Congratulations! You passed!

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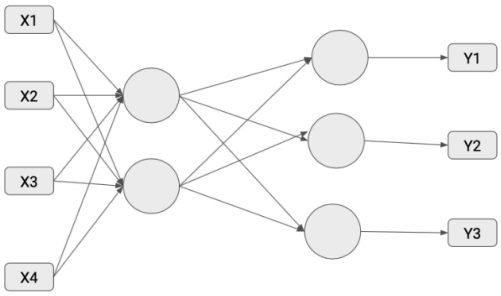
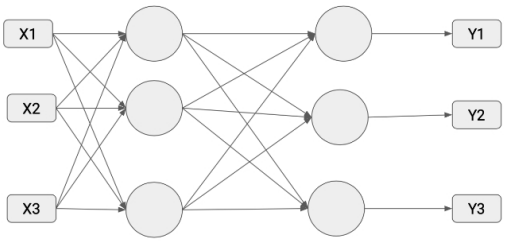
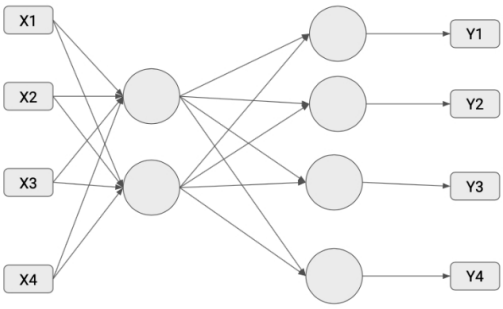
1. Which of the following is a valid architecture for an AutoEncoder? Check all that apply. **1 / 1 point**

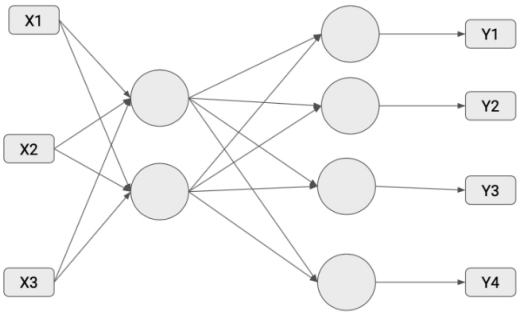




Correct
Correct! While the encoder layer and decoder layer have the same number of units which might take a straight pass through the layers, resulting in poor learning of latent representation, the architecture is still valid.



Correct
Correct!



2. After initializing your AutoEncoder you are all set to train it. Which of the following pieces of code will you use ? **1 / 1 point**

```
def autoencoder_training (X_train, Y_train, epochs):

  history = autoencoder.fit(# YOUR CODE HERE)

  return history
```

- autoencoder.fit(X_train, Y_train, epochs=epochs)
- autoencoder.fit(Y_train, Y_train, epochs=epochs)
- autoencoder.fit(Y_train, X_train, epochs=epochs)
- (●) autoencoder.fit(X_train, X_train, epochs=epochs)

Correct
Correct! For data reconstruction purposes you fit input data values to input data values (as opposed to fitting them to output data values), this way the model learns best to replicate the data.

3. Consider the following code for a simple *AutoEncoder*, what is *model_1* outputting ? **1 / 1 point**

```
inputs =  tf.keras.layers.Input(shape=(784,))

def simple_autoencoder():
    encoder = tf.keras.layers.Dense(units=32, activation='relu')(inputs)
    decoder = tf.keras.layers.Dense(units=784, activation='sigmoid')(encoder)
    return encoder, decoder

output_1, output_2 = simple_autoencoder()

model_1 = tf.keras.Model(inputs=inputs, outputs=output_1)

model_2 = tf.keras.Model(inputs=inputs, outputs=output_2)
```

- (●) Displaying the internal representation of the input the model is learning to replicate.
- Displaying the classification layer of the model, mapping input to the output label.
- Displaying the label value which the model is trying to reconstruct.
- Displaying the reconstruction of the original input which was fed to this architecture.

Correct
Correct! *model_1* is returning the encoded representation of your input values, which are being fed to the decoder as input.

4. Consider the following code for a simple *AutoEncoder*, which of these is *model_1*'s output ? **1 / 1 point**

```
inputs =  tf.keras.layers.Input(shape=(784,))

def simple_autoencoder():
    encoder = tf.keras.layers.Dense(units=32, activation='relu')(inputs)
    decoder = tf.keras.layers.Dense(units=784, activation='sigmoid')(encoder)
    return encoder, decoder

output_1, output_2 = simple_autoencoder()

model_1 = tf.keras.Model(inputs=inputs, outputs=output_1)

model_2 = tf.keras.Model(inputs=inputs, outputs=output_2)
```

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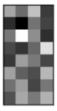
- (●) 

Correct
Correct!

5. Consider the following code for adding noise in an image. You use *tf.clip_by_value* to constrain the output image to values between 0 & 1. **1 / 1 point**

```
def map_image_with_noise(image, label):
  noise_factor = 0.5
  image = tf.cast(image, dtype=tf.float32)
  image = image / 255.0

  factor = noise_factor * tf.random.normal(shape=image.shape)
  image_noisy = image + factor
  image_noisy = tf.clip_by_value(image_noisy, 0.0, 1.0)

  return image_noisy, image
```

- ○ False
- ◉ True

Correct
Correct!