Edge-Cases

Case-IDs

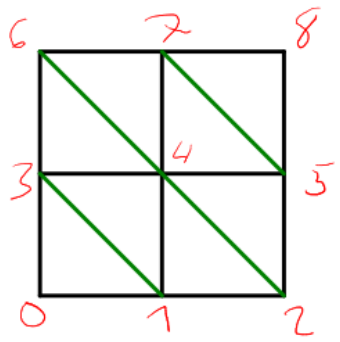
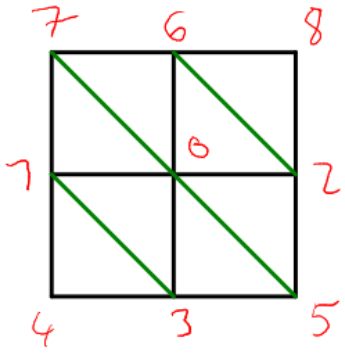
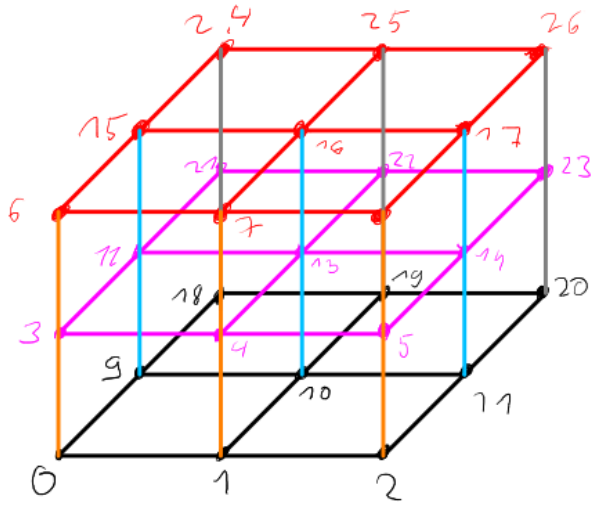
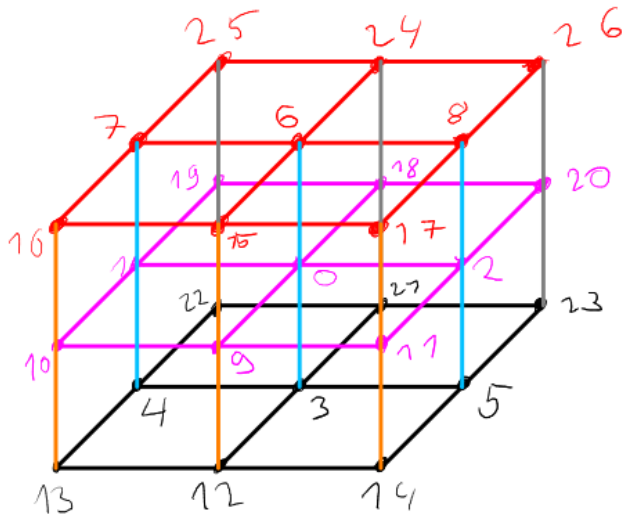
Per dimension the numbers increase and can be calculated with the formula

$$\sum_{i=0}^{dim} x_i * 3^i$$

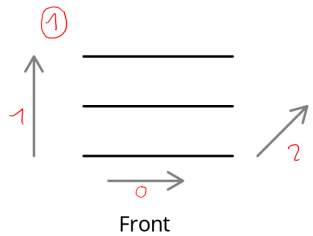
with i as the dimension and x_i as the classification case of the orientation (see below) with $x_i \in [0, 1, 2]$.
The Order of the Cases are:

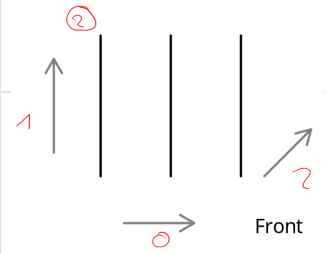
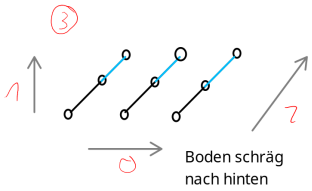
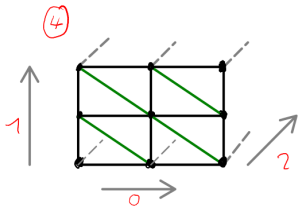
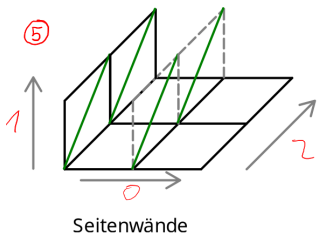
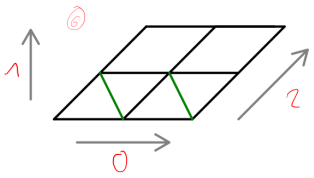
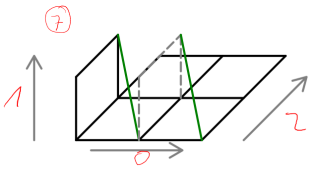
0		1		2	
Center	(+0)	Left	(+1)	Right	(+2)
Center	(+0)	Bottom	(+3)	Top	(+6)
Center	(+0)	Front	(+9)	Back	(+18)

Resulting in:

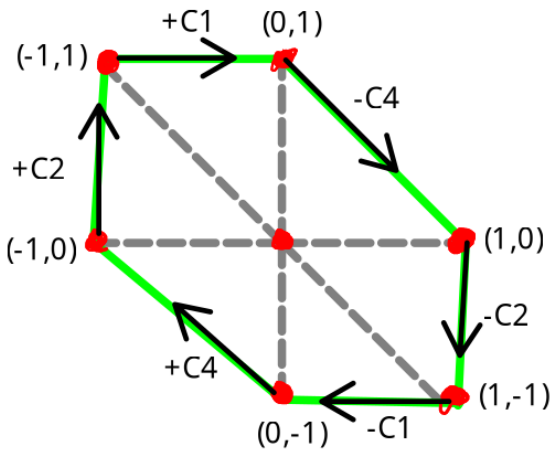
Vertex IDs	Case IDs
	
	

Edge Cases

Case	Coord-Offset	Dimension	max-Size in 3x3x3	Edge Formula (green for 2D)	Edge-Change Point-Change = CO*(-1)	
 Front	200]]	(1,0,0)	dim x-1 dim y dim z	18	x+y*(dim(x)-1) +(z * (dim(x)-1) * dim(y))	Edge_Indize-1

Case	Coord-Offset	Dimension	max-Size in 3x3x3	Edge Formula (green for 2D)	Edge-Change Point-Change = CO*(-1)	
	(0,1,0)	dim x dim y-1 dim z	18	*|(x)| + x + y*(dim(x)) +(z* dim(x) * (dim(y)-1))	Edge_Indize-(dim(x))	
	(0,0,1)	dim x dim y dim z-1	18	| (1,2)| + x + y * dim(x) + (z * dim(x) * dim(y))	Edge_Indize-(dim(x)*dim(y))	
	(-1,1,0)	dim x-1 dim y-1 dim z	12	*|(1,2)|+x-1+y(dim(x)-1)* + *|(3)|* + *(z*(dim(x)-1)* (dim(y)-1))	Edge_Indize-(dim(y)-1)	
	(0,1,1)	dim x dim y-1 dim z-1	12	|(1-4)| + x + y* dim(x) + z(dim(x) * (dim(y)-1))	Edge_Indize-(dim(x)*dim(y))	
	(-1,0,1)	dim x-1 dim y dim z-1	12	|(1-5)| + x-1 + y* (dim(x)-1) + z((dim(x)-1) * dim(y))	Edge_Indize-((dim(x)-1)* dim(y))+1	
	(-1,1,1)	dim x-1 dim y-1 dim z-1	8	|(1-6)| + x-1 + y* (dim(x)-1) + z((dim(x)-1) * (dim(y)-1))	Edge_Indize- **?**	

Link Cases 2D



Link Edges 2D - Neighbors

2D (3x3)

Vertex ID	Case ID	List of Neighbors (numbers ⇔ Vertex ID)	Edge Case List shift to point of neighbor list then case
4	0	[3,1,2,5,7,6]	[C4,C2,C1,-C4,-C2,-C1]
1	1	[0,3,4,2]	[C2,C1,-C4,∅]
7	2	[6,4,5,8]	[∅,C4,-C1,-C2]
3	3	[0,1,4,6]	[∅,-C1,-C2,-C4]
0	4	[1,3]	[∅,-C4]
6	5	[7,3,4]	[-C2,∅,-C1]
5	6	[7,8,2,4]	[C1,∅,C4,C2]
2	7	[1,5,4]	[C2,∅,C1]
8	8	[7,5]	[∅,C4]

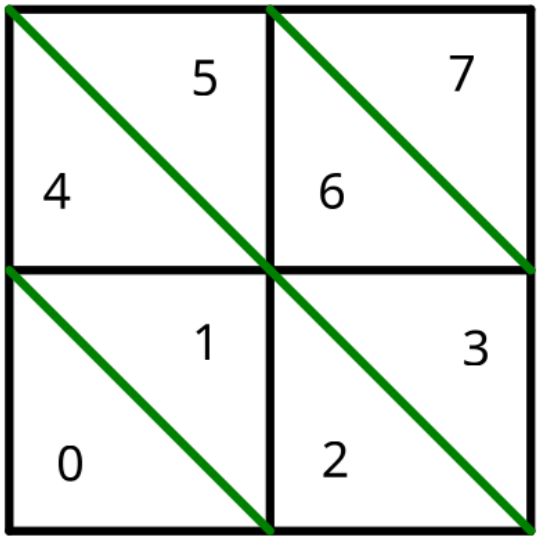
⇒ Neighbors are ordered counterclockwise expect V1 and V5.

- V6 7,3,4 not 7,4,3? wtf

Star Areas 2D (Triangles == Star)

Indices of Triangles

Vertex IDs



Area Cases

- For formulas:
  - For numbers of triangles in <x,y> $S = (dim(x) - 1) * 2 * y$

Case	Size	max-Size in 3x3x3	Edge Formula (Starting point at A) get odd through $even + 1$	Shift to start point		
	250]]	(dim(x)-1)*2 dim(y)-1 dim(z)	24	**even** $x * 2 + 2y(dim(x) - 1)$ $+2z(dim(x) - 1)(dim(y) - 1)$ **odd** $even - 1$	![[A1_shift 1.png	80]] $B_0 \Rightarrow A : (+0, -$ $B_1 \Rightarrow D : (+1, -$ $C_1 \Rightarrow D : (+0, -$ $D_0 \Rightarrow A : (-1, +$

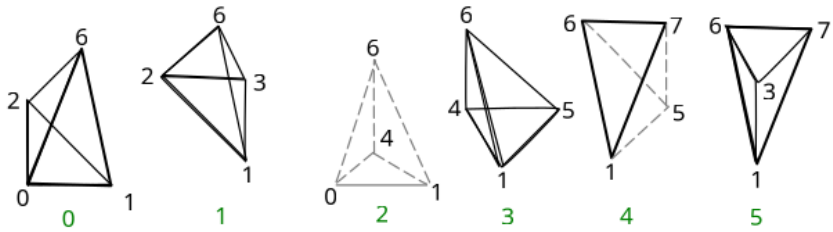
Case	Size	max-Size in 3x3x3	Edge Formula (Starting point at A) get odd through $even + 1$	Shift to start point		
	(dim(x)-1)*2 dim(y) dim(z)-1	24	**even** $x * 2 + 2y(dim(x) - 1)$ $+2z(dim(x) - 1)dim(y)$ **odd** $even - 1$	![[A2_shift 1.png	80]] $B_0 \Rightarrow A : (+0, +0, -1)$ $B_1 \Rightarrow D : (+1, 0, -1)$ $C_1 \Rightarrow D : (+0, +0, -1)$ $D_0 \Rightarrow A : (-1, +0, +0)$	
	dim(x) dim(y)-1 (dim(z)-1)*2	24	**even** $2x + 2y * dim(x)$ $+2z * dim(x) * (dim(y) - 1)$ **odd** $even + 1$	![[A3_shift 1.png	80]] $B \Rightarrow A : (+0, -1, +0)$ $C \Rightarrow A : (+0, -1, -1)$ $D \Rightarrow A : (+0, +0, -1)$	
	(dim(x)-1)*2 dim(y)-1 dim(z)-1	16	**even** $2(x - 1) + 2y(dim(x) - 1)$ $+2z(dim(x) - 1)(dim(y) - 1)$ **odd** $even + 1$	![[A4_shift 1.png	80]] $B \Rightarrow A : (+0, 1, +0)$ $C \Rightarrow A : (+1, -1, -1)$ $D \Rightarrow A : (+1, +0, -1)$	
	(dim (x)-1)*2 dim (y)-1 dim (z)	16	**even** $2x + 2y(dim(x) - 1)$ $+2z(dim(x) - 1)(dim(y) - 1)$ **odd** $even - 1$	![[A5_shift 1.png	80]] $B_0 \Rightarrow A : (+0, -1, -1)$ $B_1 \Rightarrow D : (+1, -1, -1)$ $C_1 \Rightarrow D : (+0, -1, -1)$ $D_0 \Rightarrow A : (-1, +0, +0)$	
	dim(x)-1 (dim(y)-1) (dim(z)-1)*2	16	**even** $2(x - 1) + 2y(dim(x) - 1)$ $+2z(dim(x) - 1)(dim(y) - 1)$ **odd** $even + 1$	![[A6_shift 1.png	80]] $B \Rightarrow A : (+1, -1, +0)$ $C \Rightarrow A : (+1, -1, -1)$ $D \Rightarrow A : (+0, +0, -1)$	

Idee 2(x-1) ausmultilizieren

Optimierungs Ideen

- für ungerade Dreiecke in Case 1 die Shifts direkt in den Offset
- Formeln kürzen/zusammenfassen
-

Tetrahedrons 3D

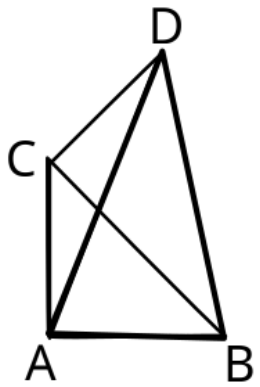
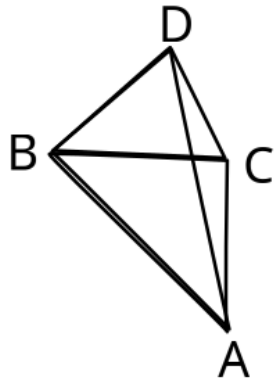
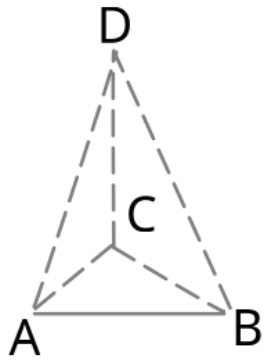
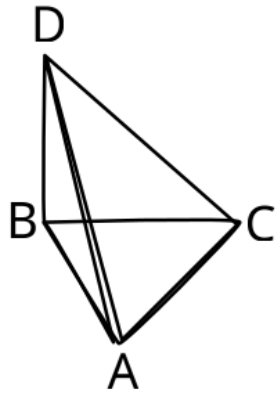
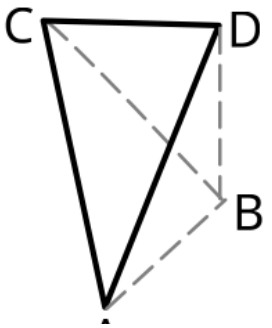


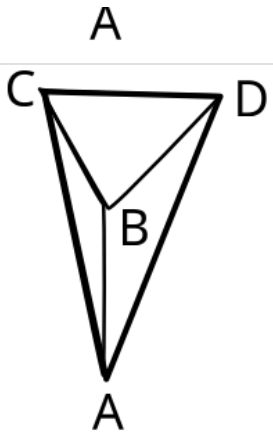
- **Order:** iterate x, then y, then z
- Grundformel

$$6x + 6y(dim(x) - 1) + 6z(dim(x) - 1)(dim(y) - 1) + SHIFT$$

  - Modellierung in Code:
    - Shift immer zu unten vorne links

- Somit wird die Formel immer gleich bis auf den Offset der == case Nummer ist

Case	Pic	Formular	Shifts to starting point
0		$6x + 6y(dim(x) - 1)$ $+6z(dim(x) - 1)(dim(y) - 1)$	$B \Rightarrow A : (-1, +0, +0)$ $C \Rightarrow A : (+0, -1, +0)$ $D \Rightarrow A : (+0, -1, -1)$
1		$6(x - 1) + 6y(dim(x) - 1)$ $+6z(dim(x) - 1)(dim(y) - 1) + 1$	$B \Rightarrow A : (+1, -1, 0)$ $C \Rightarrow A : (+0, -1, +0)$ $D \Rightarrow A : (+1, -1, -1)$
2		$6x + 6y(dim(x) - 1)$ $+6z(dim(x) - 1)(dim(y) - 1) + 2$	$B \Rightarrow A : (-1, +0, +0)$ $C \Rightarrow A : (+0, 0, -1)$ $D \Rightarrow A : (+0, -1, -1)$
3		$6(x - 1) + 6y(dim(x) - 1)$ $+6z(dim(x) - 1)(dim(y) - 1) + 3$	$B \Rightarrow A : (+1, +0, -1)$ $C \Rightarrow A : (+0, +0, -1)$ $D \Rightarrow A : (+1, -1, -1)$
4		$6(x - 1) + 6y(dim(x) - 1)$ $+6z(dim(x) - 1)(dim(y) - 1) + 4$	$B \Rightarrow A : (+0, +0, -1)$ $C \Rightarrow A : (+1, -1, -1)$ $D \Rightarrow A : (+0, -1, -1)$

			point
5		$6(x-1)+6y(dim(x)-1)$ $+6z(dim(x)-1)(dim(y)-1)+5$	$B \Rightarrow A:(+0,-1,+0)$ $C \Rightarrow A:(+1,-1,-1)$ $D \Rightarrow A:(+0,-1,-1)$

Tetrahedron Cases

Link Cases 3D

Link Triangles 3D - Neighbors

3D (3x3x3)

Vertex ID	Case ID	List of Neighbor Triangles	Edge Case List [Point von Case:Case] von 16 an umgedreht
13	0	[13,116,84,101,68,69, 117,41,85,100,40,12, 74,75,50,51,90,91, 106,107,10,11,30,31, 9,80,62, 79,57,14, 89,29, 42,102, 109, 114]	[$D_1:0, A:5, A_0:3, D_1:4, A_0:2, A_1:2,$ $A_1:5, D_1:1, A_1:3, D_0:4, D_0:1, D_0:0$ $C_0:3, C_1:3, C_0:2, C_0:2, B_0:4, B_1:4,$ $C_0:5, C_1:5, B_0:0, B_1:0, B_0:1, B_1:1$ $C_1:0, B_0:3, B_0:2$ $D_1:3, D_1:2, A_0:0,$ $C_1:4, C_1:1,$ $A_0:1, A_0:4,$ $D_1:5,$ $B_0:5$]
12	1	[72,73,48,49,88,89, 104,105,8,9,28,29, 77,55,12, 40,66,100, 67,112,60]	$C_0:3, C_1:3, C_0:2, C_0:2, B_0:4, B_1:4,$ $C_0:5, C_1:5, B_0:0, B_1:0, B_0:1, B_1:1$ $D_1:3, D_1:2, A_0:0$ $A_0:1, A_0:3, A_0:4$ $A_0:2, B_0:5, B_0:2$
14	2	[15,118,86,103,70,71, 119,43,87,102,42,14, 11,82,64, 91,52,53,31,111,59]	$D_1:0, A:5, A_0:3, D_1:4, A_0:2, A_1:2,$ $A_1:5, D_1:1, A_1:3, D_0:4, D_0:1, D_0:0$ $C_1:0, B_0:3, B_0:2$ $C_1:4, C_0:2, C_1:2, C_1:1, D_1:5, D_1:2$
10	3	[9,112,80,97,62,63, 113,37,81,96,36,8, 25,105,51,26,75,10, 27,38,98]	$D_1:0, A:5, A_0:3, D_1:4, A_0:2, A_1:2,$ $A_1:5, D_1:1, A_1:3, D_0:4, D_0:1, D_0:0$ $C_1:2, D_1:5, D_1:2, B_0:1, D_1:3, A_0:0,$ $B_1:1, B_0:1, A_0:4$
9	4	[24,73,49,8,25,36, 60,96,61]	$1:B_0, 3:D_1, 2:D_1, 0:A_0, 1:B_1, 1:A_0,$ $2:A_0, 4:A_0, 2:A_1$
11	5	[27,10,11,107,53,114, 82,99,64,65,115,39, 83,98,38]	$1:C_1, 0:D_0, 0:D_1, 5:D_1, 2:D_1, 5:A_0,$ $3:A_0, 4:D_1, 2:A_0, 2:A_1, 5:A_1, 1:D_1,$ $3:A_1, 4:D_0, 1:D_0$
16	6	[78,79,56,57,94,95, 110,111,14,15,34,35, 93,13,33,84,44,68, 45,118,46]	$3:C_0, 3:C_1, 2:C_0, 2:C_1, 4:B_0, 4:B_1,$ $5:C_0, 5:C_1, 0:B_0, 0:B_1, 1:B_0, 1:B_1,$ $4:C_1, 0:C_1, 1:C_1, 3:B_0, 1:D_0, 2:B_0,$ $1:D_1, 5:B_0, 1:A_0$
15	7	[76,77,54,55,92,93, 108,109,12,13,32,33, 116,44,66]	$3:C_0, 3:C_1, 2:C_0, 2:C_1, 4:B_0, 4:B_1,$ $5:C_0, 5:C_1, 0:B_0, 0:B_1, 1:B_0, 1:B_1,$ $5:B_0, 1:A_0, 2:B_0$
17	8	[95,15,58,59,35,86, 46,70,47]	$4:C_1, 0:C_1, 2:C_0, 2:C_1, 1:C_1, 3:A_0,$ $1:D_0, 2:A_0, 1:D_1$
4	9	[5,108,76,93,56,57, 109,29,77,92,28,	$0:D_1, 5:A_0, 3:A_0, 4:D_1, 2:A_0, 2:A_1,$ $5:A_1, 1:D_1, 3:A_1, 4:D_0, 0:D_0,$

Vertex ID	Case ID	List of Neighbor Triangles	Edge Case List [Point von Case:Case] von 16 an umgedreht
		4,1,72,50,2,3, 106,30,6,94]	$0:D_0, 0:C_1, 3:B_0, 2:B_0, 0:B_0, 0:B_1, 5:B_0, 1:A_0, 0:A_0, 4:A_0$
3	10	[0,1,104,28,48,4, 54,92,55]	$0:B_0, 0:B_1, 5:B_0, 1:A_0, 2:B_0, 0:A_0, 2:A_0, 4:A_0, 2:A_1$
5	11	[3,74,30,52,31,7, 110,78,95,58,59,111, 79,94,6]	$0:C_1, 3:B_0, 1:D_0, 2:B_0, 1:D_1, 0:D_1, 5:A_0, 3:A_0, 4:D_1, 2:A_0, 2:A_1, 5:A_1, 3:A_1, 4:D_0, 0:D_0$
1	12	[1,104,72,89,50,51, 105,25,73,88,24,0, 2,26,90]	$0:D_1, 5:A_0, 3:A_0, 4:D_1, 2:A_0, 2:A_1, 5:A_1, 1:D_1, 3:A_1, 4:D_0, 1:D_0, 0:D_0, 0:A_0, 1:A_0, 4:A_0$
0	13	[0,24,48,88,49]	$0:A_0, 1:A_0, 2:A_0, 4:A_0, 2:A_1$
2	14	[3,106,74,91,52,53, 107,27,75,90,26,2]	$0:D_1, 5:A_0, 3:A_0, 4:D_1, 2:A_0, 2:A_1, 5:A_1, 1:D_1, 3:A_1, 4:D_0, 1:D_0, 0:D_0$
7	15	[5,76,32,56,33,6, 7,110,34]	$0:C_1, 3:B_0, 1:D_0, 2:B_0, 1:D_1, 0:B_0, 0:B_1, 5:B_0, 1:A_0$
6	16	[4,5,108,32,54]	$0:B_0, 0:B_1, 5:B_0, 1:A_0, 2:B_0$
8	17	[7,78,34,58,35]	$0:C_1, 3:B_0, 1:D_0, 2:B_0, 1:D_1$
22	18	[82,83,62,63,98,99, 114,115,18,19,42,43, 97,17,41,20,21, 117,69,87,22]	$3:C_0, 3:C_1, 2:C_0, 2:C_1, 4:B_0, 4:B_1, 5:C_0, 5:C_1, 0:B_0, 0:B_1, 1:B_0, 1:B_1, 4:C_1, 0:C_1, 1:C_1, 0:D_0, 0:D_1, 5:D_1, 2:D_1, 3:D_1, 0:A_0$
21	19	[80,81,60,61,96,97, 112,113,16,17,40,41, 85,67,20]	$3:C_0, 3:C_1, 2:C_0, 2:C_1, 4:B_0, 4:B_1, 5:C_0, 5:C_1, 0:B_0, 0:B_1, 1:B_0, 1:B_1, 3:D_1, 2:D_1, 0:A_0$
23	20	[99,19,64,65,43,22, 23,119,71]	$4:C_1, 0:C_1, 2:C_0, 2:C_1, 1:C_1, 0:D_0, 0:D_1, 5:D_1, 2:D_1$
19	21	[37,16,17,113,63,38, 83,18,39]	$1:C_1, 0:D_0, 0:D_1, 5:D_1, 2:D_1, 1:B_0, 3:D_1, 0:A_0, 1:B_1$
18	22	[36,81,61,16,37]	$1:B_0, 3:D_1, 2:D_1, 0:A_0, 1:B_1$
20	23	[39,18,19,115,65]	$1:C_1, 0:D_0, 0:D_1, 5:D_1, 2:D_1$
25	24	[101,21,68,69,45,86, 87,102,103,118,119,22, 23,46,47]	$4:C_1, 0:C_1, 2:C_0, 2:C_1, 1:C_1, 3:C_0, 3:C_1, 4:B_0, 4:B_1, 5:C_0, 5:C_1, 0:B_0, 0:B_1, 1:B_0, 1:B_1$
24	25	[84,85,66,67,100,101, 116,117,20,21,44,45]	$3:C_0, 3:C_1, 2:C_0, 2:C_1, 4:B_0, 4:B_1, 5:C_0, 5:C_1, 0:B_0, 0:B_1, 1:B_0, 1:B_1$
26	26	[103,23,70,71,47]	$4:C_1, 0:C_1, 2:C_0, 2:C_1, 1:C_1$

Star (== Tetrahedrons) 3D

Punkt 1 = B:0,A:1,B:2,A:3,A:4,A:5
Punkt 6 = D:0,D:1,D:2,D:3,C:4,C:5,
Punkt 7 = D:4,D:5
Punkt 2 = C:0,B:1
Punkt 3 = C:1,B:5

Vertex ID	Case ID	List of Neighbor Tetrahedrons	Tetra Case List [Point von Case:Case]
13	0	[36,37,38,39,40,41,6,7,8,9,10,11,42, 44,30,31,25,29,20,21,15,16,4,5]	[B:0,A:1,B:2,A:3,A:4,A:5, D:0,D:1,D:2,D:3,C:4,C:5, A:0,A:2,C:0,B:1,C:1,B:5, C:2,B:3,C:3,B:4,D:4,D:5]
12	1	[0,1,2,3,4,5,24,25,36,38,14,15]	[D:0,D:1,D:2,D:3,C:4,C:5 C:0,B:1,A:0,A:2,C:2,B:3]
14	2	[42,43,44,45,46,47,21,22,10,11,31,35]	[B:0,A:1,B:2,A:3,A:4,A:5 C:3,B:4,D:4,D:5,C:1,B:5]
10	3	[24,25,26,27,28,29,30,32,3,4,8,9]	[B:0,A:1,B:2,A:3,A:4,A:5 A:0,A:2,C:3,B:4,C:2,B:3]
9	4	[2,3,24,26]	[C:2,B:3,A:0,A:2]

Vertex ID	Case ID	List of Neighbor Tetrahedrons	Tetra Case List [Point von Case:Case]
11	5	[30,31,32,33,34,35,9,10]	[B:0,A:1,B:2,A:3,A:4,A:5, C:3,B:4]
16	6	[18,19,20,21,22,23,16,17,42,43,37,41]	[D:0,D:1,D:2,D:3,C:4,C:5, D:4,D:5,C:0,B:1,C:1,B:5]
15	7	[12,13,14,15,16,17,36,37]	[D:0,D:1,D:2,D:3,C:4,C:5, C:0,B:1]
17	8	[22,23,43,47]	[D:4,D:5,C:1,B:5]
4	9	[12,13,14,15,16,17,1,5,6,7,18,20]	[B:0,A:1,B:2,A:3,A:4,A:5, C:1,B:5,C:0,B:1,A:0,A:2]
3	10	[0,1,12,14]	[C:0,B:1,A:0,A:2]
5	11	[18,19,20,21,22,23,7,11]	[B:0,A:1,B:2,A:3,A:4,A:5, C:1,B:5]
1	12	[0,1,2,3,4,5,6,8]	[B:0,A:1,B:2,A:3,A:4,A:5, A:0,A:2]
0	13	[0,2]	[A:0,A:2]
2	14	[6,7,8,9,10,11]	[B:0,A:1,B:2,A:3,A:4,A:5]
7	15	[13,17,18,19]	[C:1,B:5,C:0,B:1]
6	16	[12,13]	[C:0,B:1]
8	17	[19,23]	[C:1,B:5]
22	18	[30,31,32,33,34,35,28,29,39,40, 44,45]	[D:0,D:1,D:2,D:3,C:4,C:5, D:4,D:5,C:3,B:4,C:2,B:3]
21	19	[24,25,26,27,28,29,38,39]	[D:0,D:1,D:2,D:3,C:4,C:5, C:2,B:3]
23	20	[34,35,45,46]	[D:4,D:5,C:3,B:4]
19	21	[27,28,32,33]	[C:3,B:4,C:2,B:3]
18	22	[26,27]	[C:2,B:3]
20	23	[33,34]	[C:3,B:4]
25	24	[42,43,44,45,46,47,40,41]	[D:0,D:1,D:2,D:3,C:4,C:5, D:4,D:5]
24	25	[36,37,38,39,40,41]	[D:0,D:1,D:2,D:3,C:4,C:5]
26	26	[46,47]	[D:4,D:5]

Optimierungsideen

- LUT_Vertex_triangle: move planes to preprocessing constructor
- get vertex triangle: ausklammern, dx-1, dy-1 und dz-1 vorberechnen
- tetrahedrons 3D: formeln und offsets zusammenfassen
  - Cube in A bis H aufteilen, offset zu A und immer gleiche formel

Fehler counter

6

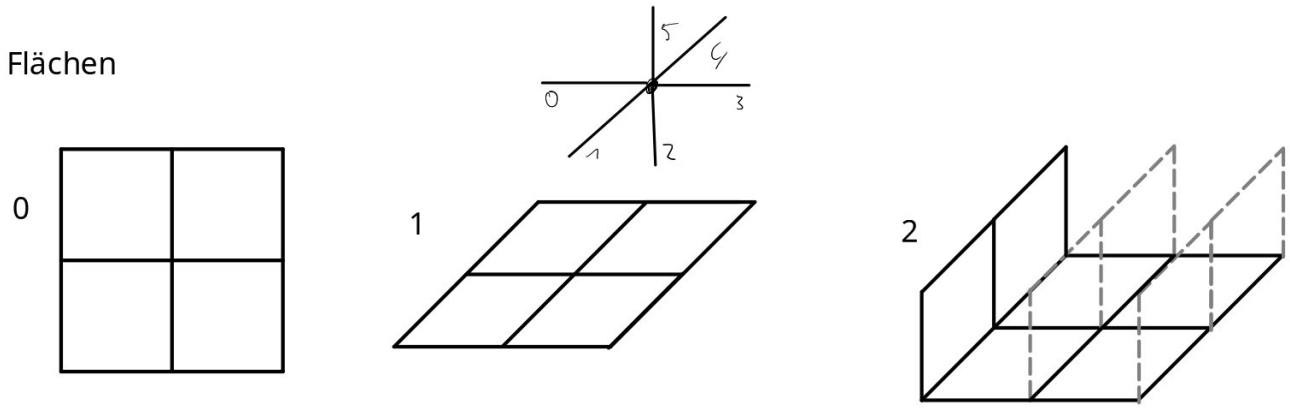
Ideen

liniare formeln für Edges für alle 0er cases
- wissen über jede Zeile

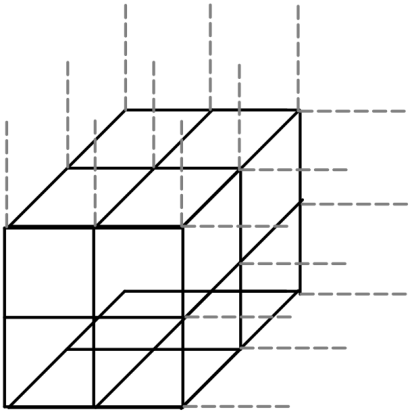
- Mosmel complex
  - braucht alle triangles an einem edge
  - Alles au perspektive edges und triangles
  - boundary triangles
  - trinangle edges
  - trinangle stars
  -
- GetVertexNeighbors für cubical
  - keine simplices

- vertex, edges, quads, cubes
- jeder cube 6 vertex and edge nachbarn

Quads



Quad Extension

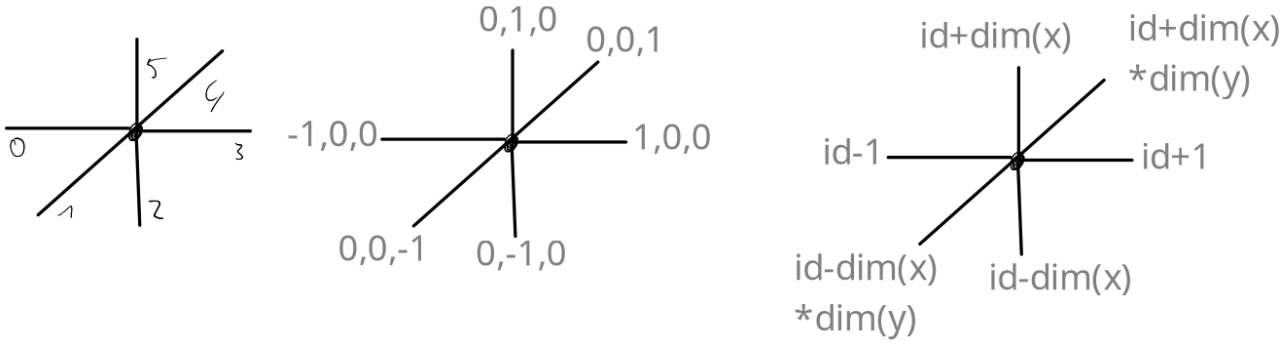


We add extra edges to make some index magic. The edges, Areas etc can be calculated by the smallest index of the vertex of the construct (Edge, Area) and the formula:

$$n * |v| + index$$

with n as the case, $|v|$ as the number of vertices and $index$ as the smallest index of the construct.
Extra Edges in z-orientation are possible but unnecessary. **IS THERE A REASON THAT THEY ARE NEEDED?**

Coordinate and Index Shifts



Edge	Shift	Dim
0	{-1,0,0}	-1
1	{0,0,-1}	-(dx*dy)
2	{0,-1,0}	-dx
3	{1,0,0}	+1
4	{0,0,1}	+(dx*dy)

Edge	Shift	Dim
5	{0,1,0}	+dx

Cases edges and neighbor

V	C	Edge Directions	# Size
0	13	3,4,5	3
1	12	3,4,5,0	4
2	14	4,5,0	3
3	10	2,3,45	4
4	9	2,3,4,5,0	5
5	11	2,4,5,0	4
6	16	2,3,4	3
7	15	0,2,3,4	4
8	17	0,2,4	3
9	4	1,3,4,5	4
10	3	3,4,5,0,1	5
11	5	4,5,0,1	4
12	1	1,2,3,4,5	5
13	0	0,1,2,3,4,5	6
14	2	4,5,0,1,2	5
15	3	1,2,3,4	4
16	6	0,1,2,3,4	5
17	8	0,1,2,4	4
18	22	3,5,1	3
19	21	3,5,0,1	4
20	23	5,0,1	3
21	19	5,1,2,3	4
22	18	5,0,1,2,3	5
23	20	5,0,1,2	4
24	25	1,2,3	3
25	24	0,1,2,3	4
26	26	0,1,2	3

V	C	Area Span	# Size
0	13	{3,5},{3,4},{4,5}	3
1	12	{0,5}{3,5}{0,4}{3,4}{4,5}	5
2	14	{0,5}{0,4}{4,5}	3
3	10	{2,3}{3,5}{3,4}{2,4}{4,5}	5
4	9	{0,2}{2,3}{3,5}{5,0}{3,4}{4,0}{2,4}{4,5}	8
5	11	{3,5}{5,0}{4,0}{2,4}{4,5}	5
6	16	{2,3}{3,4}{2,4}	3
7	15	{0,2}{2,3}{3,4}{4,0}{2,4}	5
8	17	{0,2}{4,0}{2,4}	3
9	4	{3,5}{1,3}{3,4}{4,5}{5,1}	5
10	3	{3,5}{5,0}{3,4}{4,0}{4,5}	5
11	5	{5,0}{0,1}{4,0}{4,5}{5,1}	5
12	1	{2,3}{3,5}{1,3}{3,4}{4,5}{5,1}	6
13	0	{0,2}{2,3}{3,5}{5,0}{0,1}{1,3}{3,4}{4,0}{1,2}{2,4}{4,5}{5,1}	12
14	2	{0,2}{5,0}{0,1}{4,0}{1,2}{2,4}{4,5}{5,1}	8
15	3	{2,3}{1,3}{3,4}{1,2}{2,4}	5
16	6	{0,2}{2,3}{0,1}{1,3}{3,4}{4,0}{1,2}{2,4}	8

V	C	Area Span	# Size
17	8	{0,2}{0,1}{4,0}{1,2}{2,4}	5
18	22	{3,5}{1,3}{5,1}	3
19	21	{3,5}{5,0}{0,1}{1,3}{5,1}	5
20	23	{5,0}{0,1}{5,1}	3
21	19	{2,3}{3,5}{1,3}{3,4}{1,2}{5,1}	6
22	18	{0,2}{2,3}{3,5}{5,0}{0,1}{1,3}{1,2}{5,1}	8
23	20	{0,2}{5,0}{0,1}{4,0}{1,2}{5,1}	6
24	25	{2,3}{1,3}{1,2}	3
25	24	{0,2}{2,3}{0,1}{1,3}{1,2}	5
26	26	{0,2}{0,1}{1,2}	3

V	C	Cube Span	# Size
0	13	{3,4,5}	1
1	12	{3,4,5}{4,5,0}	2
2	14	{4,5,0}	1
3	10	{2,3,4}{3,4,5}	2
4	9	{0,2,4}{2,3,4}{3,4,5}{4,5,0}	4
5	11	{0,2,4}{4,5,0}	2
6	16	{2,3,4}	1
7	15	{0,1,2}{2,3,4}	2
8	17	{4,0,2}	1
9	4	{1,3,5}{3,4,5}	2
10	3	{5,0,1}{1,3,5}{3,4,5}{4,5,0}	4
11	5	{5,0,1}{4,5,0}	2
12	1	{1,2,3}{2,3,4}{3,4,5}{5,1,3}	4
13	0	{0,1,2}{1,2,3}{2,3,4}{2,4,0} {0,1,5}{1,3,5}{3,4,5}{4,5,0}	8
14	2	{0,1,2}{2,4,0}{4,5,0}{5,0,1}	4
15	3	{1,2,3}{2,3,4}	2
16	6	{0,1,2}{1,2,3}{2,3,4}{2,4,0}	4
17	8	{0,1,2}{2,4,0}	2
18	22	{1,3,5}	1
19	21	{0,1,5}{1,3,5}	2
20	23	{0,1,5}	1
21	19	{1,2,3}{1,3,5}	2
22	18	{0,1,2}{1,2,3}{1,3,5}{0,1,5}	4
23	20	{0,1,2}{0,1,5}	2
24	25	{1,2,3}	1
25	24	{0,1,2}{1,2,3}	2
26	26	{0,1,2}	1

Task

Koordinaten Offset in Index Offset
-1 0 0
1 0 0
0 -1 0
0 1 0
0 0 1
0 0 -1