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Linear Regression with Multiple Outputs

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In this lab, we will review how to make a prediction for Linear Regression with Multiple Output.

- Build Custom Modules

Estimated Time Needed: **15 min**

Class Linear

In [1]:

Set the random seed:

In [2]:

Out[2]:

```
<torch._C.Generator at 0x7fd8d4053690>
```

Set the random seed:

In [3]:

create a linear regression object, as our input and output will be two we set the parameters accordingly

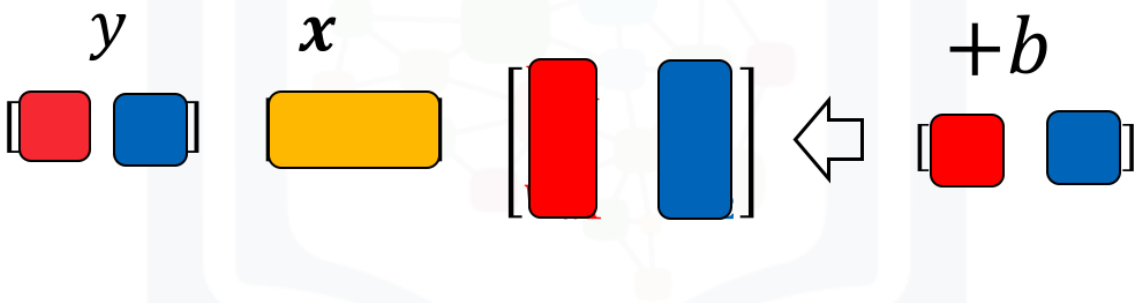
In [4]:

Out[4]:

```
tensor([ 0.7926, -0.3920,  0.1714,  0.0797, -1.0143,  0.5097, -0.0608,
0.5047,
         1.0132,  0.1887], grad_fn=<AddBackward0>)
```

we can use the diagram to represent the model or object

$$y = xW + b$$



we can see the parameters

In [5]:

Out[5]:

```
[Parameter containing:
 tensor([[ 0.5153],
         [-0.4414],
         [-0.1939],
         [ 0.4694],
         [-0.9414],
         [ 0.5997],
         [-0.2057],
         [ 0.5087],
         [ 0.1390],
         [-0.1224]], requires_grad=True),
 Parameter containing:
 tensor([ 0.2774,  0.0493,  0.3652, -0.3897, -0.0729, -0.0900,  0.144
9, -0.0040,
          0.8742,  0.3112], requires_grad=True)]
```

we can create a tensor with two rows representing one sample of data

In [6]:

we can make a prediction

In [7]:

Out[7]:

```
tensor([[ 0.7926, -0.3920,  0.1714,  0.0797, -1.0143,  0.5097, -0.060
8,  0.5047,
          1.0132,  0.1887]], grad_fn=<AddmmBackward>)
```

each row in the following tensor represents a different sample

In [8]:

we can make a prediction using multiple samples

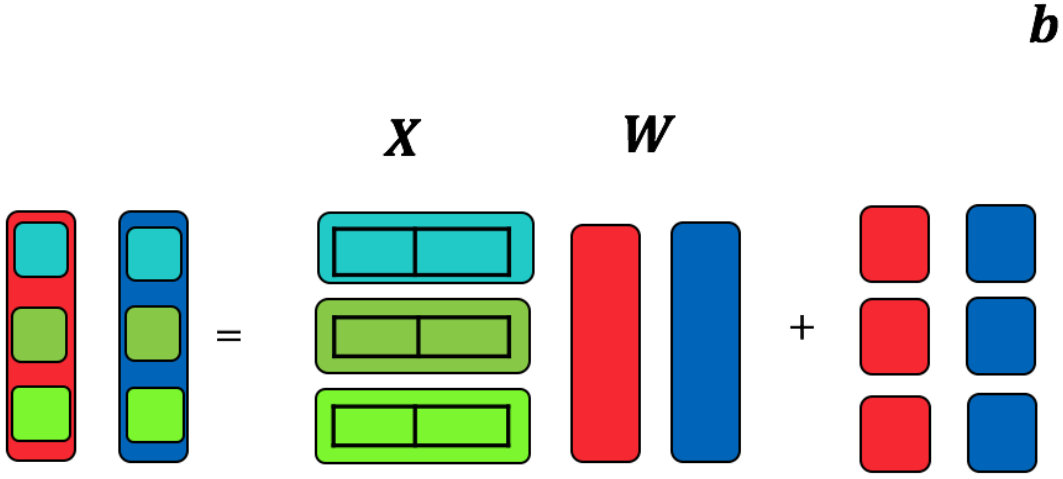
In [9]:

Out[9]:

```
tensor([[ 0.7926, -0.3920,  0.1714,  0.0797, -1.0143,  0.5097, -0.060
8,  0.5047,
          1.0132,  0.1887],
        [ 0.7926, -0.3920,  0.1714,  0.0797, -1.0143,  0.5097, -0.060
8,  0.5047,
          1.0132,  0.1887],
        [ 1.8232, -1.2748, -0.2164,  1.0184, -2.8972,  1.7091, -0.472
2,  1.5222,
          1.2912, -0.0561]], grad_fn=<AddmmBackward>)
```

the following figure represents the operation, where the red and blue represents the different parameters, and the different shades of green represent different samples.

$$y = XW + b$$



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In [ ]: