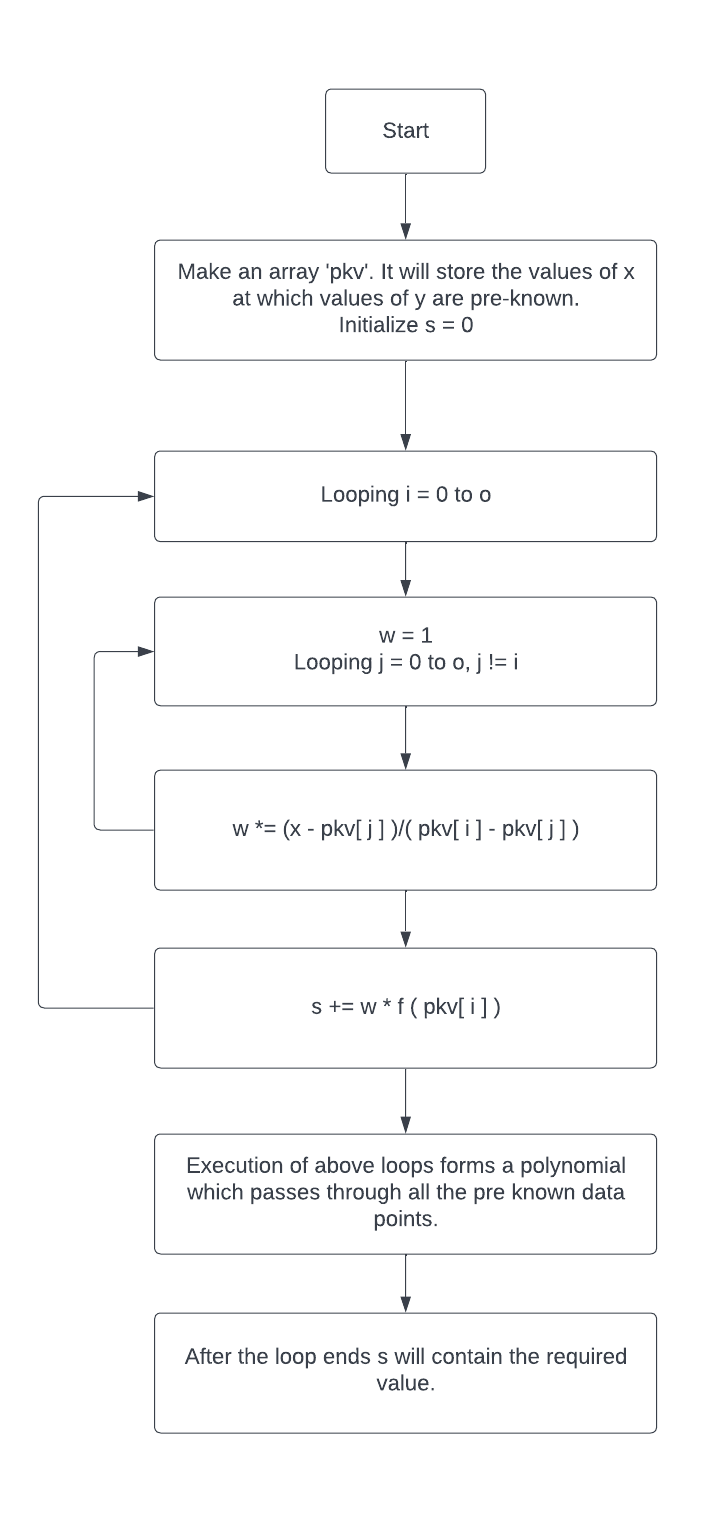
CO21BTECH11002

Aayush Kumar

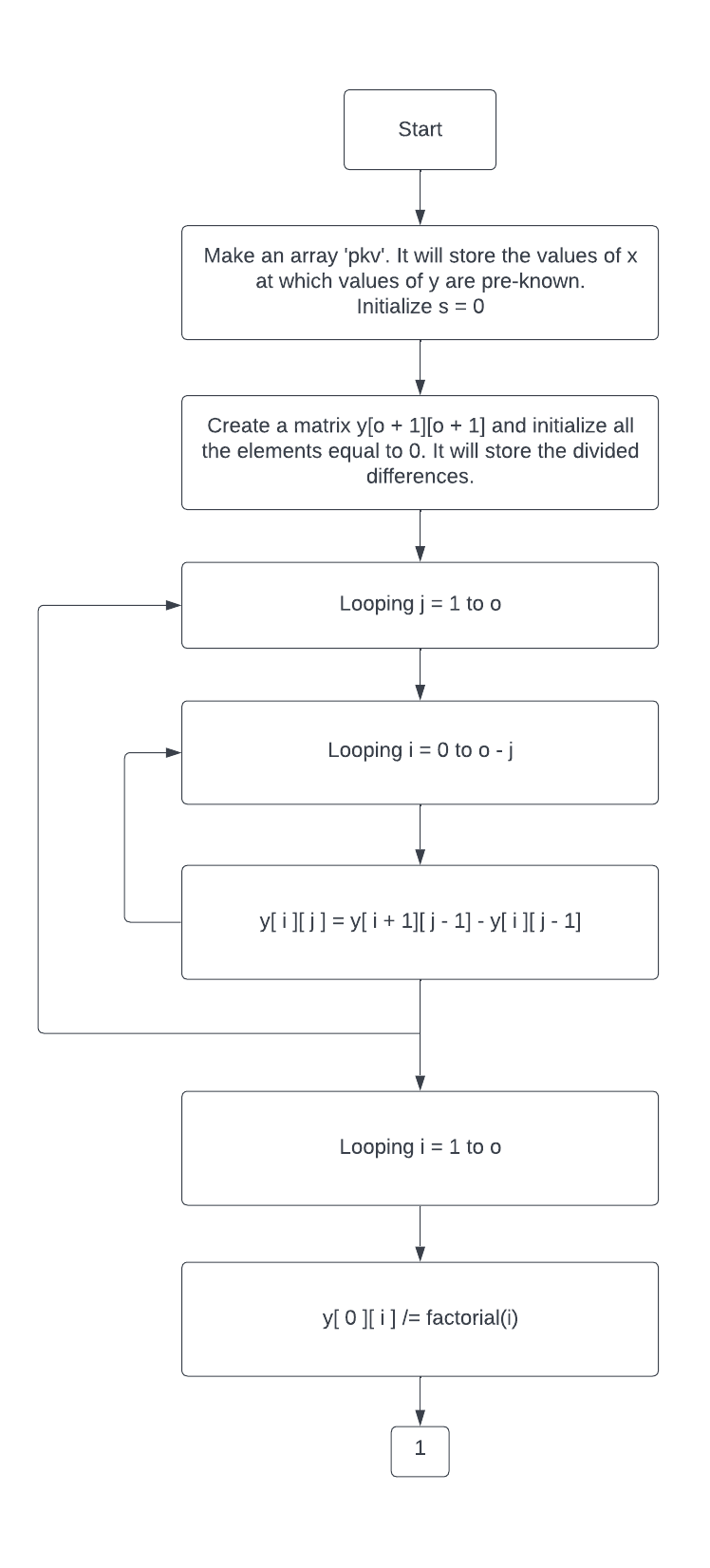
Assignment – Eigenvalues

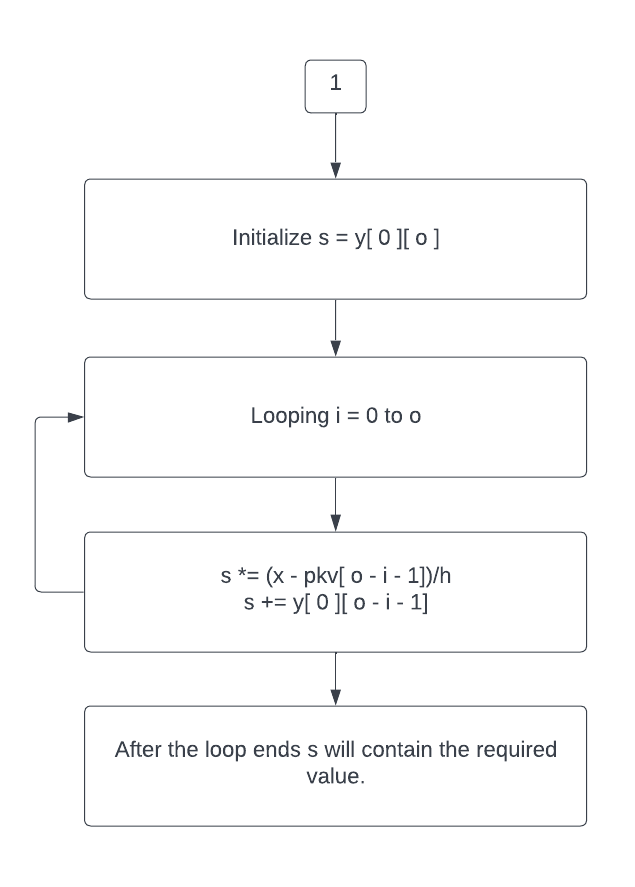
Algorithm:

1) Using Lagrange Polynomial:



2) Using Newton’s Polynomial:





Output:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| x | Method | Order | h | Value | Error |
| 1.53 | Lagrange Interpolation | 2 | 0.1 | 2.400892633 | -0.0044004770 |
|  |  |  | 0.05 | 2.4007770199 | -0.0005582266 |
|  |  | 4 | 0.1 | 2.4007638942 | -0.0000114947 |
|  |  |  | 0.05 | 2.4007636273 | -0.0000003774 |
|  | Newton Interpolation | 2 | 0.1 | 2.400892633 | -0.0044004770 |
|  |  |  | 0.05 | 2.4007770199 | -0.0005582266 |
|  |  | 4 | 0.1 | 2.4007638942 | -0.0000114947 |
|  |  |  | 0.05 | 2.4007636273 | -0.0000003774 |
| 2.01 | Lagrange Interpolation | 2 | 0.1 | 3.9929707066 | -0.0038845345 |
|  |  |  | 0.05 | 3.9928352800 | -0.0004927763 |
|  |  | 4 | 0.1 | 3.9928160095 | -0.0000101470 |
|  |  |  | 0.05 | 3.9928156176 | -0.0000003331 |
|  | Newton Interpolation | 2 | 0.1 | 3.9929707066 | -0.0038845345 |
|  |  |  | 0.05 | 3.9928352800 | -0.0004927763 |
|  |  | 4 | 0.1 | 3.9928160095 | -0.0000101470 |
|  |  |  | 0.05 | 3.9928156176 | -0.0000003331 |
| 2.76 | Lagrange Interpolation | 2 | 0.1 | 8.0977857944 | -0.0034901476 |
|  |  |  | 0.05 | 8.0975390309 | -0.0004427460 |
|  |  | 4 | 0.1 | 8.0975039178 | -0.0000091168 |
|  |  |  | 0.05 | 8.0975032038 | -0.0000002993 |
|  | Newton Interpolation | 2 | 0.1 | 8.0977857944 | -0.0034901476 |
|  |  |  | 0.05 | 8.0975390309 | -0.0004427460 |
|  |  | 4 | 0.1 | 8.0975039178 | -0.0000091168 |
|  |  |  | 0.05 | 8.0975032038 | -0.0000002993 |