Theory of Computation

Automata TOC:Theoretical branch of Computer Science and Mathematical
Studying abstract machines and problems they can solve.

Abstract machines: - simplified models used to study and understand computationals.

Finite Automata Pushdown Automata Turing Machines

* Deals with logic of computation with respect to simple machines

Basic Terminologies of TOC:-

Symbol:
A symbol is also called a character, alphabet

a,b,c,0,1...

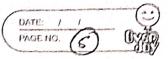
Alphabets:-

Denoted by (Σ) :set of finite symbols.

	String:-
	A string is a finite sequence of symbol s from some alphabete
	A string is a finite sequence of symbol s from some alphabets. Denoted with w and its length is denoted by Iwl
*	Empty string is the string with zero symibols denoted by 'E'
Eq:-	Mo of strings with length 2 generated over alphabet & a, b 3:
-0-	ह्व, वर्रेह्व, ьर्रेर्घ, ьर्रेर्घ, वर्
	\Rightarrow (aa, ab, bb, ba)
A A Section Section	henoth of string $ W = 2$
	hength of string $ \omega = 2$ Number of string = 4
	Formula consisted a staign with my man of althought will
	For mula generated a string with m no- of alphabets with n length =
	Alocupa Robbarantotion in Toli
	Closure Representation in TOC:-
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	Positive closure that referents a set of all strings except Null
	or E-strings.
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	Kleene Closure, reforesents a set off all strings including null
	or E-strings
	Y ,
	$L^* = \varepsilon L^+$
<u> </u>	Rigular expression for language accepting all combination of g's our $\Sigma = S = S = S = S = S = S = S = S = S = $
	$\Sigma = \xi g \hat{\beta}$:
1	R = g *
	R= { = , g, gg, ggg, gggg, }
	0 00 000 000 0000

	Regular Expression for language accepting all combination of g 's own $E = Eg$ $R = g + \frac{1}{2}$	
	R= Eq, gg, gggg	
	0000000	
	Manage of the second se	
	pleene star is an infite set but it was provide any manual trans	
-7:	there star is an infite set but if we provide any grammer nules then it can work as a finite set. CE is included in the second of the second o	1
,	it can work as a finite set. (Eis included in Kleen Closure)	
		1_
	hanguage:	
	A land of	
	a collection of appropriate string.	
-	Language:- A language is a collection of appropriate string. L1 = 9 Set of Strings 2	
1	11 = Eset of Strings }	
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	Finite Automata						
	I inite Sutomata						
*	automata used to recognize for	Hesps.					
*	It takes the strings of symbol as input and changes its state according						
	when desired symbol is found, thin the transition occurs.						
*	at the time of transition, the automata can either noue to the next.						
3	state or stay at the same state.						
K-	FA has two states occept or nege	TO MAKE					
	when string is accept when its rejected.						
	Cait and and in a sole stime of	(1,11,10,10,10,10,10,10,10,10,10,10,10,10					
	Firete automata is a collection of.	5 Hiples (Q, 2,0,90, +), where:					
	Q = finite set of states						
	$\Sigma = $ finite set of input symbol						
	90 = initial state						
	E = Fingl State 8 = Transition function						
	Types of audomata:-						
	Finile dutomotta						
	Deterministic Finite Automata	Mon-deterministic finete					
	(DFA)	automara (NDFA) or (NFA)					
All as a second	* Machine goes to one state only	* Any number of states for					
	for a particular input character.	a particular input					
	* Does not accept null move	* can accept null move.					
*	Every OFA is NFA, but NFA is no	<u> P DFA</u>					
•	Both NFA and DFA can have multip	ell fruits are not apple)					
*	Both NHA and DFA can have multip	ble final states.					



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- 10	Transition D	distribution de la secución de la contraction de		and the control of th	en en la discontrationament a ser consequence de l'expression de l'expression de l'expression de l'expression			
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2	A transition diagram	or state	Arranciti	m disposom is a	directed archb			
	which can be conso	micheel	as following	e-	mosel graph			
	which can be conse		is your	a ang mula ana ina dan annaisa ina ana ana ana anna tradi nahat antan antah dibagana, sini na anima a atauna	en metrica Publication des del difficultation per apricant ambigues accompatibilities de la primitiva de			
×	A finite set of states,	at least	one of wh	ich is designed the	start state and			
	some of which are don	imported a	A formal of	Let 1				
* An alphabet & of possible input symbols from which the input String								
7	formed.	ne myun	- wyrrucus	grow which the inp	es string sie			
formed. * A finite path through the transition graph is a series of edges forming path beginning at Start state and ending at one of the final states. * A finite set of transitions that show the change of state from the given state on a given input.								
	both beginning at the	the tognise	nor grap.	h is a series of ed	ges formy a			
*	A light set of a sili	Stale a	nd ending	at one of the final	states.			
	State on a given input.	ms that c	how the c	hange of state from	n the given			
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	Tabular representation of transition function. It takes two organisms						
State and symbol and refuses a state (the "next state").							
	Cal and according to	in much work	2011	A. Land			
*	Rown corresponds to state						
*	Entries corresponds to the			1 . 7 .			
*	The start state is denoted						
*	The accept state denoted.						
	final	AGALLET JOSEPH ATE	Since the series	Con was	to the to		
$\frac{\varepsilon_{q}:-}{-q_{0}} \xrightarrow{\circ} q_{1} \xrightarrow{1} q_{2} \xrightarrow{\circ} 0,1$							
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			7	44.4			
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