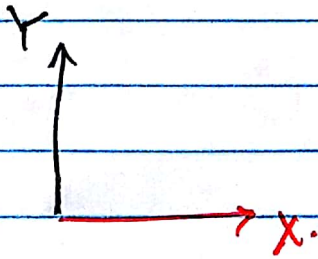
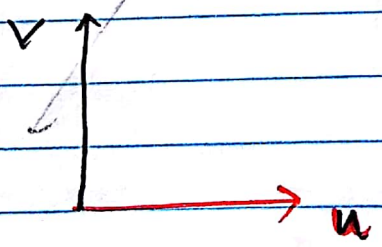
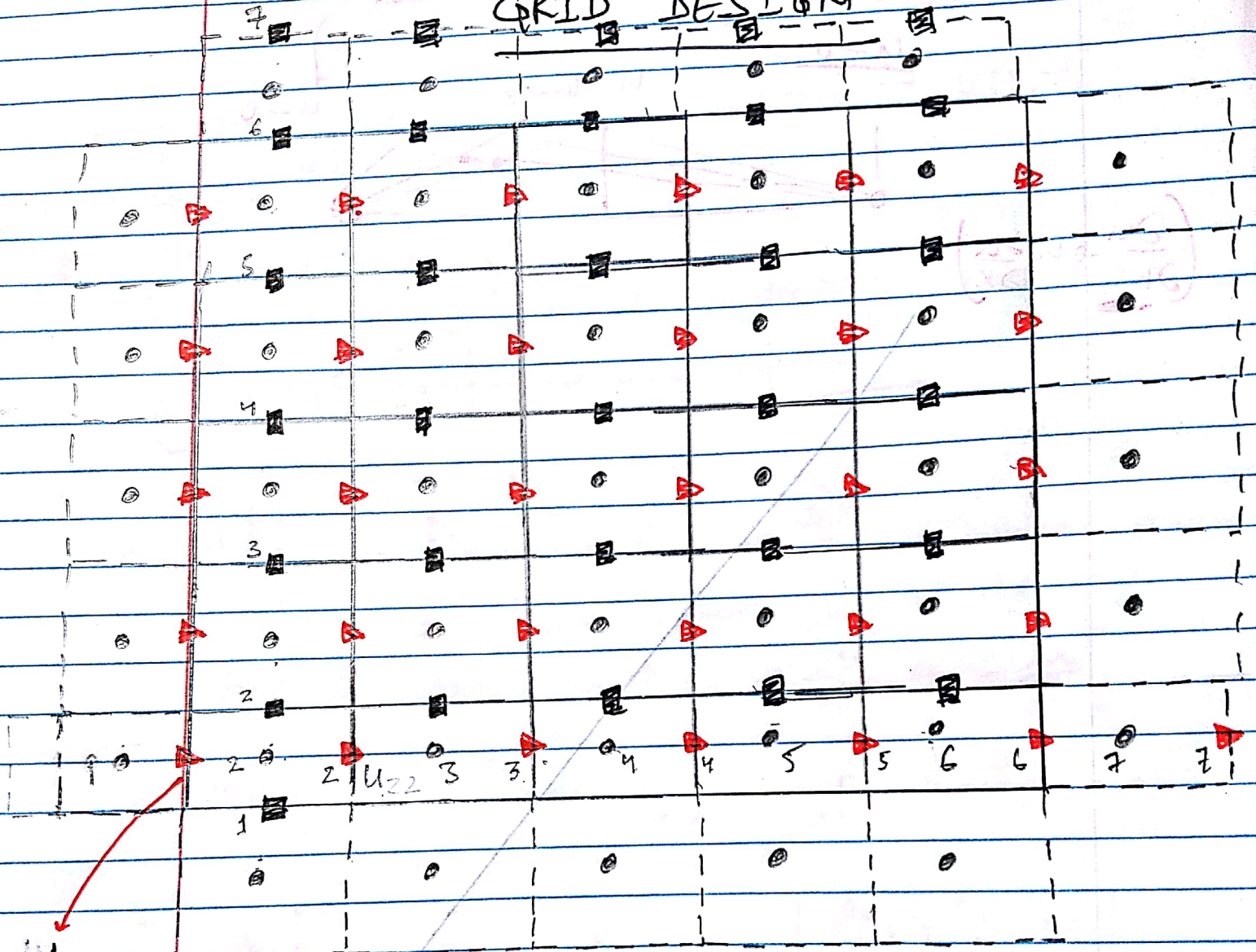


#

10 July 2018

GRID DESIGN.



▶ → u-velocity
■ → v-velocity

● - Pressure.

- * $NX =$ Total grid points in x (including ghost)
- * $NY =$ Total grid points in y (including ghost)

* on example given in previous page.

$$\boxed{NX = NY = 7}$$

* Physical cell faces
$$\begin{bmatrix} 1 - NX - 1 \\ 1 - NY - 1 \end{bmatrix}$$

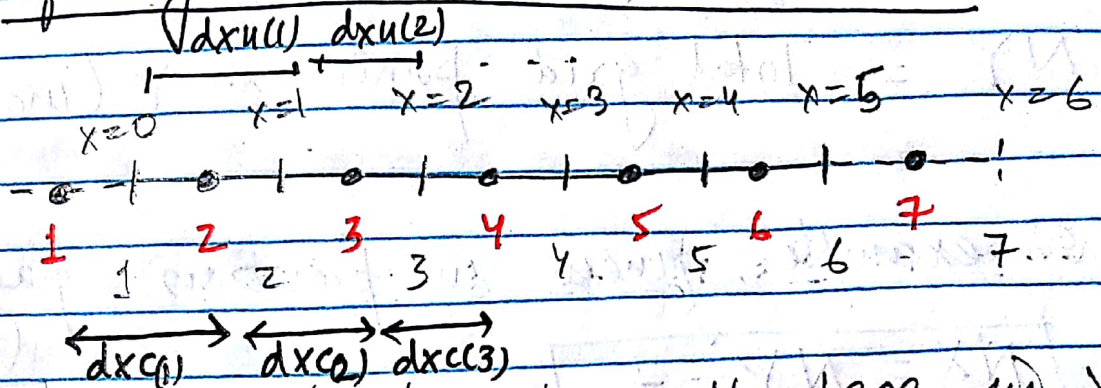
* Ghost cell faces
$$\begin{bmatrix} NX^{th} \\ NY^{th} \end{bmatrix}$$

* Physical cell centers
$$\begin{bmatrix} 2 - NX - 1 \\ 2 - NY - 1 \end{bmatrix}$$

* Ghost cell centers
$$\begin{bmatrix} 1^{st} NX^{th} \\ 1^{st} NY^{th} \end{bmatrix}$$

* Variables
$$\rightarrow \begin{bmatrix} u(NX, NY) \\ v(NX, NY) \\ p(NX, NY) \\ DENS(NX, NY) \end{bmatrix}$$

* Defining the x-direction variables



xu = Coordinates of cell face in x-direction

$$\begin{bmatrix} xu(1) = 0 \\ xu(2) = 1 \\ \vdots \\ \vdots \\ \vdots \end{bmatrix}$$

xc = Coordinates of cell centers in y-direction

ghost

$$\begin{bmatrix} xc(1) = xu(1) - \frac{1}{2} [xu(2) - xu(1)] \\ xc(2) = xu(1) + \frac{1}{2} [xu(2) - xu(1)] \\ \vdots \\ \vdots \\ \vdots \end{bmatrix}$$

RO. on

$[dxu]$ = Array of size $NX-1$ containing distance between x-cell faces

$$dxu(1) = xu(2) - xu(1)$$

$$dxu(2) = xu(3) - xu(2)$$

$$[dxu(i) = xu(i+1) - xu(i)]$$

dxu = Array of size $NX-1$ containing distance between cell centers

$$dxu(1) = xc(2) - xc(1)$$

$$dxu(2) = xc(3) - xc(2)$$

$$[dxu(i) = xc(i+1) - xc(i)]$$

* The same way is applied for y-direction

$$\begin{bmatrix} dxu \rightarrow dyv \\ dxu \rightarrow dyc \end{bmatrix}$$