

Code No: 153AK

An Autonomous Institute
NAAC Accreditation 'A' Grade
Accredited by NBA
Approved by AICTE, Affiliated to JNTUH

School of Computer Science

Previous Year Question Papers

	JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERA B. Tech II Year I Semester Examinations, April/May - 2023 DATA STRUCTURES (Common to CSE, IT, ECM, CSBS, CSIT, ITE, CE(SE), CSE(CS), CSE(DS), CSI CSE(N), AI&DS, AI&ML, CSD)		
Time		Marks: 75	
	i) Question paper consists of Part A, Part B.		
	ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all question	ons	
	iii) In Part B, Answer any one question from each unit. Each question carrie		
	and may have a, b as sub questions.		
	PART - A		
		(25 Marks)	
1.a)	Give examples for stack.	[2]	
b)	How to construct a queue using stacks?	[3]	
c)	What is a skip list?	[2]	
d)	List the drawbacks of open addressing.	[3]	
e)	What does the color notate in red-black tree?	[2]	
f)	What operations are performed on Splay trees?	[3]	
g)	What is a max heap?	[2]	
h)	Give example for adjacency list of a graph.	[3]	
i)	Define trie.	[2]	
j)	What are the merits and demerits of brute force method for pattern matching	? [3]	
	PART – B		
		(50 Marks)	
2.	Write and explain algorithms for Push and pop operations of stack using link OR	ed list[10]	
3.a)	Describe the conditions of overflow and underflow in a queue.		
b)	Discuss the applications of queues.	[5+5]	
	armane are appreciation of question	[5.5]	
4.a)	Demonstrate skip list representation of a dictionary.		
b)	How to perform reassign operation on a dictionary.	[5+5]	
,	OR		
5.	Explain the algorithm for implementing quadratic probing on a hash table.	[10]	
6.a)	Illustrate search operation on binary search tree.		
b)	Discuss the importance of height balanced trees for searching.	[5+5]	
TO	OR		C
7.a)	With suitable examples, illustrate right-left rotation on AVL tree.		2000
b)	Differentiate between splay tree and red-black tree.	[5+5]	
	• •		
8.	Make a comparison of breadth first search and depth first search for a graph.	[10]	
	OR		
9.	Write an algorithm for merge sort and explain with a suitable example.	[10]	
10.	Describe the Knuth-Morris-Pratt algorithm for pattern matching.	[10]	
	OR		
11.	"A compressed trie is an advanced version of the standard trie." Support or	oppose this	
	statement with necessary explanation.	[10]	

Q.P	Code: CS2102PC	Hall Ticket No.:		\Box		
	NARSII	HA REDDY ENGINEERING (UGC AUTONOMOUS)	COLLEG	GE		
	II B.Tech I	Semester (NR21) Supplementary Examin	ation, July	202	13	
		DATA STRUCTURES (Computer Science and Engineering)			
ime	:3 hours	UV S. MOVING SACRESON C. DOCKERO	Maximum	mi	ırks: 7	0:
		Part-A Answer all questions		(20	Mark	0
Q.N		Question		M	CO	BI
L		ications of stacks?		2	COI	L
		eas in which data structures are applied ext		2	CO2	L2
	skip list repre		ations and	2	COI	Li
	d. Define Hash !			2	COI	
L		e null links in a binary search tree?		2	CO3	
Ĺ		Black tree? Give an example		2	COI	1.2
	recursive mer		plexity of	2	CO2	1.2
		and give an example?		2	COL	1.2
		ed of external sorting?		2	CO2	1.2
	What are the	dvantages of Tries?		2	CO2	LI
		Part-B Answer all the Units All Questions carry equal Marks		(5	0 Mari	ks)
		the American survival administration				

a. Examine the applications of stack.
 b. Explain array based implementation of stacks

OR

3) a. Illustrate the difference between a queues and linked lists 5

with an example
b. Give an algorithm for push and pop operations on stack using a linked list.

a. Consider a hash table with 100 slots. Collisions are resolved 5 CO3 using chaining. Assuming simple uniform hashing, what is the probability that the first 3 slots are unfilled after the first 3 insertions?

b | Explain various linked list representation operations in detail. | 5 | CO2 | L2 OR 5) a. What is collision? and what are collision resolution 5 What is counsely to the table of length 10 uses open addressing with hash function h(k)-ik mod 10, and linear probing. After inserting 6 values into an empty hash table, the table is as shown below. CO3 0 1 2 42 3 23 4 34 5 52 6 46 7 33 Find the possible order values in which the key values could have been inserted in the table?

UNIT-III

b) a. How the Insertion and Deletion operation 6) a. How the Insertion and Deletion operations performed in 5 CO2 L3
Binary search trees.

b. Write short notes on Splay Trees.

COR

7) a. Define AVL tree and Explain different rotations in AVL tree 5 CO3 L3
b. Build an AVL tree with the following values: 5 CO4 L4
20,11,5,32,40,24,27,23,28,50.

UNIT-IV

8) a. Compare and continust different sorting methods?

5 CO1 L2
b. Explain how to insert and delete an element into Max beap?

OR

9) a. Write external sorting algorithm and explain with an 5 CO2 L3
algorithm. ons performed in 5 CO2 L3 algorithm.
b. Explain Depth First Search and Breadth First Search algorithms in detail. | AUNITY | A 11) a. What brute force algorithm. Explain string pattern matching 5 average analysis.

You are given a string "s" and s pattern "p", you need to check if the pattern is there in the stringby using Brute force CO4 algorithm. S = "prodevelopertutorial" P = "rial"

--00000--



your roots to success...

Q.I	Co	de: CS2102PC Hall Ticket No.:			П		T	b. Explain various linked list representation operations in detail.	5	CO2	L2
			-	_	-		T.	OR	Sau.		
		NARSIMHA REDDY ENGINEERING COLLE (UGC AUTONOMOUS)	GE			5)	8	techniques?		CO3	1.3
		II B.Tech I Semester (NR20) Supplementary Examination, July DATA STRUCTURES (Computer Science and Engineering)	y 20:	23			b	b. A hash table of length 10 uses open addressing with hash function h(k)=k mod 10, and linear probing. After inserting 6 values into an empty hash table, the table is as shown below.	5	CO3	L4
-	te:	This question paper contains two parts, A and B Part A is compulsory which carries 25 marks (1 s ob questions a unit carry 2 Marks each & Next 5 sub questions are one from e Marks). Answer all questions in Part A	re or	ne from unit co	n each arry 3			2 42 3 23 4 34 5 52 6 46 7 33 8			
		Part B Consists of 5 Units. Answer one question from each unic carries 10 Marks and may have a, b sub questions						Find the possible order values in which the key values could have been inserted in the table?			
		Part-A Answer all questions		Mark		6)	8		5	CO2	L3
	No.	Question		CO			1	The state of the s	5	CO2	L2
1)	a.	What are applications of stacks?		COI			1.0	OR	3	CO2	Lié
	b.	List out the areas in which data structures are applied extensively.	2	CO2	L2	7)	a		61	CO3	1.3
		Illustrate the differences between linear list representations and skip list representation.		CO3		1	b		5	CO4	LA
		Define Hash function.		CO4			+	UNIT-IV	_	_	_
	e.	How to resolve null links in a binary search tree?	2	CO5		8)	la		5	COI	1.2
	f.	What is Red-Black tree? Give an example	3			-01	-		5	CO2	L3
	g.	Give the best case, average case, worst case time complexity of recursive merge sort.	3	CO2	L2			OR		Parel	000
	h.	Define graph and give an example?	3	CO3	1.2	9)	8		5	CO2	L3
	i.	What is the need of external sorting?	3	CO4	1.2	-	b	algorithm.	-	201	
	į	What are the advantages of Tries?	3	CO5	LI		0	Explain Depth First Search and Breadth First Search algorithms in detail.	3	COI	L3
		20020	000	4810			+	UNIT-V	-		_
		Part-B	(5	0 Mar	ks)	10)	a	83,148 7	5	CO4	1.2
		Answer all the Units				-	b			CO4	1.2
		All Questions carry equal Marks					1.	OR	-1	001	
Q.	No	Question M	C	0	BL	11)	a		5	CO4	L3
17.5		UNIT-I			14.5	122	1	average analysis.			2553
2)	a.	Examine the applications of stack. 5	C	01	L3		b	2000	5	CO4	1.4
	b.	Explain array based implementation of stacks 5	C	10	1.2		1	check if the pattern is there in the stringby using Brute force			-
No.		OR	- 1		141			algorithm.			
3)	11.	Illustrate the difference between a queues and linked lists 5	CO	02	L3			S = "prodevelopertutorial"			

Page 1 of 2

CO3 L3

b. Give an algorithm for push and pop operations on stack using

4) a. Consider a hash table with 100 slots. Collisions are resolved 5

using chaining. Assuming simple uniform hashing, what is the probability that the first 3 slots are unfilled after the first

a linked list.

Page 2 of 2



Q.I	, Co	de: DS2102PC Hall Ticket No.:				
		NARSIMHA REDDY ENGINEERING COL (UGC AUTONOMOUS)	LE	GE		1775-
		II B.Tech I Semester (NR21) Supplementary Examination,	Inh	200	13	
		DATA STRUCTURES (Computer Science and Engineering (Data Science				
Tin	ne : :		32	n mi	rks: 7	0
Not		This question paper contains two parts, A and B Part A is compulsory which carries 20 marks (10 sub question unit carry 2 Marks). Answer all questions in Part A Part B Consists of 5 Units. Answer one question from each carries 10 Marks and may have a, b sub questions Part-A Answer all questions		Ea		estion
Q.	No.	Ouestion	_	М	1 00	l mr
1)	8.	What are applications of stacks?	-	2	COL	BL L1
0	b.	List out the areas in which data structures are applied extensive		2	C02	1.2
	c	Illustrate the differences between linear list representations skip list representation.	and	2	COI	Li
	d.	Define Hash function,		2	COI	LI
-1	e.	How to resolve null links in a binary search tree?		2	CO3	L2
- 1	f.	What is Red-Black tree? Give an example		2	COI	1.2
	8	Give the best case, average case, worst case time complexity recursive merge sort.	of	2	CO2	12
- 1	h.	Define graph and give an example?		2	COL	1.2
- 1	i.	What is the need of external sorting?		2	CO2	1.2
	j.	What are the advantages of Tries?		2	CO2	LI
		Part-B Answer all the Units All Questions carry equal Marks		-1120	0 Mari	CIÁI:
Q.	No	Question	M	C	0	BL.
2)	a.	UNIT-I Examine the applications of stack.	5	C	N I	L3
=1_	b.	Explain array based implementation of stacks	5	C		1.2
	- 40	OR	3	100	71	Ask:
3)	a.	Illustrate the difference between a queues and linked lists with an example	5	C)2	L3
	b.	Give an algorithm for push and pop operations on stack using a linked list.	5	C)2	L2
	-	UNIT-II				
4)	1.	Consider a hash table with 100 slots. Collisions are resolved using chaining. Assuming simple uniform hashing, what is the probability that the first 3 slots are unfilled after the first 3 invertions?	5	CC)3	1.3

	b.	Explain various linked list representation operations in detail.	5	CO2	1.2
		OR	-	1002	-
5)	4.	What is collision? and what are collision resolution techniques?	5	CO3	L
	b.	A hash table of length 10 uses open addressing, with hash function h(k)-ik mod 10, and linear probing. After inserting 6 values into an empty hash table, the table is as shown below. O	5	C03	L
	L	have been inserted in the table? UNIT-III			
6)	a.	How the Insertion and Deletion operations performed in Binary search trees.	5	CO2	L
	b.	Write short notes on Splay Trees.	- 5	CO2	1.2
		OR		-	
7)	a.	Define AVL tree and Explain different rotations in AVL tree	5	CO3	1.3
	b.	Build an AVI. tree with the following values: 20,11,5,32,40,2,4,27,23,28,50.	5	CO4	L4
	11	UNIT-IV	1	Bernel	
8)	2.	Compare and contrast different sorting methods?	5	COI	1.2
	b.	Explain how to insert and delete an element into Max heap?	5	CO2	L3
		OR			
9)	a.	Write external sorting algorithm and explain with an algorithm.	5	CO2	L3
	b.	Explain Depth First Search and Breadth First Search algorithms in detail.	5	CO1	1.3
		UNIT-V			
10)	a.	Distinguish between Standard Tries and Compressed Tries	5	CO4	1.2
	b.	Write an Algorithm for KMP pattern technique	5	CO4	1.2
		OR		Vision d	5.00
11)	a.	What brute force algorithm. Explain string pattern matching average analysis.	5	CO4	L3
	b	You are given a string "s" and s pattern "p", you need to check if the pattern is there in the stringby using Brute force algorithm. S = "prodevelopertutorial" P = "rial"	5	CO4	LA

-00O00-

Page 2 of 2



your roots to success...