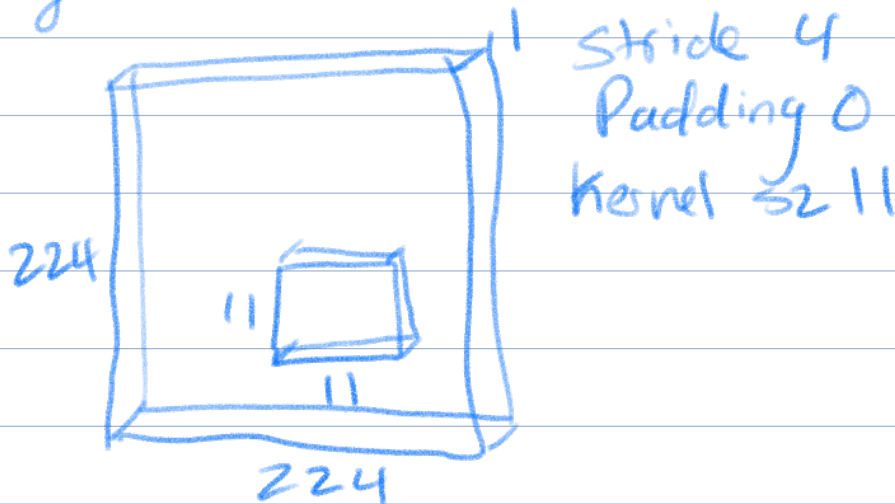


# AlexNet Program 2

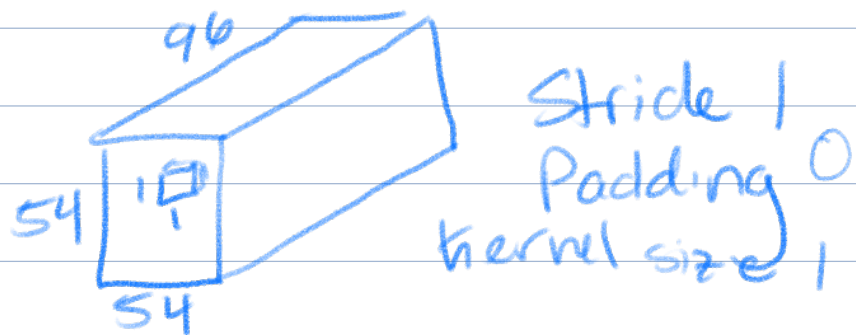
## Diagrams

Layer 1:



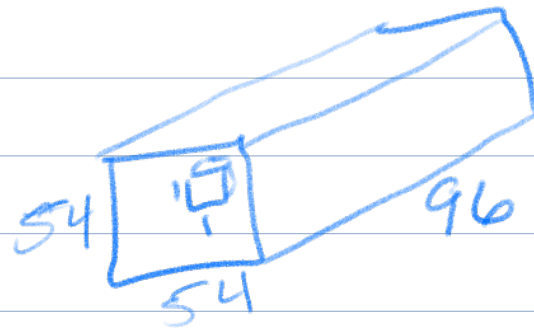
$$\text{Output size} = \lfloor (224 - 11 + 0) / 4 + 1 \rfloor = 54$$

Layer 2:



$$\text{Output size} = \lfloor (54 - 1 + 2 \cdot 0) / 1 + 1 \rfloor = 54$$

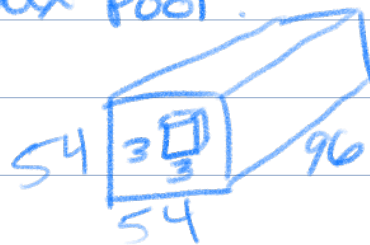
Layer 3:



Stride 1  
Padding 0  
kernel size 1

$$\text{Output size} = \lfloor (54 - 1 + 0) / 1 + 1 \rfloor \\ = \lfloor 53 + 1 \rfloor = 54$$

Layer 3 Max Pool:



Stride 2  
Padding 0  
kernel size 3

$$\text{Output size} = \lfloor (54 - 3 + 0) / 2 + 1 \rfloor \\ = \lfloor 26.5 \rfloor = 26$$

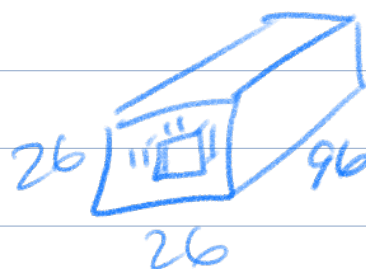
e.g. 

10	2	4
6	5	0
3	9	7

 $\rightarrow$ 

10
----

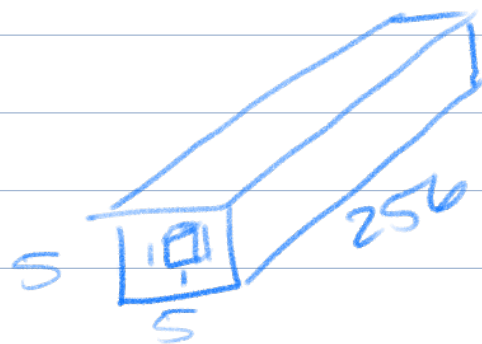
Layer 2



Stride 4  
padding 2  
kernel size 11

$$\text{Output size} = \lfloor (26 - 11 + 4) / 4 + 1 \rfloor \\ = 5$$

Layer 5



Stride 1  
padding 0  
kernel size 1

$$\begin{aligned}\text{Output size} &= \lfloor (5 - 1 + 0) / 1 + 1 \rfloor \\ &= \lfloor 4 + 1 \rfloor = 5\end{aligned}$$

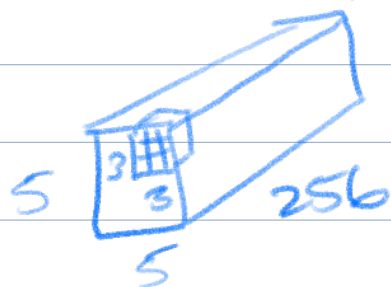
Layer 6



Stride 1  
padding 0  
kernel size 1

$$\begin{aligned}\text{Output size} &= \lfloor (5 - 1 + 0) / 1 + 1 \rfloor \\ &= 5\end{aligned}$$

Layer 6 MaxPool

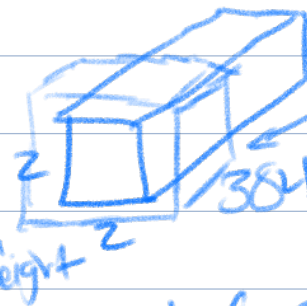


Stride 2  
padding 0  
kernel size 3

$$\begin{aligned}\text{Output size} &= \lfloor (5 - 3 + 0) / 2 + 1 \rfloor \\ &= \lfloor 2 \rfloor = 2\end{aligned}$$

Layer 7

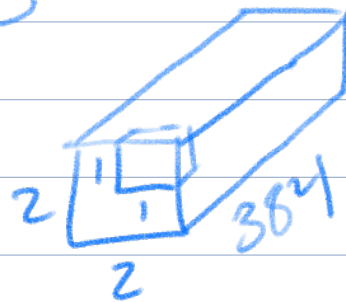
\*kernel size  
bigger than  
data width  
height



Stride 1  
padding 1  
kernel size 3

$$\text{Output size} = \lfloor (2 - 3 + 2) / 1 + 1 \rfloor = 2$$

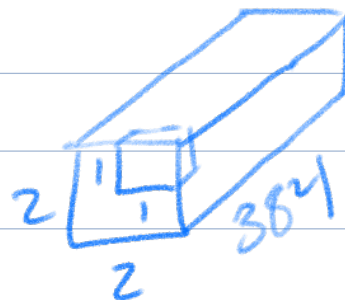
Layer 8



Stride 1  
padding 0  
kernel size 1

$$\text{Output size} = \lfloor (2 - 1 + 0) / 1 + 1 \rfloor = 2$$

Layer 9



Stride 1  
padding 0  
kernel size 1

$$\text{Output size} = 2$$

\* Flatten dimensions of Layer 9  
to  $4096 \times 1 \times 1$

Layer 10 Fully Connected Linear



Input  
is  $2 \cdot 2 \cdot 384$

Output is 4096

Layer 11 Fully Connected Linear



Input is 4096  
Output is 4096

Layer 12 Fully Connected Linear



Input is 4096  
Output is 10

→ # of classes we are  
testing for is 10