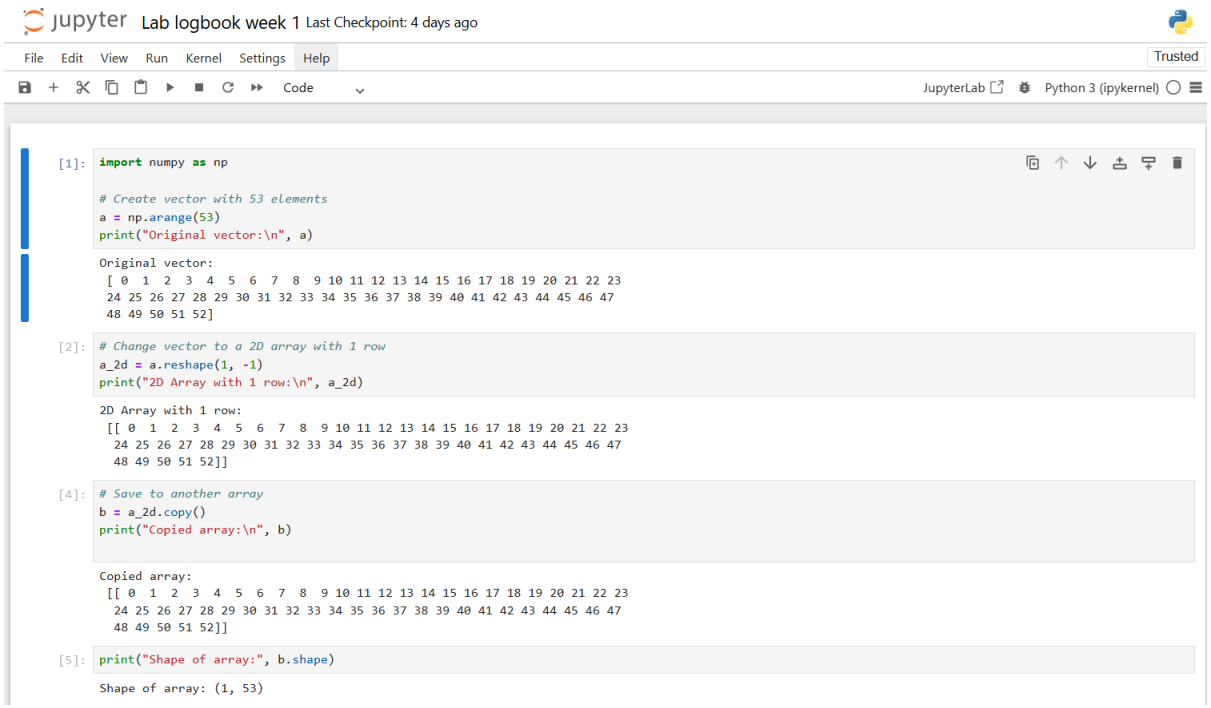
LAB Logbook

Lab 1



Lab 2

Lab 3

Lab 4

Lab MLP architecture (SID 2317053):

Model: "sequential"

Layer (type)	Output Shape	Param #
dense (Dense)	(None, 53)	26,553
dense_1 (Dense)	(None, 26)	1,404
dense_2 (Dense)	(None, 1)	27

Total params: 27,984 (109.31 KB)

Trainable params: 27,984 (109.31 KB)

Non-trainable params: 0 (0.00 B)

[5]:
```
# Train the model (epochs = 10)
history_lab = lab_model.fit(X_train, y_train, batch_size=10, epochs=10, validation_split=0.2, verbose=1

# Evaluate on test set and print MAE (scaled units)
mse_lab, mae_lab = lab_model.evaluate(X_test, y_test, verbose=0)
print('\nLab model test MAE (scaled):', mae_lab)
print('Lab model test MSE (scaled):', mse_lab)

# For comparison: if you have the practical-session MLP MAE (scaled) from the session, print it here.
practical_session_mae = 0.05292  # replace if you have a different value
print('\nPractical session MLP test MAE (reported):', practical_session_mae)
print('Difference (lab - practical):', mae_lab - practical_session_mae)
```

```
Epoch 1/10
2640/2640 ━━━━━━━━━━━━━━━━━━━━ 4s 1ms/step - loss: 5.9491e-04 - mae: 0.0147 - val_loss: 0.0059 - val_ma
e: 0.0696
Epoch 2/10
2640/2640 ━━━━━━━━━━━━━━━━━━━━ 3s 1ms/step - loss: 1.1717e-04 - mae: 0.0083 - val_loss: 0.0034 - val_ma
e: 0.0533
Epoch 3/10
2640/2640 ━━━━━━━━━━━━━━━━━━━━ 3s 1ms/step - loss: 8.6730e-05 - mae: 0.0072 - val_loss: 0.0010 - val_ma
e: 0.0282
Epoch 4/10
2640/2640 ━━━━━━━━━━━━━━━━━━━━ 3s 1ms/step - loss: 8.0475e-05 - mae: 0.0068 - val_loss: 0.0014 - val_ma
e: 0.0340
Epoch 5/10
2640/2640 ━━━━━━━━━━━━━━━━━━━━ 3s 1ms/step - loss: 6.9877e-05 - mae: 0.0063 - val_loss: 0.0011 - val_ma
e: 0.0293
Epoch 6/10
2640/2640 ━━━━━━━━━━━━━━━━━━━━ 3s 1ms/step - loss: 6.3635e-05 - mae: 0.0061 - val_loss: 5.9511e-04 - va
l_mae: 0.0207
Epoch 7/10
2640/2640 ━━━━━━━━━━━━━━━━━━━━ 3s 1ms/step - loss: 5.9160e-05 - mae: 0.0059 - val_loss: 6.8608e-04 - va
l_mae: 0.0226
Epoch 8/10
2640/2640 ━━━━━━━━━━━━━━━━━━━━ 3s 1ms/step - loss: 5.5622e-05 - mae: 0.0057 - val_loss: 4.2178e-04 - va
l_mae: 0.0172
Epoch 9/10
2640/2640 ━━━━━━━━━━━━━━━━━━━━ 3s 1ms/step - loss: 5.1369e-05 - mae: 0.0054 - val_loss: 3.9681e-04 - va
l_mae: 0.0164
Epoch 10/10
2640/2640 ━━━━━━━━━━━━━━━━━━━━ 3s 1ms/step - loss: 4.9476e-05 - mae: 0.0053 - val_loss: 3.0102e-04 - va
l_mae: 0.0143

Lab model test MAE (scaled): 0.024312620982527733
Lab model test MSE (scaled): 0.0008323349175043404

Practical session MLP test MAE (reported): 0.05292
Difference (lab - practical): -0.02860737901747227
```

Lab 5

Lab 6

Lab 7

Lab 8

Lab 9

Lab 10

Lab 11

Lab 12