# TensorFlow Developer Certificate Notes

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# 1 Fundamentals

- **tf.constant()** is not mutable, but **tf.Variable()** is by using the *.assign()* method on the var object.
- You must set both the global **tf.random.set_seed()** and function **seed=** parameter to get reproducible results for shuffle function.
- We can *add dimensions* to a tensor whilst keeping the same information (*newaxis* and *expand_dims* have same output).

```
rank_3_tensor = rank_2_tensor[..., tf.newaxis] # "..." means "all dims prior to"
rank_2_tensor, rank_3_tensor # shape (2, 2), shape (2, 2, 1)
tf.expand_dims(rank_2_tensor, axis=-1) # "-1" means last axis (2, 2, 1)
```

- **tf.reshape()** will change the shape in the order they appear (top left to bottom right) and **tf.transpose()** simply flips the matrix.
- We can reduce tensor sizes in memory by changing the datatype (i.e. float32 cast to float16).
- We can perform aggregation on tensors by using **reduce()_[action]** and using min, max, mean, sum, etc. We can also find positional arguments using **tf.argmin()** or **tf.argmax()**.
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