1-1/	Theory of Computation
	- What are computers? What can they dut what can't trey do?
station outside the control of the company of the control of the c	
Sought (1984) is "	Set Theory
entro trappines (* 1900), i s. 1900.	[1,2,3] [1,1,2,3]
	X = Y iff Va, a +X -> a = Y
Militar translation (1975) in the first state of the stat	N-naturals Z-integers NEZ
<mark>1997 tan den en en sold de</mark> n en sold i de la Arrego est en en 1 en 2 en 1 de la calación en en en este en en en e	R-reals Q-rationals
ottistä saikitaattista taleen koi koi koi koike kastiotototototototototototototaan ja kussa josa kastallista k	
in the state of the	a e X u Y iff a eX or a e Y i
fertions at the limit season will be a common or recommended to the common of the comm	Měn
PORTICUTA STATES CONTROL AND A PROMISSION AND A PROMISSION OF THE STATE AND A PROMISSION AN	a e x n y iff a ex and a e y.
e de la companya de l Companya de la companya de la compa	The state of the s
THE CONTROL OF THE PROPERTY OF A THICK AND A PROJECT AND A THICK A	$a \in X_{p}^{c} = X$ iff $a \notin X$ and $a \in U$ complement Not M
	complement Not M
o Patriani C.C.C. Section of the foliation for the section of the	Tuples
	(0,1) is a two-type (on pair) of 0 and 7
	X is a tuple, then It; (T) is the ifh thing
	$T_{o}(O_{1})=0$
	<pre> (X x Y = {(x,y)   x f X and y f Y }  cross product suither </pre>
and a summation of the committee of the	
	0 1 1 0
	Relation R on XIY, and Z is a subset of XXYXZ
	pluses 0 0 0
The efficiency discovers descend to the control of	pluses: NxNxN Vn. pruses on n
	$\forall n_{i}m_{i}$ pluses $(++n)$ m $(1+x) \in \exists x_{i}$ pluses $n m x$
rettrikaningsklopene (sklopen y elevikaningsk-en in en en en en en elevikaningske filozofet en elevike in flocket en en elevike en e	

-3) A function F from X => X

To a relation on X x Y Succ: { (0,1) (1,7) ¥x, y, 14z, Fx y, (3, 4) 5, 7. (99,100) 3 1 FX YZ =7 41 = 42 Reflexive: Yx, Rxx Symmetriz: Xx,y, Rxy => Ryx Transitue: YX1412, RXY 1 RYZ -7 RXZ Powerset:  $P(X) = P(X) = 2^X$  $a \in P(x)$  iff  $a \subseteq X$  $X = \{0,13\}$   $P(X) = \{23, 203, 213, 20,13\}$ Sequence of X is a function from N -> X (a string if there's also a length N) (N, N=X) Astring of 2 is a finite sequence of E signa, the alphabet  $|\alpha| = length$ E - epsilon, empty string xR - revese, switch direction f(x) = f(str(-x)) $x \circ y = xy$ , concatenate f(i) = x(i) if  $i \in [x]$  y(i-|x|) o.v.  $x^{n} = n$  corres of xStrings can be ordered (lexicographically) x\* = kleene star (not a string) a set of strings Devangin  $S = X^n$  of some n, Hen  $S \in X^{\times}$ "Language of E" is a set of strings of E

3/	A computer "solves" a problem
4.	A problem is a language
	the addition problem is a set strings over $50-9/+3$ *
	==++3 3+3=6 3+3=18 (-) "is just the ones that are the"
	The even problem 33 the set of even-length strings over &
	The C-factorial is the set of all C-programs that complete the factorial of 25.
	The job of the compute is "recognition"  given a string x
	No 17 is NOT in the set
-	A computer is a function from string => Etes, No3 L- not actually
	A computer semanties. is a finite function, X=> ExIN3

Even-ness :



$$= \left\{ \begin{array}{c|c} s & s \in \{0, 13\} \\ \hline \\ 1s1 & = 2n \end{array} \right. \text{ for some}$$

$$\left. \begin{array}{c|c} natural & 3 \end{array} \right.$$

O is a node or a state

"O is the stant state

a 50 B is a transition that goes FROM a TO 6 ON c

O is the accept state

 $2n \rightarrow 2n+1 \rightarrow 2n+2 = 2(n+1)$ even old even

on cond)

above (on anything)

Machine with output

C E E'

when the machine reaches this state, purports (

(even[2]) Moore machine

Mealy machine

مل

nutouts on Houseton

[R] (S) (S) P

(R) (P) R (P) P

negative float