locture 17: Definition: R is a Pelation on A. the Connectivity Relation R\* Consists of parts (a,b) such that I a path from a to b in R. Rulla, b), (CC, c), (b, c)} 1 = { (a, b) ( (c, c) , (b, c), (a, c) } R\* 2 U Rin. R Set of all people. Ex4 :-485 Rza(a,b) a has met bg. What B Rh = 7 (472). What B Rt Solutioni. - R2 2 ROR. REVISION. R (a,b) aEA,LEB. RS (b.c) BEBICEC. GIORSOR TO GIORERAGIOES.  $(a_1b) \in \mathbb{R}^3$   $\exists_{x_1x_2}$   $(a_{7x_1}) \in \mathbb{R} \wedge (x_1, x_2) \in \mathbb{R}$ 1(x1,5) ER Caid EROR 36. (ABERA (bid) ER (a,b) ERh = x1, x2,--- xn-1 (A,1 x2) ERA Caib) ER JX (aix) ERN(VII B) ER.  $(x_{n-2},x_{n-1}) \in \mathbb{R}$ (xu-1,b) ER Q \* R Set of States in Onited States. Bx6-ં પશ્ચ 6 . Reflatible and behas a Common botcher?
What is Ruz? HW
R\* =? HYY.

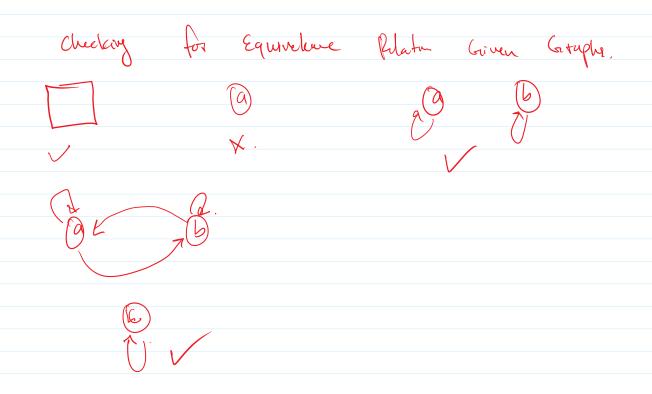
the Connetrinty Relation R\* 15 Housitive. theorem: the Housefive Closure equals the Connectivity Relation Rox ( WARSHAL ALGO? EQUIVELENCE KELATION. A Velation which is - Replayine. - Symmetriz - Transitive (aub) ER. anto-Ex1 frf(a,b)|azb or az-b}. AzZ. leftexive ta EA (a, a) ER. ta EZ aza es az-a. Symmetric Vaib EA il (aib) ER -7 kia) ER.
Vaib EZ il azboraz-b -> bza or bza. Transitive Haine EA M (ab) ER M (hc) ER - (ac) ER.

Value EZ M arborar-6 M bzc 616-c - az Cora-c Exd. :- Reflais) | a-b EZP. Az R. Réflexive ta EA (a.a) ER. Va ER. a-a EZ L-Symmetric Vaib & A il (aib) & R - 7 kin) & R. Vaib & R. il a-b & 2 - 7 b-a & 2. ~ Transitive Haile EA M (ab) ER M(hc) ER → (ac) ER.
M a-b EZ N b-c EZ → a-c EZ. Va, buc € Hence Equivelua Relation

Rigland azb mod m? Ex 4: m71. m72+ Azz. P494. Réflexive Va E A Va E Z (a.a) ER. aza modm. Symmetric Vaib & A Vaib &Z 1) (a1b) EK - Reasek.

1) azbmodn - bzamodn. Transitive Harbic EA Mashmodm Abzemodm > U. azcmodm, Ex6:- fzf(a,6) | a divides b} AEZ. Réflexive Ha EA (a.a) ER. Ha EZ a divides a il (ab) ER - kias ER.

il a divides b - 6 divides a K. Symmetric Vaib & A Vaib &Z Transitive Harrie EA Vaince & Z of (ab) ER M(hc) ER -> (acc) ER. Ex7:- P2 f(x,y) | | x-y| < 27. AzR. Reflexive Va E A Va E Z (a,a) ER. la-alc1. Symmetric Vaib & A Vaib &Z il (alb) ER - klaser. 1) 1a-6/21 -> 16-a/ C1. () (a,6) ER M(hc) ER -> (a,c) ER.
() 19-61<2 1 16-c1<2 -> 10-c1<1.
10-4-13| <1 11-3-2-0| <1 -> 10-4-2-0| <1 Transitive Harrie EA a=-C Not Equivelene felation.



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