

NM Lab Sheet

II Year / II Part

Faculty: Computer/Electrical

Labsheet#8

Objective

1. To find the $f(x)$ using **Lagrange Interpolation**.

Algorithm

1. Start
2. Input no. of observation, n
3. For i = 1 to n
 - Input X_i
 - Input Y_i
- Next i
4. Input X_p at which Y_p to be computed
5. Initialize $Y_p = 0$
6. For i = 1 to n
 - t=1
 - For j = 1 to n
 - If $j \neq i$
 - $t = t * (X_p - X_j) / (X_i - X_j)$
 - End If
 - Next j
 - $Y_p = Y_p + t * Y_i$
- Next i
7. Print Y_p as output
8. Stop

Lab Assignment#8

1. Use Lagrange's Interpolation formula, evaluate $f(3)$ from the table:

x	3.2	2.7	1.0	4.8	5.6
f(x)	22.0	17.8	14.2	38.3	51.7

2. Apply Lagrange's formula to find the polynomial $f(x)$ which passes through the points (0, 2), (1, 3), (2, 12), (5, 147) and hence find $f(3)$.
3. Find the missing value of collected water level using Lagrange's interpolation.

Time duration of rainfall (t) min	3.2	2.7	1.0	4.8
Collected water level (h) m	22.0	17.8	14.2	38.3

4. Use Lagrange's interpolation and estimate the square of 3.25 if

x	1	2	3	4	5
f(x)	1	4	9	16	25

5. Find $\log(656)$ using suitable method:

x	654	658	659	661
$\log_{10} x$	2.8156	2.8182	2.8189	2.8202