A Review of What you Already Know

Sam - how well she likes 2 genre's of music

- dream pop - 4
- Neotraditionalist Country - 2
- R&B. - 4

And we have 2 new to her artists and we are trying to decide which to recommend:

artist	dream pop	neo	R&B
Dua Lipa	5	1	4
Midland	.5	5	1

and we are going to try to determine how much Sam likes Dua

we have two vectors. One for Sam

```
[4, 2, 4]
```

and one for Dua

```
[5, 1, 4]
```

Sam gave Dream Pop a 4 and Dua is a 5 for that so I will multiply them together

```
4 x 5 + 2 x 1 + 4 x 4 = 20 + 2 + 16 = 38
```

Midland was

```
5 x .5 + 2 * 5 + 4 x 1 = 2.5 + 10 + 4 = 16.5
```

called a dot product

suppose we have 2 more customers and a few more artists:

artist	dream pop	neo	R&B
Dua Lipa	5	1	4
Midland	.5	5	1

Bruno Mars	3	1	5
Lorde	4	2	2
Bebe Rexha	3	1	3

Customers	dream pop	neo	R&B
Sam	5	2	4
Mary	1	5	3
Ben	1	3	5
Julie	1	1	5

And now say we want to predict how well these customers will like these artists: So we want a little table like:

Customers	Dua Lipa	Midland	Bruno Mars	Lorde	Bebe Rexha
Sam	38	16,5	x	x	x
Mary	x	x	x	x	x
Ben	x	x	x	x	x
Julie	x	x	x	x	x

matrix multiplication

Let's call the Customer Matrix P and the Artist one Q so what we want is

PQ^T

what does transpose mean?

Genre	Dua Lipa	Midland	Bruno Mars	Lorde	Bebe Rexha
dream pop	5	.5	3	4	3
neotrad.	1	5	1	2	1
R&B	4	1	5	2	3

Teams Finish

In tensorflow it is tf.matmul