	at er 17	the explosion	leaf
THE CASE OF THE CA	3. Fin 4. 5 5. II rodes 6. Fla Frayor 00 15 3	A Media  reparch  cost of  then  26  5  6	on  on  cod  on  the  to  colore  16  po  18	this load innimate the	d ree	duce and least o	the provided all	ratri	17 11 00 12	the explose	leaf
Aunc Co	3. Fin  4. 5  5. Il  rodes  6. Fla  Franch  00  15	d Medin	on the to	this load invinate	d ree	duce and least o	the arviv	ratrii	at er 17	the explosion	leaf
A LINE	3. Fin 4. 5 5. II rodes 6. Fla Frayor 00 15 3	A Medium repard  fort of them  them  2e > 25  6  4	on the splane 30 16 po 18	loal inninate the	d ree	duce and least o	the arrival	ratrii	17 11 0	the explose	leaf
	3. Fin 4. 5 5. II rodes 6. Fla Frayor 00 15 3	A Medium repard  fort of them  them  2e > 25  6  4	on  on  cod  on  the  to  colore  16  po  18	loal inninate the	d ree	duce and least o	the arrival	ratrii	17 11 0	the explose	leaf



	0 50						11000	PAGE NO
	33304						-full	companion
	Fon node 5:	8	CO	di 0 or	00	,	ر مو	1,11
		10	00	q	0		00	
	Path (1,5)	0	3	00	0		ao	
	7	(2)	/ · O	9	· 00		00	
	A.	12	0	0	12	r	00	7.3
10	3	00			ż	5.0		7.0
	71.45	<u> </u>	( T. )					
	For node 6:	00	00	00	an	\$40		
	Potth (4,2)	co	(00	11.3	80	0		
	**	0	90	00	00	2	-	
		00	ao	00	00	<u>~</u>		
		110	00	O	00	Co		
					23		1	
	Node 7:	00	œ	.00	80	Ø	1,00	
	1000	1	90	00	00	0		
	Path (1,4,3)	(0)	1	90	00	0		, , , , , , , , , , , , , , , , , , ,
		00	00	02	00	00		
				00	00	Ø		
	and the second	0 0	L.O.	alas NYA				
		T			20	~	Ahon	7
	Node 8:	00	000	10	80	<u>~</u>		asta I
	Path (1,4,5)	1	000	0		ක		yant I
	100	0	3	00	. 00	 ∞		
	1 2 2	00	8	00				
	120	00	0	0	90	00		
		1.1	· ·	Total			7	
	Node 95	00	8	8	80	00	E the	h NJ
	Path (1,4,2,3)	00	8	00	8	∞	(8.	.fbil
	( ivor ( i ) ) , ,	80	00	S	∞	0	-	,
	0	02	00	00	00	80		
	ESC	0	00	. 00)	8	00		
					1			
		<b>8</b>	00	00	∞	$\infty$	36 1A33	and :
	Node 10:	<b>10</b>	00 /	00 80	00	8	(Ta, 1)	149
			00	00	<b>20</b>	co		
		9	00	∞ .	00 🗽	CO		
		<b>8</b>		00	00	00		1
	, 0	0	00					



83304 == Mycompanion == Input: Cost nation TSP graph Output: Reduced natrine obtained by applying LCBB. Conclusion: The least rost branch and bound is studied and implemented Stratergy for TSP