# Assignment-2
## CSE-428

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Section: 01

**Question 1:**

Let's assume, stride is default = 1;

| Layer | Input dimension | Filter size | Pad width | No. of Filters | Output dimension | Memory | FLOPs |
|---|---|---|---|---|---|---|---|
| Conv-1 | 56X56X3 | 2X2 | 3 | 10 | 56X56X10 | 122 kB | 5 |
| Pool-1 | 56X56X10 | 2X2 | 0 | - | 55X55X10 | 118 kB | 0 |
| Conv-2 | 55X55X10 | 5X5 | 2 | 20 | 55X55X20 | 236 kB | 16 |
| Pool-2 | 55X55X20 | 4X4 | 0 | - | 52X52X20 | 211 kB | 0 |
| Flatten | 52X52X20 | | | | | | |
| Fc(output) | | | 54080 | 5 | | | |

**Question 2:**

1. given, $Qk = z = \begin{bmatrix} 0.59 & 0.62 & 0.83 & 2.57 & 3.62 \\ 0.34 & 0.36 & 0.22 & 2.55 & 3.66 \\ 0.55 & 0.56 & 0.85 & 2.35 & 3.36 \end{bmatrix} \begin{bmatrix} 1 \\ 1.82 \\ 2.04 \\ 3.15 \\ 4.16 \end{bmatrix}$

$= \begin{bmatrix} 26.5563 \\ 24.7021 \\ 24.6833 \end{bmatrix}$

now one vs all,

$h_\theta(x) = \begin{bmatrix} \frac{1}{1+e^{-z_0}} \\ \frac{1}{1+e^{-z_1}} \\ \frac{1}{1+e^{-z_2}} \end{bmatrix} = \begin{bmatrix} 0.9999 \\ 0.9999 \\ 0.9999 \end{bmatrix}$

In one-vs-all, these values indicates that all classes have very high probabilities using sigmoid. (Ans)

2. same matrix value from 1: $\begin{bmatrix} 26.5663 \\ 24.7021 \\ 24.6833 \end{bmatrix}$

So, $f(wx) = f_0 = \frac{e^{26.5663}}{4.50 \times 10^{11}} = 0.7650$

$f_1 = \frac{e^{24.7021}}{4.50 \times 10^{11}} = 0.1186$

$f_2 = \frac{e^{24.6833}}{4.50 \times 10^{11}} = 0.11164$

$e^{26.5663} + e^{24.7021} + e^{24.6833} = 4.50 \times 10^{11}$

These values are predicting class 0 has the highest probability (76.5%) (Ans.)

3.