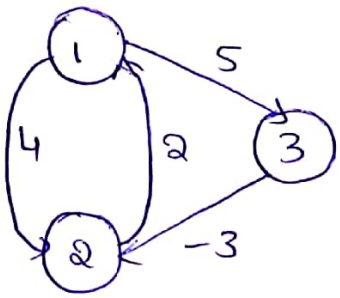
# ASSIGNMENT-1

## Flyod's Algorithm to find Shortest distance.




$$A^0 = \begin{array}{c} \\ 1 \\ 2 \\ 3 \end{array} \begin{array}{c} \begin{array}{ccc} 1 & 2 & 3 \end{array} \\ \begin{bmatrix} 0 & 4 & 5 \\ 2 & 0 & \infty \\ \infty & -3 & 0 \end{bmatrix} \end{array}$$

$$A^1 = \begin{array}{c} \\ 1 \\ 2 \\ 3 \end{array} \begin{array}{c} \begin{array}{ccc} 1 & 2 & 3 \end{array} \\ \begin{bmatrix} 0 & 4 & 5 \\ 2 & 0 & 7 \\ \infty & -3 & 0 \end{bmatrix} \end{array}$$

$A^0[2,0] \Rightarrow A^0[2,1] + A^0[1,2]$

$0 \Rightarrow 2 + 4$

$\Rightarrow 6 \quad \therefore 6 > 0$

$A^0[2,3] \Rightarrow A^0[2,1] + A^0[1,3]$

$\infty = 2 + 5 = 7$

$\therefore 7 > \infty$

Replace 7 with $\infty$

$$A^2 = \begin{array}{c} \\ 1 \\ 2 \\ 3 \end{array} \begin{array}{c} \begin{array}{ccc} 1 & 2 & 3 \end{array} \\ \begin{bmatrix} 0 & 4 & 5 \\ 2 & 0 & 7 \\ -1 & -3 & 0 \end{bmatrix} \end{array}$$

$A^1[1,3] \Rightarrow A^1[1,2] + A^1[2,3]$

$5 = 4 + 7 = 11$

No replace.

$A^1[3,1] \Rightarrow A^1[2,1] + A^1[3,2]$

$\infty = 2 + (-3)$

$= -1$

Scanned with CamScanner

$A^3 =$

| | 1 | 2 | 3 |
|---|---|---|---|
| 1 | 0 | 2 | 5 |
| 2 | 2 | 0 | 7 |
| 3 | -1 | -3 | 0 |

$A^2[1,2] \Rightarrow A^2[3,2] + A^2[1,3]$

$4 = -3 + 5$

$= 2$

$\therefore 2 < 4$

Replace 2 with 4.

$A^2[2,1] \Rightarrow A^2[2,3] + A^2[3,1]$

$2 = 7 - 1 = 6$

No replace

Scanned with CamScanner