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Assignment - IV

1) Write an algorithm & computer program to fit a curve $y = ax^2 + bx + c$ for given sets of $(x_i, y_i, i = 1, \ldots x)$ values by least square.

Step1: Start
Step2: Read n
Step 3: Initialize sumx=0, sumx²=0, sumy=0, sumxy=0, sumx³=0, sumx⁴=0, sumx²y=0
Step 4: Initialize i=0
Step 5: Repeat step 5 to 7 until i<n
Step 6: Read x, y
Step 7: sumx = sumx + x
sum x² = sum x² + pow(x,2)
sum x³ = sum x³ + pow(x,3)
sum x⁴ = sum x⁴ + pow(x,4)
sum y = sum y + y
sum xy = sumxy + x* + y
sum x²y = sumx²y + pow(x,2) * y
Step8: Increment i by 1
Step 9: Assign
a[0][0] = n
a[0][1] = n
a[0][2] = n

a[0][3] = n
a[1][0] = n
a[1][1] = n
a[1][2] = n
a[1][3] = n
a[2][0] = n
a[2][1] = n
a[2][2] = n
a[2][3] = n

Step 10: Initialize i = 0
Step 11: Repeat steps 11 to 15 until i<3
Step 12: Initialize j = 0
Step 13: Repeat step 13 to 14 until j<=3
Step 14: Write a[i][j]
Step 15: Increment j by 1.
Step 16: Increment i by 1
Step 17 = Initialize k=0
Step 18 = Repeat step 18 to 27 until k<=2
step 19 = Initialize i = 0
Step 20: Repeat step 20 to 26 until i<=2
step 21: If I not equal to k
step 22 = Assign a U = a[i][k] / a[k][k]
step 23 = Initialize j = k
step 24 = Repeat step 24 & 25 until j<=3
Step 25 = Assign a[i][j] = a[i][j] - 4 * a[k][j]
Step 26: Increment j by 1.
Step 27: Increment i by 1.
Step 28: Increment k by 1
Step 29: Initialize I = 0

Step 30: Repeat step 31 to 33 until i<3
Step 31: Assign b[i] = a[0][3] / a[i][i].
Step 32: Write i, b[i]
Step 33: Increment i by 1
Step 34: write b[2], b[1], b[0]
Step 35: Stop.