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~~Web Program~~ Chapter 2 - Assignment 7

1) What are relations? List the type of relations
-> A relation R, is a set S is a collection of ordered pairs of elements in S (ie a subset of S x S). When (x,y) is in R, we write xRy. When (x,y) is not in R, we write xR'y
Types of relations
a) A relation R in S is reflexive if xRx for every x in S
2) A relation R in symmetric if for x, y in S, yRx whenever xRy
3) A relation R in transitive if for x, y and z in S, xRz whenever xRy and yRz.

2) Example 2.2
-> A relation R in {1,2,3,4,5,6} is given by
{(1,2) (2,3) (3,4), (4,4), (4,5)}
∴ R = {1,2,3,4,5,6}
a) This relation is not ~~reflexive~~ for reflexive as there is no xRx for every x in S - 1R
b) This relation is not symmetric as there is no yRx whenever xRy - 2R3 but 3R'2
c) This relation is not transitive as there is no xRz whenever xRy and yRz - 1R2 and 2R by 1R'3

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3) Describe closure property)
→ The closure property means that a set is closed for some mathematical operation. That is a set is closed with respect to that operation if the operation can always be completed with the elements in the set. Thus a set either has or lacks closure respected to given operation for example
1) The set of even natural numbers [2,4,6,8...] is closed with respect to addition because the sum of any two of them is another even natural number, which is also a member of the set
2) The set of [1, 2, 3, 4...] integers is not closed with respect to division because 3/2 gives number in fraction and not integer

4) Are the word in English are closed under set of alphabets) (Special characters are ignored)
→ 1) A set is said to be closed if the operation can always be completed with the element in the set
2) The word in English excluding special characters are made of 26 alphabets
3) So the words in English are not made of anything outside the set of alphabets, Thus the word in English are closed under set of Alphabets.