

# Deep learning & applications

Practice#2-1

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## Task: binary classification using logistic regression (loss = binary cross entropy loss)

**Input:** 2-dim vector,  $\mathbf{x} = \{x_1, x_2\}$

**Output:** label of the input,  $\mathbf{y} \in \{0,1\}$

### Pseudo code to generate dataset

**Step 1.** Generate 10000(=m) train samples & 1000(=n) test samples:

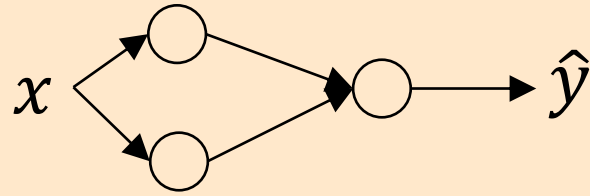
```
x1_train=[], x2_train=[], y_train=[]  
for i in range(m):  
    x1_train.append(random.uniform(-10, 10))  
    x2_train.append(random.uniform(-10, 10))  
    if x1_train[-1] < -5 or x1_train[-1] > 5:  
        y_train.append(1)  
    else:  
        y_train.append(0)  
  
x_test=[], y_test=[] #similarly generate 1000 test samples!
```

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**Input:** 2-dim vector,  $x = \{x_1, x_2\}$

**Output:** label of the input,  $y \in \{0,1\}$

**Pseudo code to train a 2-layered net.**



**Step 2.** Build the model using Tensorflow

**Step 3.** Update trainable parameters for 5000 epochs with 'm' samples

**Step 4.** Try with different optimizers (SGD, ADAM, RMSPROP) and compare the accuracies.