	DSA Assignment No.07 Page No. 1 Date.
	Minimum Spanning Free
	Aim: To implement minimum spanning tree using prims and knusheds algorithm
2	problem Statement: Represent graph of your college campus using adjacency list/matrix.
	Modes represent various depostments and limbourd represent the distance bett them find minimum spanning tree using
p)	koushkoul's Algorithm prim's algorithm Analyse time & space complexicity
	Theory:
•	This an non-linear data structure consisting of nodes and edges
	2 5 7 (2) 20 vertices 2 5 7 (2)
	edges

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		The second secon
e)	Graph	representation using 2D Amay Matrix
9	Adjac	ency matrix is a 20 Array of size VXV
	where	Visthe number of vertices in graph.
•	1et 2	D Amay be adj [][], then adj [][][]=1
	1 F the	ere is an edge from V to V2 1 to 1
	for w	oder undirected graph matrix is symmetric
	4	
		(a) (i) (ii) (iii)
		12 Mar 12 (2) on participal Vision
		(4) (3)
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	Adjac	Lency matrix:
		- trous of a sign of the life.
		0 122 3140000 60
	0	10 mg of 10 coll to say me of V
	1	1 0 1 1
	2	0 1 0 1 20 1 100
	3	0000010 21 200 1 1 1 mining a
	4	per b 2 2 1 1 0 9 11 710 22 11 12 11 16 2
		2 aplace to be addition recognization
•	Advar	rtages!
1) Easie	r representation
9	Remo	r representation wing an edge takes 0(1) At time
	Disa	drantages:
<u> </u>		The second of
1) consu	ne more space de la
2) More	time to add an vesters
	14 Sec. 14	and the state of t

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	Paga No. (2)
	Data.
A (a) a del	Graph representation using adjacency list!
Y 30 4 4 4	An amay of list is used.
fagur.	Size is equal to no of restex.
Factorial	Let ami I be an armay . An entry amili
	represents 11st of vertices deligaent to certain
The distance of	1,Ch. 6261.12 1121 01 00011 (1)
A Committee of the Comm	Advantages:
.21	Saves space Adding nester is easy
7	A-for CAT 1 1 CO 1
	Application of graph:
	Marps
رد	Computer Network
3)	Social netwood-ing sites
4	To represent flow of computations
	Spanning Tree:
	A spanning tree is subset of Graph by
	which has all the restices covered with
	A spanning tree is subset of Graph li, which has all the vertices covered with minimum possible no of edges
	Ce Ce
	(b) -(c) (b) (c) (b) (c)
100 may 200 may	
	Minimum spanning Tree!
	A minimum spanning tree is spanning tree with weight less than or equal to weight of every other spanning tree. The weight is sum of weight on each edge of spanning
	with oneight less than or equal to weigh
	of every other spanning tree. The weight
	is sum of coeight on each edge of spanning
	tree.

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			uses of MST!	
			Telephone coming	
			Electronic circuits	—.
Ex		છ)	Computer Network	
			applied to be well in	
			Algorithms:	
		1)	prim's algorithm	
		•	It starts coîth tree. T, consisting of single	
	~	1	ipotex Ville and to part to a soul a	
		•	Then it find shortest edge emanating trom	
			a that connects I to rest of the grouph	
	Vi.	•	The lac this odge & new vestex to tree!	
		•	- 1 11 - siels the charteof polac emanating la	لق
			11 and I dono to that also connects 1 10 111	
			rester are visited	
			restex are visited as actual and	
4				
		2)	Kruskal's algorithm	
/		2)	11 - 1000 IC A CIPNOING (GIRLY OF SUPPLIES	·
/	1 2 1	e	II - O IIIOL PAIDE ONECK II-IT TOVIOS	
/			a all with spanning tree. It not make It	2
		•	Repeat (b) till those are (v-1) edges	
_		1 1	validations:	
Yel				
nt		6	Ho of vertices and edges should be positive sunt fend restices one within the no of worti	
//		•	yout Lend restices one within the no of worth	ce
g			provided by user	
1				

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	Test cases:
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	Complete undirected graph with no loops,
The state of the s	parallel edges.
	Connected undirected grouph with no loops
The state of the s	parallel edges.
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	Condusion:
- 3/ per l	- Le ve et la contraction de l
	Time complexity of min's algorithm O(v2) for
- mori	adjaceny matrix
	For adjacency 11st = octo o (Elog v)
	It works faster with dense graphs
7,551	Time complexity of knuskou's eligorithm
264	
	O (Eloge) or o (Blagv)
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	It mens fastor in spense matrix.
	or son a sure of the state of t
	[] 그는 : # 마이트 : 1 전 다리 보는 : : : : : : : : : : : : : : : : : :
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