



S1	A	B	C	D					
S2		B	C		E	F	G	H	
S3					F	G		I	J
S4			C	D		G	H	I	J

Dynamic programming

Step 1 Find pairwise $\cap \binom{4}{2} = 6$

$$I_{12} = S1 \cap S2, I_{23} = S2 \cap S3, I_{34} = S3 \cap S4$$

$$I_{13} = S1 \cap S3, I_{24} = S2 \cap S4$$

$$I_{14} = S1 \cap S4$$

Step 2 Find 3 set intersection $\binom{4}{3} = 4$

$$I_{123} = I_{12} \cap S3$$

$$I_{124} = I_{12} \cap S4$$

$$I_{234} = I_{23} \cap S4$$

Step 3 Find 4 set intersection $\binom{4}{4} = 1$

$$I_{1234} = I_{123} \cap S4$$

Step 4 Find elements that are only in single set
 Faster to subtract

$$I_1 = S1 - I_{12} - I_{13} - I_{14}$$

$$I_2 = S2 - I_{12} - I_{23} - I_{34}$$