Congratulations! You passed!

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1. What is stored in the 'cache' during forward propagation for latter use in backward propagation? 1 / 1 point

- $W^{[l]}$
- $Z^{[l]}$ (selected)
- $b^{[l]}$
- $A^{[l]}$

Expand

Correct
Yes. This value is useful in the calculation of $dW^{[l]}$ in the backward propagation.

2. During the backpropagation process, we use gradient descent to change the hyperparameters. True/False? 1 / 1 point

- False (selected)
- True

Expand

Correct
Correct. During backpropagation, we use gradient descent to compute new values of $W^{[l]}$ and $b^{[l]}$. These are the parameters of the network.

3. Considering the intermediate results below, which layers of a deep neural network are they likely to belong to? 1 / 1 point

- Later layers of the deep neural network. (selected)
- Middle layers of the deep neural network.
- Input layer of the deep neural network.
- Early layers of the deep neural network.

Expand

Correct
Correct. The deep layers of a neural network are typically computing more complex features such as the ones shown in the figure.

4. We can not use vectorization to calculate $da^{[l]}$ in backpropagation, we must use a for loop over all the examples. True/False? 1 / 1 point

- False (selected)
- True

Expand

Correct
Correct. We can use vectorization in backpropagation to calculate $dA^{[l]}$ for each layer. This computation is done over all the training examples.

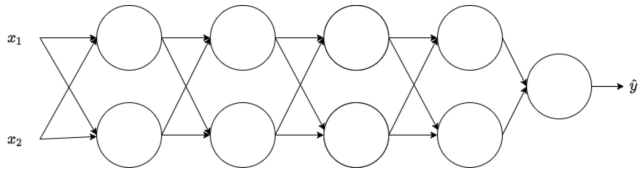
5. Suppose W[i] is the array with the weights of the i-th layer, b[i] is the vector of biases of the i-th layer, and g is the activation function used in all layers. Which of the following calculates the forward propagation for the neural network with L layers. **1 / 1 point**

- for i in range(L):
  Z[i+1] = W[i+1]*A[i+1] + b[i+1]
  A[i+1] = g(Z[i+1])
- for i in range(1, L):
  Z[i] = W[i]*A[i-1] + b[i]
  A[i] = g(Z[i])
- for i in range(1, L+1):
  Z[i] = W[i]*A[i-1] + b[i]
  A[i] = g(Z[i])
- for i in range(L):
  Z[i] = W[i]*X + b[i]
  A[i] = g(Z[i])

Expand

Correct
Yes. Remember that the range omits the last number thus the range from 1 to L+1 gives the L necessary values.

6. Consider the following neural network: **1 / 1 point**



How many layers does this network have?

- The number of layers L is 2.
- The number of layers L is 4.
- The number of layers L is 5.
- The number of layers L is 6

Expand

Correct
Yes. The number of layers is the number of hidden layers + 1.

7. If L is the number of layers of a neural network then $dZ^{[L]} = A^{[L]} - Y$. True/False? **1 / 1 point**

- True
  Yes. The gradient of the output layer depends on the difference between the value computed during the forward propagation process and the target values.
- False
  No. The gradient of the output layer depends on the difference between the value computed during the forward propagation process and the target values.

Expand

Correct

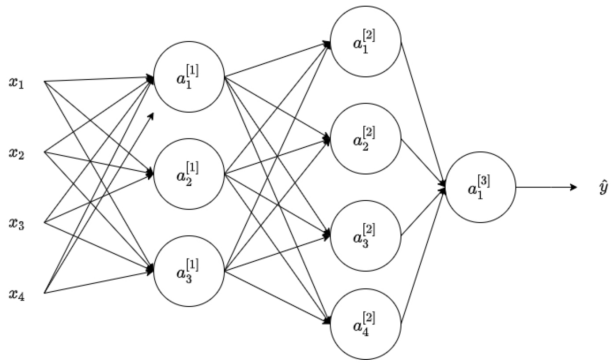
8. For any mathematical function you can compute with an L-layered deep neural network with N hidden units there is a shallow neural network that requires only $\log N$ units, but it is very difficult to train. **1 / 1 point**

- False
- True

Expand

Correct
Correct. On the contrary, some mathematical functions can be computed using an L-layered neural network and a given number of hidden units; but using a shallow neural network the number of necessary hidden units grows exponentially.

9. Consider the following 2 hidden layers neural network: **1 / 1 point**



Which of the following statements are true? (Check all that apply).

- [ ] $W^{[1]}$ will have shape (4, 3)
- [x] $W^{[2]}$ will have shape (4, 3)

  Correct
  Yes. More generally, the shape of $W^{[l]}$ is $(n^{[l]}, n^{[l-1]})$.

- [ ] $W^{[2]}$ will have shape (1, 3)
- [x] $b^{[1]}$ will have shape (3, 1)

  Correct
  Yes. More generally, the shape of $b^{[l]}$ is $(n^{[l]}, 1)$.

- [ ] $W^{[2]}$ will have shape (3, 4)
- [ ] $b^{[1]}$ will have shape (4, 1)
- [x] $W^{[1]}$ will have shape (3, 4)

  Correct
  Yes. More generally, the shape of $W^{[l]}$ is $(n^{[l]}, n^{[l-1]})$.

- [ ] $b^{[1]}$ will have shape (1, 3)
- [ ] $W^{[2]}$ will have shape (3, 1)

Expand

Correct
Great, you got all the right answers.

10. In the general case if we are training with m examples what is the shape of $A^{[l]}$? **1 / 1 point**

- ( ) $(m, n^{[l]})$
- ( ) $(m, n^{[l+1]})$
- (•) $(n^{[l]}, m)$
- ( ) $(n^{[l+1]}, m)$

Expand

Correct
Yes. The number of rows in $A^{[l]}$ corresponds to the number of units in the l-th layer.