```
from google.colab import files
uploaded = files.upload()

# first neural network with keras tutorial
import keras
from numpy import loadtxt
from keras.models import Sequential
from keras.layers import Dense
import pandas as pd

df = pd.read_csv("/content/pima-indians-diabetes.csv")

# split into input (X) and output (y) variables
X = df.iloc[:,0:8]
y = df.iloc[:,8]

# define the keras model
model = Sequential()
#input_layer = Dense(12, input_dim = 8, activation = 'relu')
#model.add(input_layer)
model.add(Dense(12, input_dim=8, activation='relu'))
model.add(Dense(8, activation='relu'))
model.add(Dense(1, activation='sigmoid'))
```

```
# compile the keras model and specify the training parameters of the architecture
model.compile(loss='binary_crossentropy', optimizer='adam', metrics=['accuracy'])

# fit the keras model on the dataset
model.fit(X, y, epochs=150, batch_size=16)

#Output
Epoch 1/150
48/48 [==============================] - 1s 2ms/step - loss: 21.7155 - accuracy: 0.3481
Epoch 2/150
48/48 [==============================] - 0s 2ms/step - loss: 7.4857 - accuracy: 0.4146
Epoch 3/150
48/48 [==============================] - 0s 2ms/step - loss: 2.6969 - accuracy: 0.5476
Epoch 4/150
48/48 [==============================] - 0s 2ms/step - loss: 1.3637 - accuracy: 0.6297
Epoch 5/150
48/48 [==============================] - 0s 2ms/step - loss: 0.9965 - accuracy: 0.6349
Epoch 6/150
48/48 [==============================] - 0s 2ms/step - loss: 0.8090 - accuracy: 0.6415
Epoch 7/150
48/48 [==============================] - 0s 2ms/step - loss: 0.7353 - accuracy: 0.6441
Epoch 8/150
48/48 [==============================] - 0s 2ms/step - loss: 0.7100 - accuracy: 0.6467
Epoch 9/150
48/48 [==============================] - 0s 2ms/step - loss: 0.6999 - accuracy: 0.6284
Epoch 10/150
48/48 [==============================] - 0s 2ms/step - loss: 0.6901 - accuracy: 0.6441
```

```
Epoch 11/150
48/48 [==============================] - 0s 2ms/step - loss: 0.6831 - accuracy: 0.6362
Epoch 12/150
48/48 [==============================] - 0s 2ms/step - loss: 0.6689 - accuracy: 0.6323
Epoch 13/150
48/48 [==============================] - 0s 2ms/step - loss: 0.6618 - accuracy: 0.6441
Epoch 14/150
48/48 [==============================] - 0s 2ms/step - loss: 0.6587 - accuracy: 0.6493
Epoch 15/150
48/48 [==============================] - 0s 2ms/step - loss: 0.6514 - accuracy: 0.6415
Epoch 16/150
48/48 [==============================] - 0s 2ms/step - loss: 0.6507 - accuracy: 0.6584
Epoch 17/150
48/48 [==============================] - 0s 2ms/step - loss: 0.6429 - accuracy: 0.6545
Epoch 18/150
48/48 [==============================] - 0s 2ms/step - loss: 0.6331 - accuracy: 0.6662
Epoch 19/150
48/48 [==============================] - 0s 2ms/step - loss: 0.6298 - accuracy: 0.6532
Epoch 20/150
48/48 [==============================] - 0s 2ms/step - loss: 0.6105 - accuracy: 0.6806
```

```
Epoch 146/150
48/48 [==============================] - 0s 2ms/step - loss: 0.4952 - accuracy: 0.7627
Epoch 147/150
48/48 [==============================] - 0s 2ms/step - loss: 0.4965 - accuracy: 0.7679
Epoch 148/150
48/48 [==============================] - 0s 3ms/step - loss: 0.4972 - accuracy: 0.7601
Epoch 149/150
48/48 [==============================] - 0s 3ms/step - loss: 0.4979 - accuracy: 0.7640
Epoch 150/150
48/48 [==============================] - 0s 2ms/step - loss: 0.4996 - accuracy: 0.7640
<keras.callbacks.History at 0x7febc12b8a10>
```

```
# evaluate the keras model
_, accuracy = model.evaluate(X, y)
print('Accuracy: %.2f' % (accuracy*100))
```

#Output

```
Accuracy: 76.27
```

model.get_config()

```
{'layers': [{'class_name': 'InputLayer',
   'config': {'batch_input_shape': (None, 8),
    'dtype': 'float32',
    'name': 'dense_input',
    'ragged': False,
    'sparse': False}},
  {'class_name': 'Dense',
   'config': {'activation': 'relu',
    'activity_regularizer': None,
    'batch_input_shape': (None, 8),
    'bias_constraint': None,
    'bias_initializer': {'class_name': 'Zeros', 'config': {}},
    'bias_regularizer': None,
    'dtype': 'float32',
    'kernel_constraint': None,
    'kernel_initializer': {'class_name': 'GlorotUniform',
     'config': {'seed': None}},
    'kernel_regularizer': None,
    'name': 'dense'
```