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Business Intelligence Assignment

① problem:- $N = [100, 10, 30, 20, 40, 70, 80, 90, 110, 120, 50, 60]$

Unsorted data
$N = [100, 10, 30, 20, 40, 70, 80, 90, 110, 120, 50, 60]$

Step 1: Sorting Data
$N = [10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120]$

Step 2: Partition data by equal frequency bins
We are taking depth as 3
Total number of bins = 12
No of bins = Elements / depth
$= 12/3$ [∴ i·e Elements = 12,
$= 4_{11}$ depth = 3]

Step 3: Smoothing the data by equal frequency bins.

Bin 1: 10, 20, 30
Bin 2: 40, 50, 60
Bin 3: 70, 80, 90
Bin 4: 100, 110, 120

Step 4: Smoothing by bin means.
For Bin 1:- $(10 + 20 + 30 / 3) = 20$
∴ Bin 1 = 20, 20, 20, ~~20~~.

For Bin 2:- $(40 + 50 + 60 / 3) = 50$
∴ Bin 2 = 50, 50, 50, ~~50~~.

for Bin 3 :- $(70+80+90/3) = 80$
     Bin 3 = 80, 80, 80

for Bin 4 :- $(100, 110, 120/3) = 110$
     Bin 4 = 110, 110, 110

Step 5 : Smoothed Data
     { 20, 20, 20, 50, 50, 50, 80, 80, 80, 110, 110, 110 }

② Problem :- N = [5 , 10 , 20 , 15 , 25 , 35 , 30 , 45 , 60 , 50 , 65]

Unsorted Data =
N = [5, 10, 20, 15, 25, 35, 30, 45, 60, 50, 65]

Step 1: Sorting Data
N = [5, 10, 15, 20, 25, 30, 35, 45, 50, 60, 65]

Step 2: Partition data by equal frequency bins we are
taking depth as 4

Total number of bins = 11 + 1 = 12
No of bins = Elements / depth
= 12 / 4   [∴ i·e Elements = 11 + 1 = 12
= 3 / 1   depth = 4]

Step 3: Smoothing the data by equal frequency bins

Bin1: 5, 10, 15, 20
Bin2: 25, 30, 35, 45
Bin3: 50, 60, 65, x

Step 4: Smoothing by bins
for Bin1 :- (5 + 10 + 15 + 20 / 4) = 12·5
∴ Bin 1 = 12·5, 12·5, 12·5, 12·5
for Bin2 :- (25, 30, 35, 45 / 4) = 33·75
∴ Bin 2 = 33·75, 33·75, 33·75, 33·75
for Bin 3 :- (50, 60, 65, 70 / 4) = 61·25
∴ Bin 3 = 61·25, 61·25, 61·25, 61·25

Step 5:- Smoothed Data:

$\{12.5, 12.5, 12.5, 12.5, 33.75, 33.75, 33.75, 33.75,$
$61.25, 61.25, 61.25, 61.25\}$