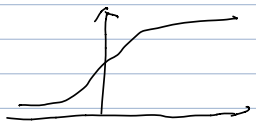
Lab-05 Logistic Regression

Hypothesis : $H(X) = \frac{1}{1+e^{-W^T X}}$



$H(x) = P(X=1; W)$
$= 1 - P(X=0; W)$

```
hypothesis = 1/(1+torch.exp(-(x_train.matmul(W)+b)))
           = torch.sigmoid(x_train.matmul(W)+b)
```

Cost: $cost(W) = -\frac{1}{m}\sum y \log(H(x)) + (1-y)(\log(1-H(x)))$

$y \simeq H(x)$ 이면 거의 0, $y \neq H(x)$ 이면 커짐.

```
loss = -(y_train * torch.log(hypothesis) +
         (1-y_train) * torch.log(1-hypothesis))
cost = loss.mean()
     = F.binary_cross_entropy(hypothesis, y_train)
```

Weight update via Gradient Descent : $W := W - \frac{\partial}{\partial W} cost(W)$

```
prediction = hypothesis >= torch.FloatTensor([0.5])
correct_prediction = prediction.float() == y_train
model = BinaryClassifier()
optimizer = optim.SGD(model.parameters(), lr=1)
```