

Tensors and Gradient Tape

LATEST SUBMISSION GRADE

100%

1.

Question 1

A *Tensor* is a flexible data structure that can hold data in a variety of different ways.

1 / 1 point



True



False

Correct

Correct!

2.

Question 2

A Tensor can be a vector, matrix or multi-dimensional array but not a scalar

1 / 1 point



False



True

Correct

Correct! A tensor can be a scalar

3.

Question 3

You want to create a tensor object that is a 2 by 3 matrix containing all -1 values. You also want to be able to modify the values inside the tensor in the future. Which of the following lines of code should you use? Check all that are true.

$$\begin{bmatrix} -1 & -1 & -1 \\ -1 & -1 & -1 \end{bmatrix}$$

1 / 1 point



```
tf.Variable([[-1, -1, -1], [-1, -1, -1]], dtype=tf.int32)
```

Correct

Correct!



```
tf.constant([-1, -1, -1, -1, -1, -1], shape=[2, 3])
```



```
tf.Variable([-1, -1, -1, -1, -1, -1], tf.int32, shape=[2,3])
```



```
tf.Variable([[-1, -1, -1], [-1, -1, -1]], shape=[2, 3])
```

Correct

Correct! This code will run, but the shape will automatically be derived from the initial value (the list of lists). The dtype will be derived from the initial value, which is `tf.int32`.

4.

Question 4

One type of mode in TensorFlow allows for immediate evaluation of values. What is this mode called?

1 / 1 point



Eager mode



Graph mode

Correct

Correct! In general, this way of handling code (whether it's in TensorFlow or any other programming language) is called "eager execution".

5.

Question 5

Consider the following code:

```
a = tf.constant([[5,7], [2, 1]])  
b = tf.add(a,2)  
c = b ** 2  
d =tf.reduce_sum(c)  
print(d)
```

The output of the code *could* be: tf.Tensor(x, shape=(), dtype=int32)

What is the value of "x" in this case ? Enter in the box below. Enter "0" if you think the code above will run into some kind of error.

1 / 1 point

155

Correct

Correct!

6.

Question 6

What is the name of the TensorFlow API which handles automatic differentiation?

1 / 1 point



AutoDiff



TapeGradient



Gradient



GradientTape

Correct

Correct!