Supplemental material for Visual Algebra (Math 4120), HW 14

#1: The additive Cayley table of the finite field $\mathbb{F}_9 \cong \mathbb{F}_3[x]/(x^2+x+2)$.

$+$	0	1	2	x	$x+1$	$x+2$	$2x$	$2x+1$	$2x+2$
0									
1									
2									
x									
$x+1$									
$x+2$									
$2x$									
$2x+1$									
$2x+2$									

#1: The multiplictive Cayley table of the finite field $\mathbb{F}_9 \cong \mathbb{F}_3[x]/(x^2+x+2)$.

$\times$	1	2	x	$x+1$	$x+2$	$2x$	$2x+1$	$2x+2$
1								
2								
x								
$x+1$								
$x+2$								
$2x$								
$2x+1$								
$2x+2$								

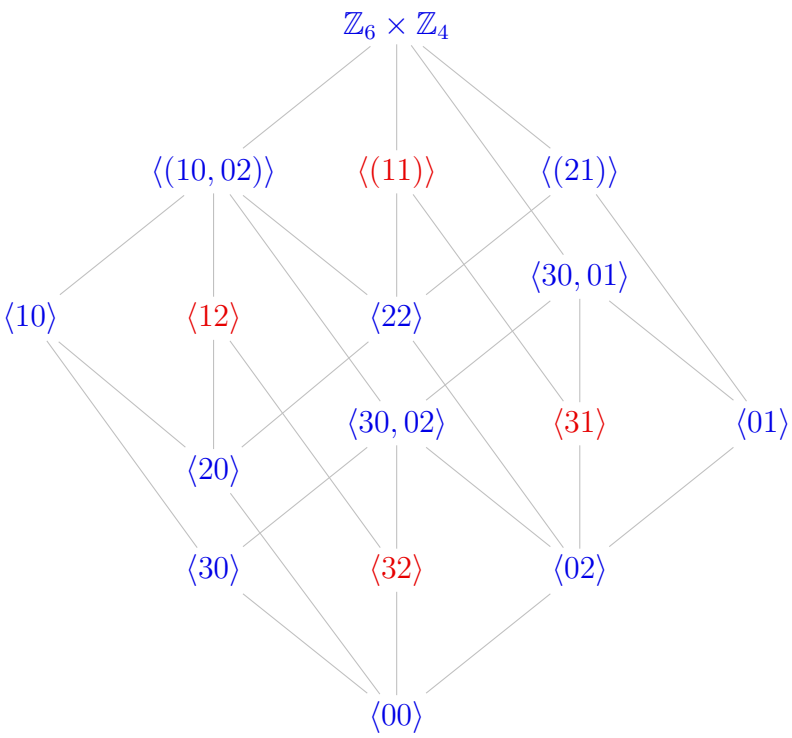
#1: The additive Cayley table of the finite field $\mathbb{F}_9 \cong \mathbb{F}_3[x]/(x^2+x+2)$.

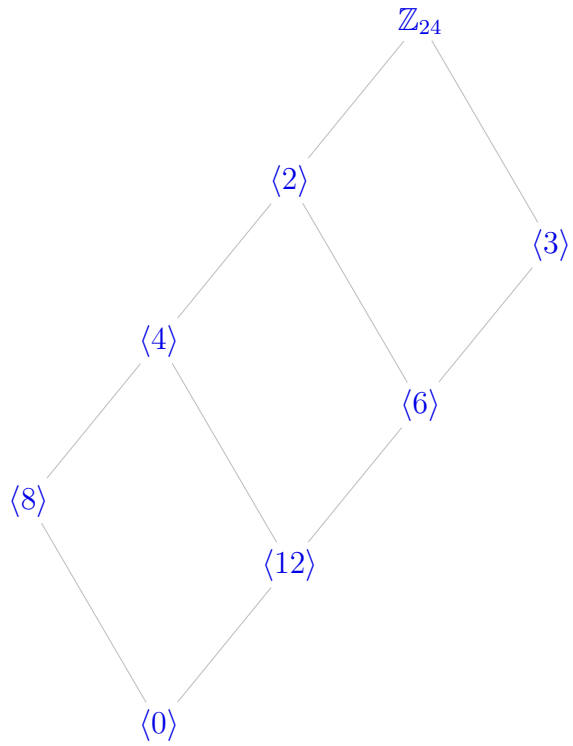
$+$	0	1	-1	x	$x+1$	$x-1$	$-x$	$-x+1$	$-x-1$
0									
1									
-1									
x									
$x+1$									
$x-1$									
$-x$									
$-x+1$									
$-x-1$									

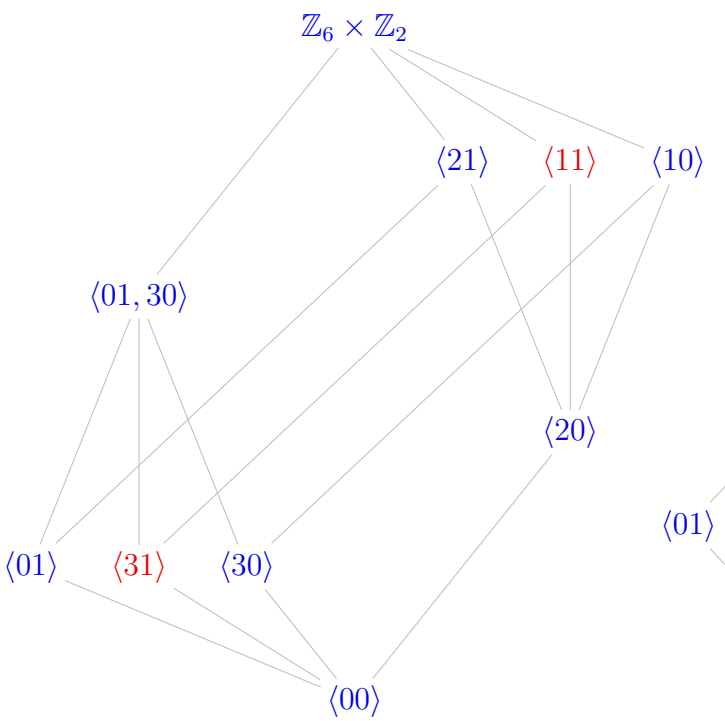
#1: The multiplictive Cayley table of the finite field $\mathbb{F}_9 \cong \mathbb{F}_3[x]/(x^2+x+2)$.

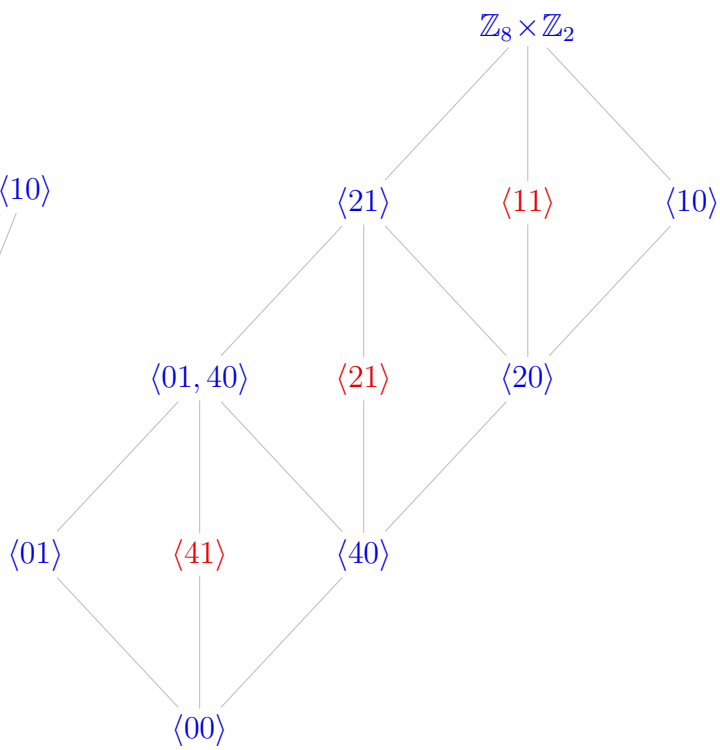
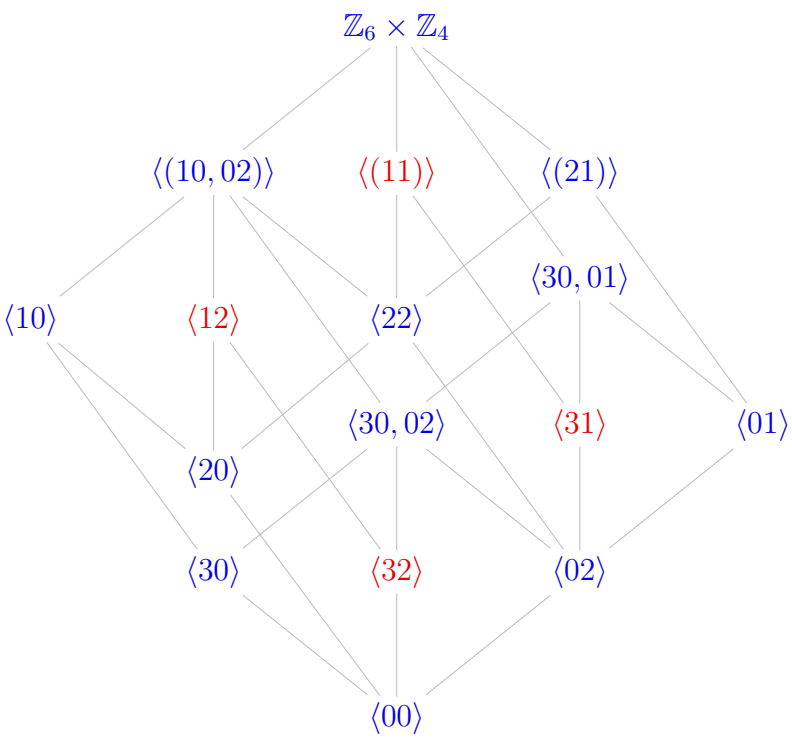
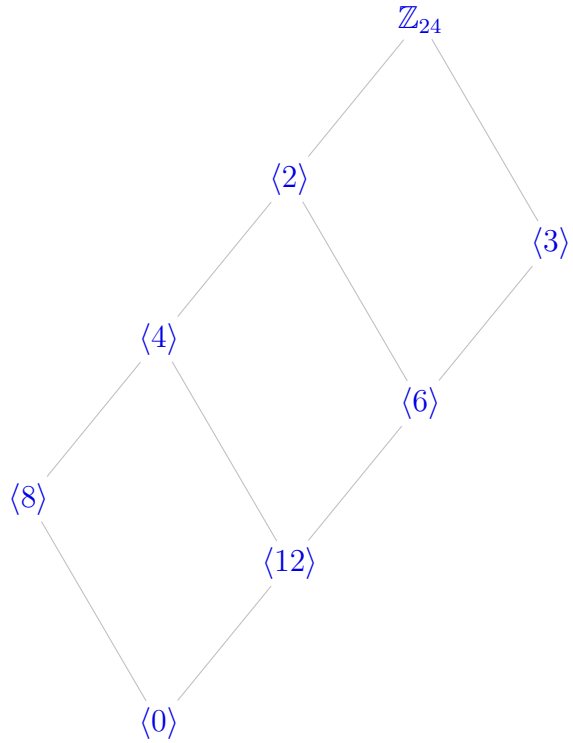
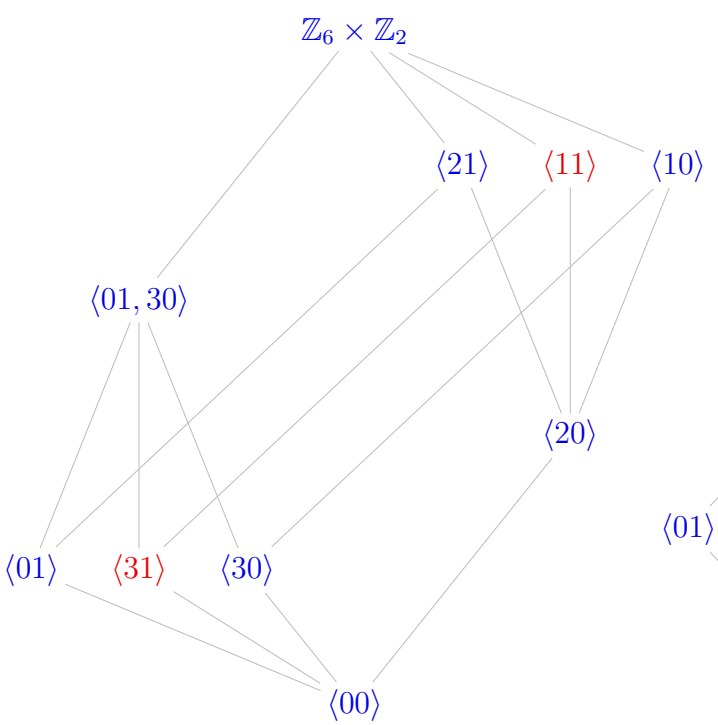
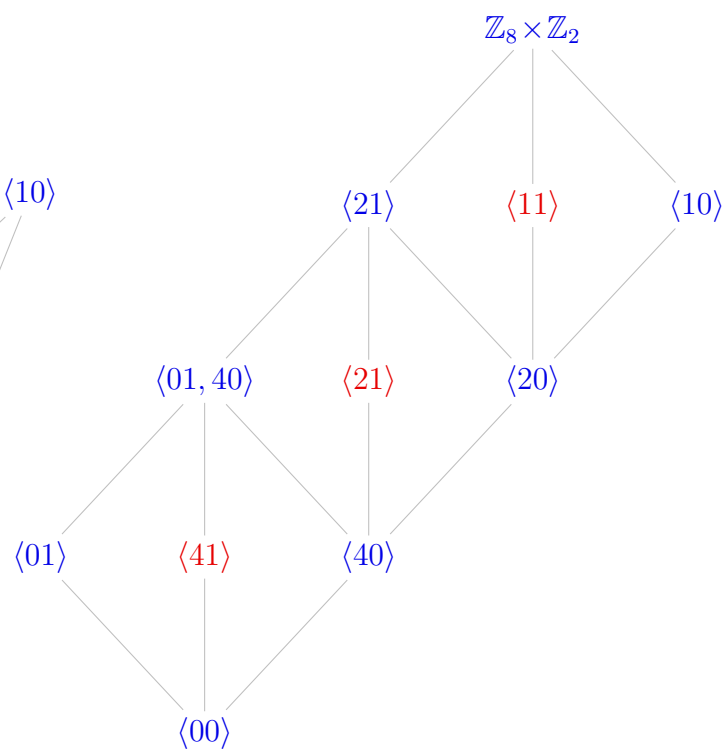
$\times$	1	-1	x	$x+1$	$x-1$	$-x$	$-x+1$	$-x-1$
1								
-1								
x								
$x+1$								
$x-1$								
$-x$								
$-x+1$								
$-x-1$								

#3(a): Subring lattices, annotated with arrows $I \to \sqrt{I}$ from each ideal to its radical, and labeled with the nilradical of the quotient, $\mathfrak{N}_{R/I} = \sqrt{I}/I$.









#3(b): Subring lattices, annotated with arrows $I \to \mathrm{jac}(I)$ from each ideal to its Jacobsen radical.