LECTURER2

From the mapping diagram in Figure 2, we can see that each domain object on the left is paired (mapped) with exactly one range object on the right. Hence, the relation T is a function

Functions and different types of functions

A relation is a function if for every x in the domain there is exactly one y in the codomain. A vertical line through any element of the domain should intersect the graph of the function exactly once. (one to one or many to one but not all the Bs have to be busy) A function **is injective** if for every y in the codomain B there is at most one x in the domain.

A horizontal line should intersect the graph of the function at most once (i.e.not at all or once). (one to one only but not all the Bs have to be busy) A function **is bijective** if for every y in the codomain there is exactly one x in the domain.

A horizontal line through any element of the range should intersect the graph of the function exactly once. (one to one only and all the Bs must be busy). A function **is surjective** if for every y in the codomain B there is at least one x in the domain. A horizontal line intersects the graph of the function at least once (i.e.once or more). The range and the codomain are identical. (one to one or many to one and all the Bs must be busy)

Example: Find the Domain and the Range for the function $f(x) = \dfrac{1}{x-1}$

D: $x \neq 1$ R: $y \neq 0$

H.W.
Find the Domain and the Range for the following functions

(1) $y = \sqrt{x^2 - 4x + 3}$

(2) $y = x^2$