& Solved Problems on Normalization Techniques *. O Suppose that the data for analysis includes the attribute MU JUNE-21 (10M). age. The age values for the data tuples are (in increasing order): 13,15,16,16,19,20,23,29,35,41,44,53,62,69,72 i) Use min-max normalization to transform the conduct value 45 for age onto the range [0:0,1:0] ii) Use X-score normaligation to transform the value 45 for age, where the standard deviation of age is 20.64 Jeass Solution: :-By min-max normalization, Well to the those southerdules sough V = V-minA (new-maxA-new_minA) + new_minA where A is attribute data. Here, A is the attribute age. $min_A = 13$ maxA = 72. $V^2 = iis new value, V = 45$ new_minA = 0 and new_max A = 1.0 & Given in problem statement & $v' = \frac{45 - 13}{72 - 18}$ (100) + 0.0 $V' = \frac{45 - 13}{72 - 13} (1 - 0) + 0$ $v' = \frac{32}{59}(1) = 0.5428$ Hence the value 45 for age is transformed to 0.5423.

VI = V - MA here, Standard deviation is given in problem is given in problem.

Now calculate the

i.e 6A = 20.64.

mean first.
$$UA = 36.18$$
.
 $V' = \frac{45 - 35.13}{20.64}$

$$v' = 0.478$$

to 0.478 using X-score brownsformation.

K Min-max normalization *

W Min-max normalization w.

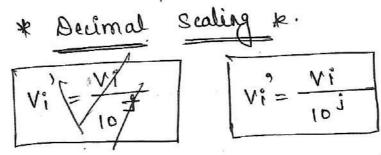
Ext. Suppose the Income rouge from \$10,000 to \$435000 is mormalized to [0.0, 1.0]. By min-max normalization, a value of \$64,300 is bransformed to 9 $V = \frac{V - min_A}{max_A - min_A}$ (new-max_A - new_min_A) + new_min. $= \frac{64300 - 10000}{95000 - 10000}$ (1-0) + 0. $= \frac{54300}{85000}$ (1) = 0.6388Hence the transformed value of 64,300 will be 0.6388 $V' = \frac{V - UA}{A}$ Ext. if means salary is \$54000 and standard duriation is \$16000. Then \$\times\$ score value if salary \$73600 will be \$\frac{V}{A} = \frac{V - UA}{A} = \frac{V}{A} = \frac{73600 - 54000}{16000} = \frac{19600}{16000} = \frac{1960

$$V' = \frac{V - \min_A}{\max_A - \min_A} \quad (\text{new} - \max_A - \text{new} - \min_A)$$
+ new_min.

$$= \frac{64300 - 10000}{95000 - 10000} (1-0) + 0$$

$$= \frac{54300}{85000} (1)$$

$$V' = \frac{V - \mu_A}{6A} = V' = \frac{78600 - 54000}{16000}$$
$$= \frac{19600}{16000}$$
$$= 1.0225$$



where, it is the smallest integer such that max $(|v^2|) < 1$.

Ux. Let the input data be: -10, 201, 301, -401,501, 601, 701.

To normalized the above data.

. step 1 :- maximum absolute value la given data (101)

Step 2: - so now put j=3, means divide the given data by 1000. i.e (j=3).

Hence, $\frac{-10}{1000}$, $\frac{201}{1000}$, $\frac{301}{1000}$, $\frac{-401}{1000}$, $\frac{501}{1000}$!

Hence the normalized data is,

-0.01,0.201,0.301,-0.401,0.501,0.601,0.