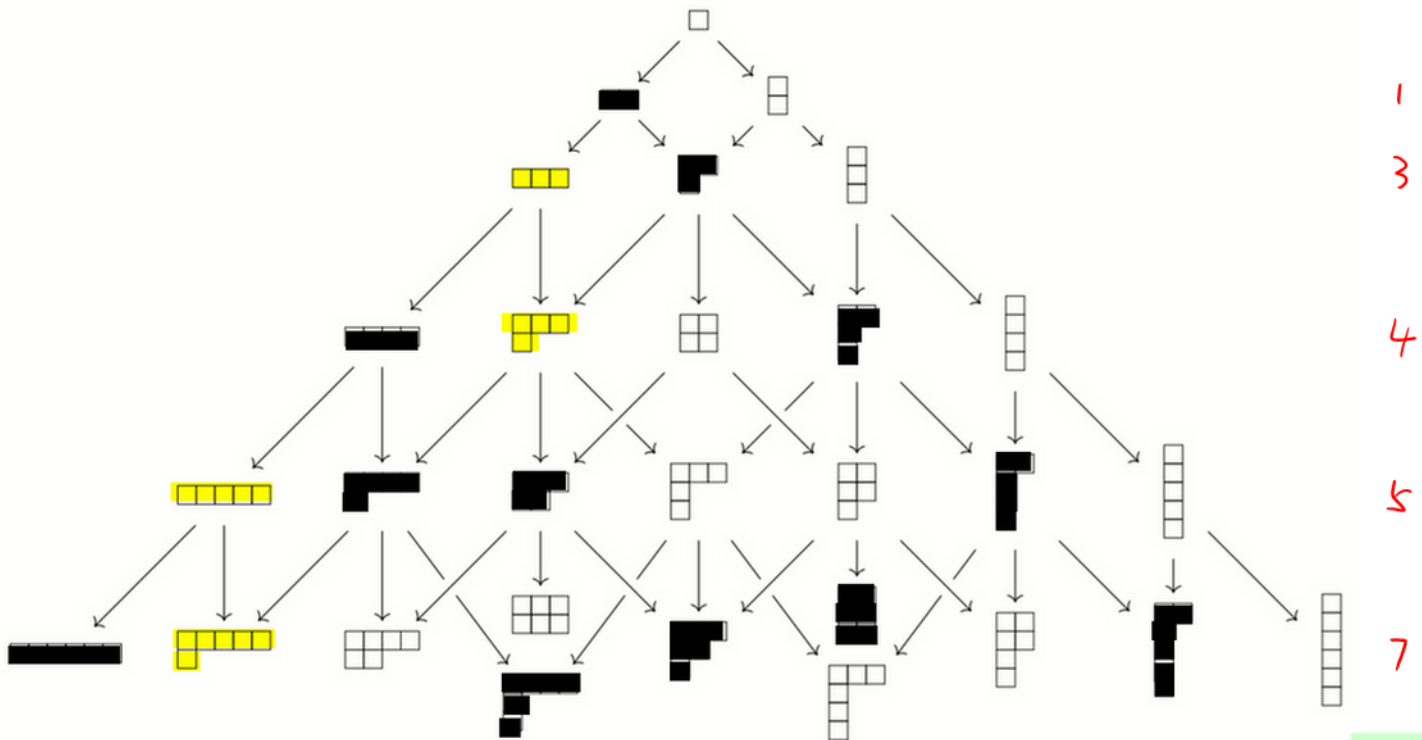


Eine Woche, ein Beispiel
 7.25 irreducible representation of S_n / A_n



A000702





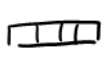



S_2 / A_2

	1 ²	2'
	1	(12)
	1	-1
	1	1












S_3 / A_3

	1 ³	3'	2·1
	Id	(123)	(132)
	1	1	-1
	1	1	1
	2	-1	0
	1	ρ ρ^2	ρ ρ^2























S_4/A_4

					
	1^4 Id	2^2 (12)(34)	$3,1$ (123) (132)	$2,1^2$ (12)	$4,1$ (1234)
	1 1 1	1 1 1	1 1 1	-1 1	-1 1
	3 3 3	-1 -1 -1	0 0 0	-1 1	1 -1
	2 1 1	2 1 1	-1 $\frac{1+\sqrt{5}}{2}$ $\frac{1-\sqrt{5}}{2}$	0 0	0 0

S_5/A_5

							
	1^5 Id	$2^2,1$ (12)(34)	$3,1^2$ (123)	$5,1$ (12345) (12345)	$2,1^3$ (12)	$3,2$ (123)(45)	$4,1$ (1234)
	1 1 1 1 1	1 1 1 1 1	1 1 1 1 1	1 1 1 1 1	-1 1	-1 1	-1 1
	4 4 4	0 0 0	1 1 1	-1 -1 -1	-2 2	1 -1	0 0
	5 5 5	1 1 1	-1 -1 -1	0 0 0	-1 1	-1 1	1 -1
	6 3 3	-2 -1 -1	0 0 0	1 $\frac{1+\sqrt{5}}{2}$ $\frac{1-\sqrt{5}}{2}$	0 0 0	0 0 0	0 0 0

S_6/A_6
 ζ : outer automorphism action on representation.

												
	1^6	$2^2 \cdot 1^2$	$3 \cdot 1^3$	3^2	$4 \cdot 2$	$5 \cdot 1$	$2 \cdot 1^4$	2^3	$3 \cdot 2 \cdot 1$	$4 \cdot 1^2$	6	
	Id	$(12)(34)$	(123)	$(123)(456)$	$(1234)(56)$	(12345)	(12354)	(12)	$(12)(34)(56)$	$(123)(45)$	(1234)	(123456)
	1	1	1	1	1	1	1	-1	-1	-1	-1	-1
	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1					
	5	1	2	-1	-1	0		-3	1	0	-1	1
	5	1	2	-1	-1	0	0	3	-1	0	1	-1
	5	1	2	-1	-1	0	0					
	9	1	0	0	1	-1		-3	-3	0	1	0
	9	1	0	0	1	-1	-1	3	3	0	-1	0
	9	1	0	0	1	-1	-1					
	10	-2	1	1	0	0		-2	2	1	0	-1
	10	-2	1	1	0	0	0	2	-2	-1	0	1
	10	-2	1	1	0	0	0					
	5	1	-1	2	-1	0		-1	3	-1	1	0
	5	1	-1	2	-1	0	0	1	-3	1	-1	0
	5	1	-1	2	-1	0	0					
	16	0	-2	-2	0	1		0	0	0	0	0
	8	0	-1	-1	0	$\frac{1+\sqrt{5}}{2}$	$\frac{1-\sqrt{5}}{2}$					
	8	0	-1	-1	0	$\frac{1-\sqrt{5}}{2}$	$\frac{1+\sqrt{5}}{2}$					

We use Frobenius character formula to compute characters of S_n . For a clear statement of Frobenius character formula, see here: <https://mathoverflow.net/questions/323949/frobenius-formula>

After this, we can compute characters of A_n by using the theories in Fulton's book [Rep, Lec 5.1].

For a deeper research on the symmetry of the representation table, see here: <http://www.ma.rhul.ac.uk/~uvah099/Maths/labels.pdf>

To compute character tables of S_n in computer, see <https://mathoverflow.net/questions/162478/character-table-of-s-7/162482>

For the relationship of representations of subgroup of index 2, see <https://math.stackexchange.com/questions/1965967/decomposition-of-induced-representation-from-index-2-subgroup> [Theorem 23.3, Clifford's Theorem] [<https://www.mathematik.uni-kl.de/~lassueur/en/teaching/DTWS1920/DT1920/SkriptMD1920.pdf>]