lecture 257 Transitive Closure. P484i- P2 { (2,3), (2,4), (2,2) }. Az { 1, 2,3,4} Rm 2 { (2,2), (2,3), (2,4), (3,2) }. RURm 2 { (2,3), (2,4), (2,1) (3,2)}, U { (2,2), (2,3), (2,4), (3,1)} $= \left\{ (2,3), (2,4), (2,2), (3,2), (2,2), (2,3), (2,4), (3,2) \right\}$ (3,2), (44) -> (3,4). EXPURM R Insert massing - More Missing. in a Directed Graph. Paths A path from a to b in a directed Graph G When that is a Sequence of copes. Such - (Xu, b). a to e. dugth BK3 :-7 (a,b) (b,e). P484 aloe 3-1-2 a to a (a, a) 1. (a1a) (a1a) (a1a) 3 R be a Volation on A. P485/Theorem: Let

there is a path of Length in NEZ+ from a to b
(a, b) E P".
Red Da the Classe Dr. Ole
Frud L ru the above Example. The 4 Pt., Confirm Length 2 Paths in the Caroph.
Connectivity Relation: Let I be a Valation of A. the Connectivity Relation Pt Consist of Pairs (a,b)
Such that I a pall from a to b in R.
$\mathbb{R}^{*} = \mathbb{I} \mathbb{R}^{i} \mathbb{Z} \mathbb{R}^{i} \mathbb{V} \mathbb{R}^{2} \mathbb{V} \mathbb{R}^{3} \mathbb{V} \mathbb{R}^{6} \mathbb{U}^{} \mathbb{V} \mathbb{R}^{6}$
Puss Ri S(a,b) a has met b3. Az Set of all puss
P*. R (a,b) ER AVIS)A
RS (bic) ER. BXC. XI b A A. (aic) ESOR if (aib) ER A. (bic) ES.
R ² 2 ROR. a has met X ₁ X ₁ has met b.
(a,b) E R ² = 3. 3 x, Such That a has met x, & x, has met b.
(a,b) ER3 = 3 x,, x2, Such that a has met x1, x1 has met x2

and Ke has met b.
(a,b) ERh => 3 ×1, X2, X2, Xn=1 Such the
a has met K, Ki a a XL
Ki a a XL
X10-2 has med N.
Xn-2 has med Xn-1. Xn-1 11 h b -
<u></u>
R* 2 DR' 2 R'UR²UR³U UR ^U .
122
z = J atheast any pedsons between a & b.
V
Ex6 p (1) 1 p p p p p
486 Kz d(a,b)l a has a common Hotely with by
Az Sct of States in US.
the transitive Closure equals to Rt.
Ex 491-493 HW.
DAL WILLOW POLLET TO
EQUIVALENCE RELATIONS. 1- Replague.
2- Symmetric
3- Transitive.
P. A
Ex1: R2 a (a16) (a26 / a2-6) A=Z
Replacive. Ha EA (ans) ER.
ta EZ aza V az-a.
Symmetric Harb EA My (a16) ER -> (b12) ER.
H., S. F. III nzh Vaz-b - bza V bz-a

Mark Ch I (ala) Ch . C-1 or Ch.
Haib & Z 1/ azb Vaz-b - > bza V bz-a.
Vaib C Z
Thoughton Harley SA M (a.s) EP N/Loc) SP - 10 0/P
Transitive Harbic EA 1/2 (aib) ERN(bic) ER-> (aic) ER. Harbic EZ 1/2 (azb (laz-b) N(bzc V bz-c) -> azc V az-c.
Haibic & Z 1/ (azb (1 az-b) ∧ (bzc V bz-c) →
V azc V az-c.
BKZ, BV3 HV4.