Examen Práctico

```
In [ ]: pip install tensorflow
```

```
In [ ]: pip install -U scikit-learn
```

```
Collecting scikit-learn
  Obtaining dependency information for scikit-learn from https://files.pythonhosted.org/packages/77/85/bff3a
1e818ec6aa3dd466ff4f4b0a727db9fdb41f2e849747ad902ddbe95/scikit_learn-1.3.0-cp311-cp311-win_amd64.whl.metadat
a
  Downloading scikit_learn-1.3.0-cp311-cp311-win_amd64.whl.metadata (11 kB)
Requirement already satisfied: numpy>=1.17.3 in d:\nueva carpeta\nueva carpeta\nueva carpeta\exam\env\lib\si
te-packages (from scikit-learn) (1.24.3)
Collecting scipy>=1.5.0 (from scikit-learn)
  Obtaining dependency information for scipy>=1.5.0 from https://files.pythonhosted.org/packages/06/15/e7373
4f9170b66c6a84a0bd7e03586e87e77404e2eb8e34749fc49fa43f7/scipy-1.11.2-cp311-cp311-win_amd64.whl.metadata
  Downloading scipy-1.11.2-cp311-cp311-win_amd64.whl.metadata (59 kB)
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Collecting joblib>=1.1.1 (from scikit-learn)
  Obtaining dependency information for joblib>=1.1.1 from https://files.pythonhosted.org/packages/10/40/d551
139c85db202f1f384ba8bcf96aca2f329440a844f924c8a0040b6d02/joblib-1.3.2-py3-none-any.whl.metadata
  Downloading joblib-1.3.2-py3-none-any.whl.metadata (5.4 kB)
Collecting threadpoolctl>=2.0.0 (from scikit-learn)
  Obtaining dependency information for threadpoolctl>=2.0.0 from https://files.pythonhosted.org/packages/81/
12/fd4dea011af9d69e1cad05c75f3f7202cdcbeac9b712eea58ca779a72865/threadpoolctl-3.2.0-py3-none-any.whl.metadat
a
  Downloading threadpoolctl-3.2.0-py3-none-any.whl.metadata (10.0 kB)
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Downloading threadpoolctl-3.2.0-py3-none-any.whl (15 kB)
Installing collected packages: threadpoolctl, scipy, joblib, scikit-learn
Successfully installed joblib-1.3.2 scikit-learn-1.3.0 scipy-1.11.2 threadpoolctl-3.2.0
Note: you may need to restart the kernel to use updated packages.
```

```
In [ ]: #evaluación Priemra parte
        #Elaborar un modelo para la prediccion de costos de un terreno en función de sus medida en metros cuadrados
        import numpy as np
        import tensorflow as tf
```

```
In [ ]: from tensorflow import keras
        from sklearn.model_selection import train_test_split
```

In [ ]:
```python
#datos de ejemplo
terrenos = [80,100,120,150,200,300,400]


#especificamo si el terremo tiene servicio de agua
agua = [1,1,0,0,1,0,0]

#especificamos si el terreno tiene servicio de luz
luz = [1,1,1,0,0,0,0]

#precios en miles de dolares
precios = [12,22,30,45,60,75, 82]
```

In [ ]:
```python
#pre procesamos los datos
X=np.column_stack((terrenos,agua,luz))
y=np.array(precios)
```

In [ ]:
```python
# dividimos los datos en entrenamiento y prueba
X_train,X_test,y_train,y_test=train_test_split(X,y,test_size=0.2,random_state=42)
```

In [ ]:
```python
# crear el modelo de red neuronal
# agregando más capas ocultas
model = keras.Sequential([
    keras.layers.Dense(units=128,activation='relu', input_shape=[3]),
    keras.layers.Dense(units=64,activation='relu'),
    keras.layers.Dense(units=1),
])
```

In [ ]:
```python
#compilar el modelo
model.compile(optimizer='adam',loss='mean_squared_error')
```

In [ ]:
```python
#entrenar el modelo
model.fit(X_train,y_train,epochs=600, verbose=0)
```

Out[ ]:
```
<keras.src.callbacks.History at 0x20c0d7c30d0>
```

In [ ]:
```python
#predicimos el precio de un terreno de 170 metros cuadrados
terreno_new=np.array([[160,1,1],[160,0,1],[600,0,0],[160,1,1],[800,0,0],[800,0,1],[800,1,0],[800,1,1]])
precio_predecido=model.predict(terreno_new)
#Colocar los datos en un data frame
import pandas as pd
df = pd.DataFrame(terreno_new, columns=['Metros Cuadrados', 'Agua', 'Luz'])
df['Precio'] = precio_predecido
print(df)
```

```
1/1 [==============================] - 0s 13ms/step
   Metros Cuadrados  Agua  Luz      Precio
0               160     1    1   41.693401
1               160     0    1   39.065361
2               600     0    0  139.394226
3               160     1    1   41.693401
4               800     0    0  185.262360
5               800     0    1  185.843475
6               800     1    0  187.958801
7               800     1    1  188.539886
1/1 [==============================] - 0s 13ms/step
   Metros Cuadrados  Agua  Luz      Precio
0               160     1    1   41.693401
1               160     0    1   39.065361
2               600     0    0  139.394226
3               160     1    1   41.693401
4               800     0    0  185.262360
5               800     0    1  185.843475
6               800     1    0  187.958801
7               800     1    1  188.539886
```

- Por *Gian Grobert Mamani Mamani*