Logic Specification Template

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Class Name DataSet

Method Name calculateSignificance

Parameters

declare and initialise in 0s variable dX of type Double
declare variable areTCalculator of type AreaUnderTDistribution
dX = (Math.abs(dR) * Math.sqrt(iN - 2)) / Math.sqrt(1 - dR2)
set dX in areTCalculator to dX
set iDof in areTCalculator to (iN - 2)
call calculateP() on areTCalculator
set dSig to 1 - 2 * areTCalculator.getdP();

Class Name DataSet

Method Name calculateStandardDeviation

Parameters

declare variable dSum and initialise in 0
dSum = iN * Math.pow(dB0, 2)
dSum += (2 * dB0 * dB1 * dSumX)
dSum -= (2 * dB0 * dSumY)
dSum += (Math.pow(dB1, 2) * dSumX2)
dSum -= (2 * dB1 * dSumXY)
dSum += dSumY2
dStandardDeviation = Math.sqrt((1 / (iN - 2)) * dSum)

Class Name DataSet

Method Name calculateRange

Parameters dX : double

declare dSqrt and initialise in 0

declare dSum and initialise in 0
declare variable areTCalculator of type AreaUnderTDistribution
dSum = dSumX2 - 2*dXAvg*dSumX + iN*Math.pow(dXAvg,2)
dSqrt = Math.sqrt(1 + (1/iN) + Math.pow(dXk - dXAvg, 2)/dSum)
set dP in areTCalculator to 0.35
set dof in areTCalculator to (iN - 2)
call calculateX on areTCalculator
dRan = areTCalculator.getdX() * dStandardDeviation * dSqrt

Class Name	DataSet
Method Name	DataSet
Parameters	dX : double

Initialise all class variables in 0.

Class Name	DataSet
Method Name	calculate
Parameters	

if iN is greater than 3
assign dSumX / iN to dAvgX
assign dSumY / iN to dAvgY
assign (dSumXY - iN * dXAvg * dYAvg) / (dSumX2 - iN * Math.pow(dXAvg, 2)) to dB1
assign dYAvg - dB1 * dXAvg to dB0
assign (iN * dSumXY - dSumX * dSumY) / Math.sqrt ((iN * dSumX2 - Math.pow(dSumX, 2)) * (iN * dSumY2 - Math.pow(dSumY, 2))) to dR
assign dR * dR to dR2
assign dB0 + dB1 * dXK to dYk
call calculateSignificance()
call calculateRange()
dLS = dYk + dRan

dLI = dYk - dRan
if dLI < 0
print error message for empty data set: “No se han encontrado datos válidos en el set de datos.”
return False
else
return True
else
print error message for empty data set: “No se han encontrado datos válidos en el set de datos."
return False

Class Name	DataSet
Method Name	addPair
Parameters	dX : double dY : double

add dX to dSumX
add dY to dSumY
add dX * dY to dSumXY
add dX * dX to dSumX2
add dY * dY to dSumY2
add 1 to iN
append dX to dXs
append dY to dYs

Class Name	DataSet
Method Name	toString

declare variable sFormat
assign “N = %d\nxk = %d\nr = %.5f\nr2 = %.5f\nb0 = %.5f\nb1 = %.5f\nyk = %.5f\nsig= %.10f\nran= %.5f\nLS = %.5f\nLI = %.5f\n” to sFormat
return sFormat.format(iN, dXk, dR, dR2, dB0, dB1, dYk, dSig, dRan, dLS, dLI);