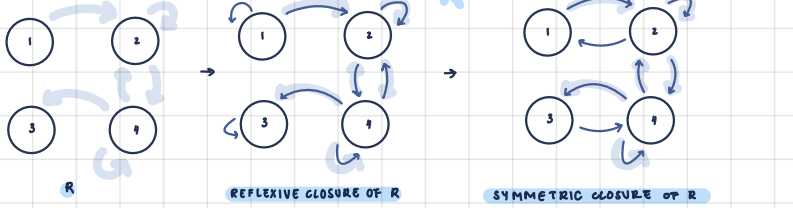
WK 4 - 2

CLOSURE OF A RELATION w/ RESPECT TO PROPERTY P

1. HAS PROPERTY P ex: reflexive closure, reflexive = property p
2. IS A SUPERSET OF THE ORIGINAL RELATION
3. IS A SUBSET OF EVERY RELATION WHICH SATISFIES 1 + 2

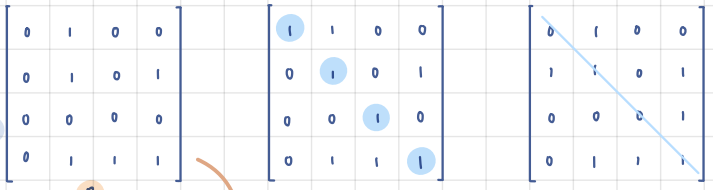
ONLY ADD EDGES WHEN WE NEED TO!

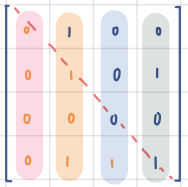


WISE WORDS OF WILSON:

INVERSE OF THE RELATION ≠ INVERSE OF THE MATRIX THAT REPRESENTS THE RELATION

INVERSE OF THE RELATION = TRANSPOSE OF THE MATRIX OF THE RELATION (FLIP ROW N COL)





NOW WE WANT THE TRANSPOSE MATRIX

(INVERSE OF RELATION R)
BUT NOT THE INVERSE MATRIX

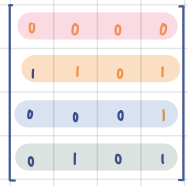
Take the matrix of R +

EXCHANGE THE VALUES

OR flip it symmetrically

EX. IF 1R2, in the inverse of R, 2R1

IF JUST THINK OF IT AS SWITCHING DIRECTIONS OF THE ARROWS



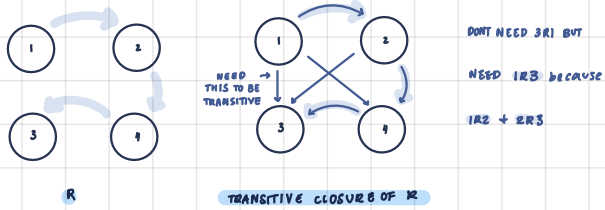
UNION OF R + INVERSE R = SYMMETRIC CLOSURE

INVERSE OF R

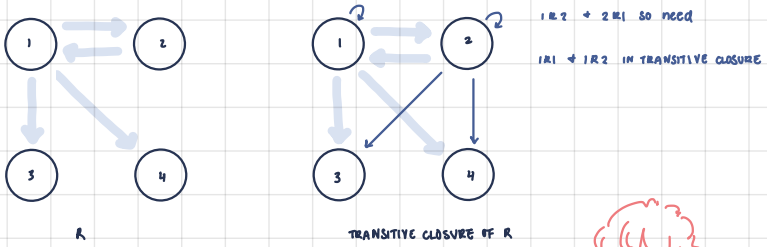
NOW WE WANT THE TRANSITIVE CLOSURE OF R T

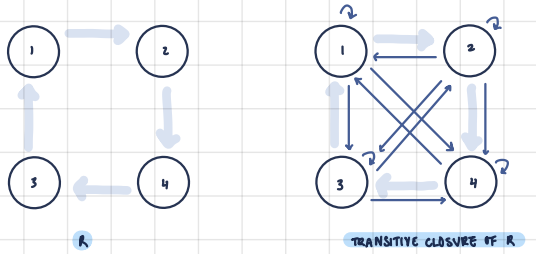
THIS IS THE SAME AS THE CONNECTIVITY RELATION R*

(we want to include (a,b) in the transitive closure of R iff there is a path of 1 or more steps from a to b in R)

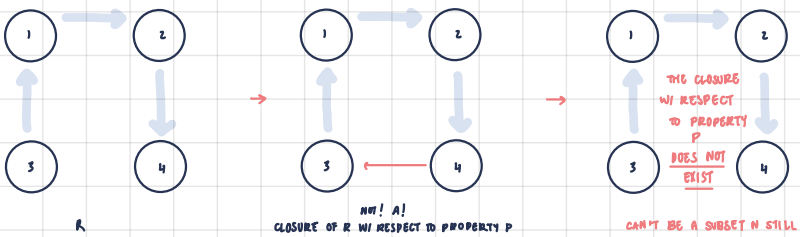


NOW LETS LOOK AT THIS: T MORE TRANSITIVE!





NOW, LET PROPERTY P be when "EVERY ELEMENT IS RELATED TO THE SAME # OF ELEMENTS"



WARNING:

THIS PROPERTY SHOWS YOU CANNOT TAKE A CLOSURE OF IT!

ANOTHER BAD PROPERTY YOU CANNOT TAKE THE CLOSURE OF! ⟶

ANTI-SYMMETRIC