**Question 1.1** How many handwritten digital numbers in training set and testing set respectively in downloaded data?

**Question 1.2** What is the shape of the training data?

**Question 1.3**

* What is the format of the label (y) before and after the binary class transformation?
* What is the label of a '9' digit drawing after the transformation?
* Why do we do so?

**Question** 1.4 Plot 0-9 handwritten digits (in total 10) from MNIST data accordingly.

A picture containing calendar

Description automatically generated

**Questions 2.1** How many layers of convolution in the model below?

**Questions 2.2** What is the input shape of the model and the output shape of the model?

* The input shape of the model is (None, 28, 28)
* The output shape of the model is (None, 10)

**Question 3.1** Use batch\_size = 128 and epochs = 15 to train the model. What is batch\_size and epochs? What is the difference between loss and val\_loss?

**Question 3.2** Plot the evolution of accuracy and validation accuracy of the model with respect to the epoch. What do you see?

Chart, line chart

Description automatically generated

**Question 3.3** Change the Epoch to 30, what do you think is a good value for number of epochs in the training data?

Chart

Description automatically generated