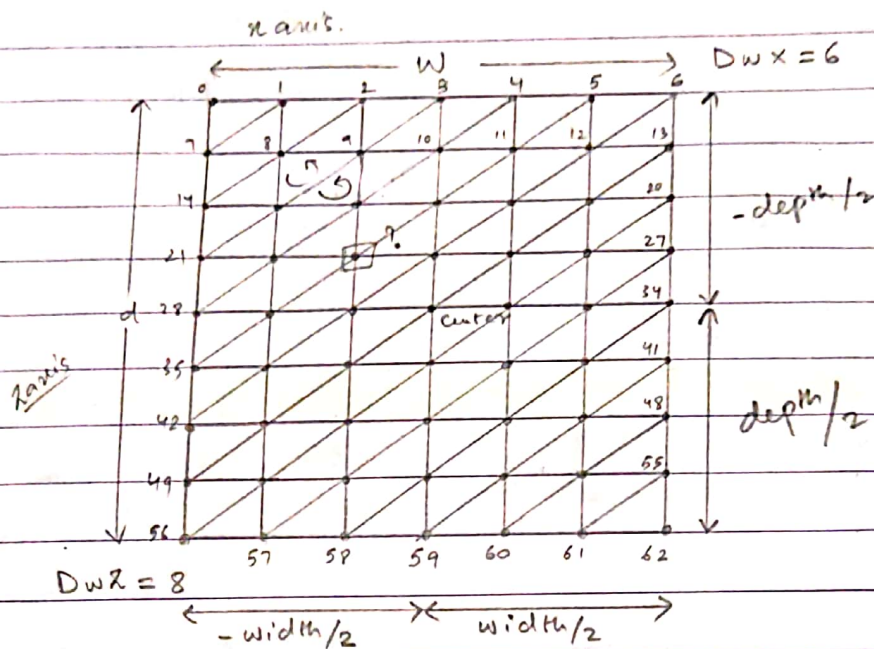


# Grid With Faces (paper work) Date



- The larger the values of  $Dwx$  &  $Dwz$ , the larger the resolution will be.
- This grid will get rendered row by row.
- Render the triangles as strips.
- Render triangles with counter clockwise and clockwise direction.

e.g.

|          |       |   |
|----------|-------|---|
| 0, 7, 1  | $t_1$ | } |
| 7, 8, 1  | $t_2$ |   |
| 1, 8, 2  | $t_3$ |   |
| 8, 9, 2  | $t_4$ |   |
| 2, 9, 3  | $t_5$ |   |
| 9, 10, 3 | $t_6$ |   |

notice the pattern.

variables

- $gwidth$
- $gdepth$
- $Dwx$
- $Dwz$
- color
- renderer

pass them to constructor of grid.



$$\text{no of vertices} = (Dwx + 1) \times (Dwz + 1)$$

First vertex is at

$$(-gwidth/2, 0, -gdepth/2)$$

and to get the next vertex increment it by:

$$\text{for } x \rightarrow \frac{x * gwidth}{Dwx} \quad \text{where } x = 0, 1, 2, \dots, Dwx$$

$$\text{for } z \rightarrow \frac{z * gdepth}{Dwz} \quad \text{where } z = 0, 1, 2, \dots, Dwz$$

To save these vertices of two dimensional grid into 1D array use the logic below:

index number for a vertex.

$$x + z * (\underbrace{Dwx + 1}_{\text{vertices in row}})$$

at which row?  
 then add how far we are from x?

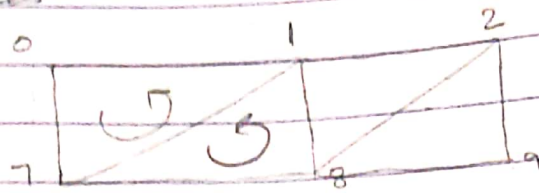
Example: calculate index no for vertex at 4th row ( $z=3$ ) & 3rd col ( $x=2$ )

$$2 + (3 * 7) = 2 + 21 = \boxed{23}$$



# Building logic for faces

To give vertices to make faces of triangles



$$\begin{aligned} & x + z * (Dw x + 1) \quad 0 \\ & x + (z+1) * (Dw x + 1) \quad 7 \\ & (x+1) + z * (Dw x + 1) \quad 1 \end{aligned}$$

test the logic

$$\begin{aligned} & (x+1) + z * (Dw x + 1) \quad 1 \\ & x + (z+1) * (Dw x + 1) \quad 7 \\ & (x+1) + (z+1) * Dw x + 1 \quad 8 \end{aligned}$$

when  $x=0, z=0$

$$\begin{aligned} & 0 + 0 * 7 = 0 \\ & 0 + 1 * 7 = 7 \\ & 1 + 0 * 7 = 1 \end{aligned}$$

$x=1, z=0$

$$\begin{aligned} & 1 + 0 * 7 = 1 \\ & 1 + 1 * 7 = 8 \\ & 2 + 0 * 7 = 2 \end{aligned}$$

$$\begin{aligned} & 0 + 1 * 7 = 7 \\ & 1 + 1 * 7 = 8 \\ & 1 + 0 * 7 = 1 \end{aligned}$$

$$\begin{aligned} & 1 + 1 * 7 = 8 \\ & 2 + 1 * 7 = 9 \\ & 2 + 0 * 7 = 2 \end{aligned}$$

when  $x=0, z=1$

$$\begin{aligned} & 0 + 1 * 7 = 7 \\ & 0 + 2 * 7 = 14 \\ & 1 + 0 * 7 = 1 \end{aligned}$$

$$\begin{aligned} & 0 + 2 * 7 = 7 \\ & 1 + 2 * 7 = 15 \\ & 1 + 0 * 7 = 1 \end{aligned}$$

The logic is correct ✓

