

iv) hash table?

b) Using a tuple, which is one instance of a datatype that can hold multiple different elements of different types

Currying, where partial function application allows a function to be passed on that has the initial argument 'valued' into it, then the next function argument is passed to this function.

$$\text{fun map } (f, []) = [] \\ \text{map } (f, x::xs) = f(x) :: (\text{map } (f, xs));$$

$$\text{fun map } f = \\ \text{fun } [] = [] \mid (x::xs) = f(x) :: (\text{map } f xs)$$

$$\text{fun } \text{map} = \text{fun } f \Rightarrow (\text{fun } [] \Rightarrow [] \mid (x::xs) \Rightarrow f(x) :: (\text{map } f xs));$$

c) i)  $\text{map } f [1,2] = [f(1), f(2)]$

$$\text{fun } f \ n = (2^n - 1) :: (2^n);$$

ii)  $\text{map } g [1,2,3,4] = [g(1), g(2), g(3), g(4)]$

$$\text{fun } g \ n = \text{if } n < 1 \text{ then } n :: (n+1) :: [] \\ \text{else } []$$

iii)  $\text{map map } g \Rightarrow [ [g(1), g(2)], [g(3), g(4)] ]$   
map