regresion lineal con tensorflow

In [3]:

```
import tensorflow as tf
import numpy as np
import matplotlib.pyplot as plt
```

In [ ]:

```
datos_x = np.linspace(0,10,10) + np.random.uniform(-1,1,10)
```

In [4]:

```
datos_x
```

Out[4]:

```
array([-0.91175439,  1.61523627,  1.50693834,  3.60120094,  5.31086176,
        6.48386677,  5.66785548,  6.8675788 ,  9.5840317 , 10.2016827 ])
```

In [6]:

```
datos_y = np.linspace(0,10,10) + np.random.uniform(-1,1,10)
```

In [7]:

```
datos_y
```

Out[7]:

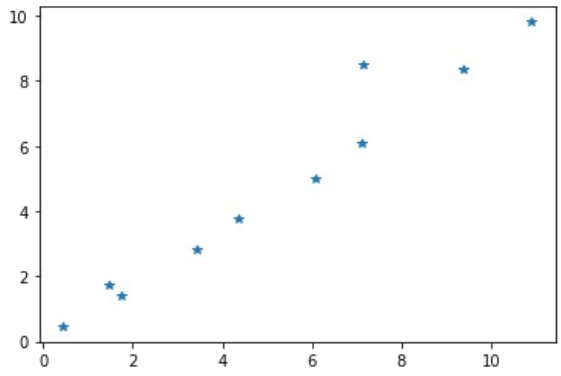
```
array([0.45761588, 1.75154162, 1.42209794, 2.82432511, 3.76625726,
       5.0037357 , 6.09390211, 8.47599936, 8.32949512, 9.80231158])
```

In [8]:

```
plt.plot(datos_x, datos_y, '*')
```

Out[8]:

```
[<matplotlib.lines.Line2D at 0x17add6fd148>]
```



y=mx + b

In [9]:

```
np.random.rand(2)
```

Out[9]:

```
array([0.52759884, 0.27318077])
```

In [10]:

```
n = tf.Variable(0.52)
b = tf.Variable(0.27)
```

In [29]:

```
error = 0
for x,y in zip(datos_x, datos_y):
    y_pred = n * x + b
    error = error + (y - y_pred)**2
```

In [30]:

```
optimizador = tf.train.GradientDescentOptimizer(learning_rate=0.001)
entrenamiento = optimizador.minimize
```

In [31]:

```
inicializacion = tf.global_variables_initializer()
```

In [39]:

```
with tf.Session() as session:
    session.run(inicializacion)
    pasos = 1
    for i in range(pasos):
        session.run(entrenamiento)
    final_n, final_b = session.run([n,b])
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
~\anaconda3\envs\pruebasTensorflow\lib\site-packages\tensorflow_core\python\client\session.py in __i
nit__(self, fetches, contraction_fn)
    304         self._unique_fetches.append(ops.get_default_graph().as_graph_element(
--> 305             fetch, allow_tensor=True, allow_operation=True))
    306       except TypeError as e:

~\anaconda3\envs\pruebasTensorflow\lib\site-packages\tensorflow_core\python\framework\ops.py in as_g
raph_element(self, obj, allow_tensor, allow_operation)
   3606     with self._lock:
-> 3607       return self._as_graph_element_locked(obj, allow_tensor, allow_operation)
   3608

~\anaconda3\envs\pruebasTensorflow\lib\site-packages\tensorflow_core\python\framework\ops.py in _as_
graph_element_locked(self, obj, allow_tensor, allow_operation)
   3695       raise TypeError("Can not convert a %s into a %s." %
-> 3696                       (type(obj).__name__, types_str))
   3697

TypeError: Can not convert a method into a Tensor or Operation.

During handling of the above exception, another exception occurred:

TypeError                                 Traceback (most recent call last)
<ipython-input-39-b03c81f6685c> in <module>
      3     pasos = 1
      4     for i in range(pasos):
----> 5         session.run(entrenamiento)
      6     final_n, final_b = session.run([n,b])

~\anaconda3\envs\pruebasTensorflow\lib\site-packages\tensorflow_core\python\client\session.py in run
(self, fetches, feed_dict, options, run_metadata)
    954     try:
    955       result = self._run(None, fetches, feed_dict, options_ptr,
--> 956                          run_metadata_ptr)
    957       if run_metadata:
    958         proto_data = tf_session.TF_GetBuffer(run_metadata_ptr)

~\anaconda3\envs\pruebasTensorflow\lib\site-packages\tensorflow_core\python\client\session.py in _ru
n(self, handle, fetches, feed_dict, options, run_metadata)
   1163     # Create a fetch handler to take care of the structure of fetches.
   1164     fetch_handler = _FetchHandler(
-> 1165         self._graph, fetches, feed_dict_tensor, feed_handles=feed_handles)
   1166
   1167     # Run request and get response.

~\anaconda3\envs\pruebasTensorflow\lib\site-packages\tensorflow_core\python\client\session.py in __i
nit__(self, graph, fetches, feeds, feed_handles)
    472     """
    473     with graph.as_default():
--> 474       self._fetch_mapper = _FetchMapper.for_fetch(fetches)
    475     self._fetches = []
    476     self._targets = []

~\anaconda3\envs\pruebasTensorflow\lib\site-packages\tensorflow_core\python\client\session.py in for
_fetch(fetch)
    274         if isinstance(fetch, tensor_type):
    275           fetches, contraction_fn = fetch_fn(fetch)
--> 276           return _ElementFetchMapper(fetches, contraction_fn)
    277     # Did not find anything.
    278     raise TypeError('Fetch argument %r has invalid type %r' %

~\anaconda3\envs\pruebasTensorflow\lib\site-packages\tensorflow_core\python\client\session.py in __i
nit__(self, fetches, contraction_fn)
    307         raise TypeError('Fetch argument %r has invalid type %r, '
    308                         'must be a string or Tensor. (%s)' %
--> 309                         (fetch, type(fetch), str(e)))
    310       except ValueError as e:
    311         raise ValueError('Fetch argument %r cannot be interpreted as a '

TypeError: Fetch argument <bound method Optimizer.minimize of <tensorflow.python.training.gradient_d
escent.GradientDescentOptimizer object at 0x0000017AE02D1D88>> has invalid type <class 'method'>, mu
st be a string or Tensor. (Can not convert a method into a Tensor or Operation.)
```

In [33]:

```
x_test = np.linspace(-1,11,10)
```

In [40]:

```
y_pred_2 = (final_n * x_test) + final_b
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-40-848cea0a2a3e> in <module>
----> 1 y_pred_2 = (final_n * x_test) + final_b

NameError: name 'final_n' is not defined
```

In [37]:

```
plt.plot(x_test, y_pred_2, 'r')
plt.plot(datos_x, datos_y, '*')
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-37-c2104b6f5b95> in <module>
----> 1 plt.plot(x_test, y_pred_2, 'r')
      2 plt.plot(datos_x, datos_y, '*')

NameError: name 'y_pred_2' is not defined
```

In [ ]:

```

```