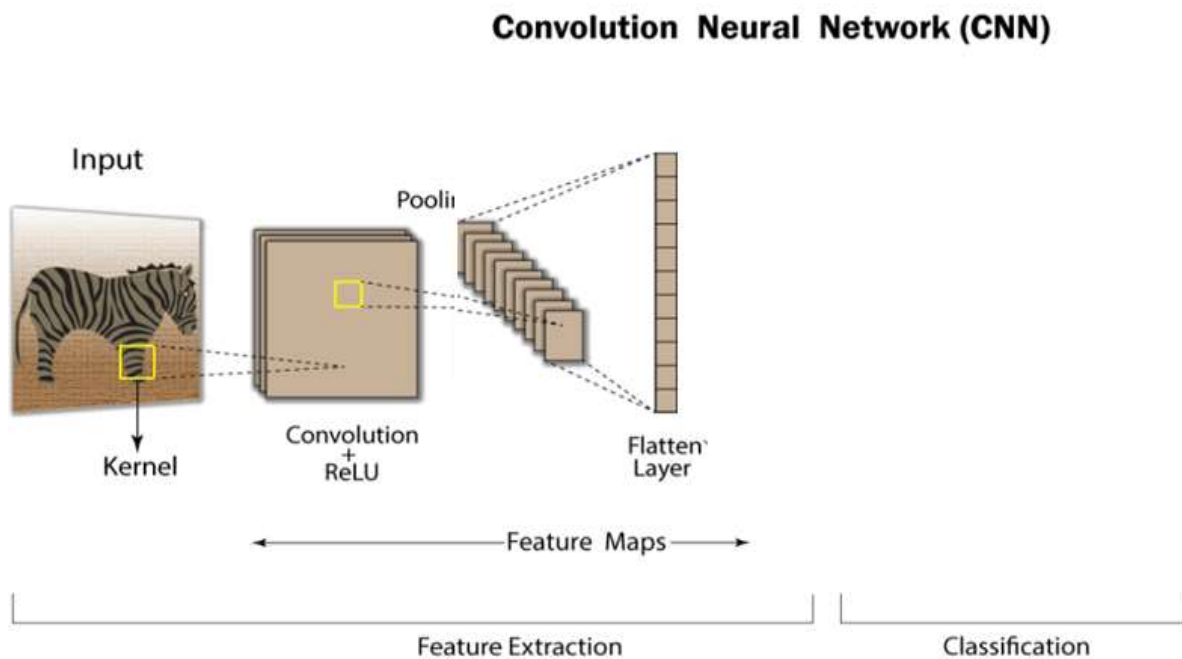


What is the output of the CNN below (flattening layer)?



Suppose that

1- The input is black and white Image with size 5X5.

0	1	1	1	0
0	0	1	0	0
0	0	1	0	0
0	0	1	0	0
0	0	1	0	0

2- Kernel (Filter) is

0	1	0
-1	5	-1
0	-1	0

3- ReLU activate function

4- Max Pooling 2X2

Suppose you have a dataset of colour images with resolution of 64X64 and you want to train a CNN model to classify them into 15 categories. Write a Python code to define a simple CNN model with the following architecture:

1. Input layer that takes input images
2. Convolutional layer with 32 filters, kernel size of 3x3, and ReLU activation function
3. MaxPooling layer with pool size of 2x2
4. Convolutional layer with 64 filters, kernel size of 3x3, and ReLU activation function
5. MaxPooling layer with pool size of 2x2
6. Flatten layer to convert the output of the previous layer to a 1D vector
7. Dense layer with 128 neurons and ReLU activation function
8. Output layer with softmax activation function to output the probabilities of the different categories.