Congratulations! You passed!

Grade received 100% **Latest Submission Grade** 100% **To pass** 80% or higher

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

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

Expand

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

2. Which of the following are “parameters” of a neural network? (Check all that apply.) **1 / 1 point**

- [ ] $g^{[l]}$ the activation functions.
- [x] $W^{[l]}$ the weight matrices.

Correct
Correct. The weight matrices and the bias vectors are the parameters of the network.

- [x] $b^{[l]}$ the bias vector.

Correct
Correct. The weight matrices and the bias vectors are the parameters of the network.

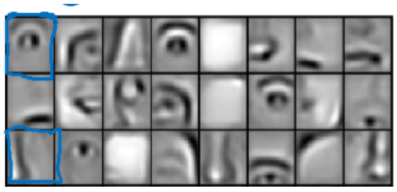
- [ ] L the number of layers of the neural network.

Expand

Correct
Great, you got all the right answers.

3. Which of the following is more likely related to the early layers of a deep neural network? **1 / 1 point**

- ( )



Expand

Correct
Yes. The early layer of a neural network usually computes simple features such as edges and lines.

4. Vectorization allows you to compute forward propagation in an L-layer neural network without an explicit for-loop (or any other explicit iterative loop) over the layers l=1, 2, …,L. True/False? **1 / 1 point**

- ○ True
- ◉ False

Expand

✓ **Correct**
Forward propagation propagates the input through the layers, although for shallow networks we may just write all the lines ($a^{[2]} = g^{[2]}(z^{[2]})$, $z^{[2]} = W^{[2]}a^{[1]} + b^{[2]}$, ...) in a deeper network, we cannot avoid a for loop iterating over the layers: ($a^{[l]} = g^{[l]}(z^{[l]})$, $z^{[l]} = W^{[l]}a^{[l-1]} + b^{[l]}$, ...).

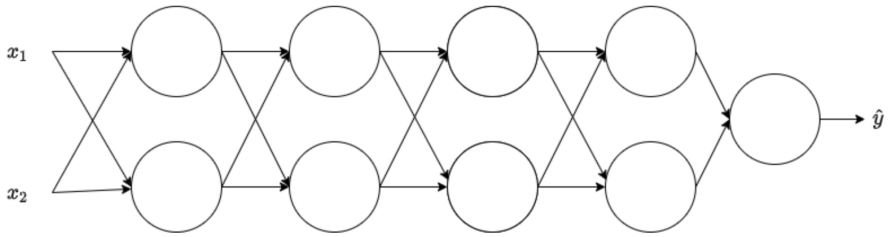
5. Suppose W[i] is the array with the weights of the i-th layer, b[i] is the vector of biases of the i-th layer, and g is the activation function used in all layers. Which of the following calculates the forward propagation for the neural network with L layers. **1 / 1 point**

- ○ for i in range(1, L):
  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])
- ○ 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+1):
  Z[i] = W[i]*A[i-1] + 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 4.
- ○ The number of layers L is 6
- ◉ The number of layers L is 5.
- ○ The number of layers L is 2.

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

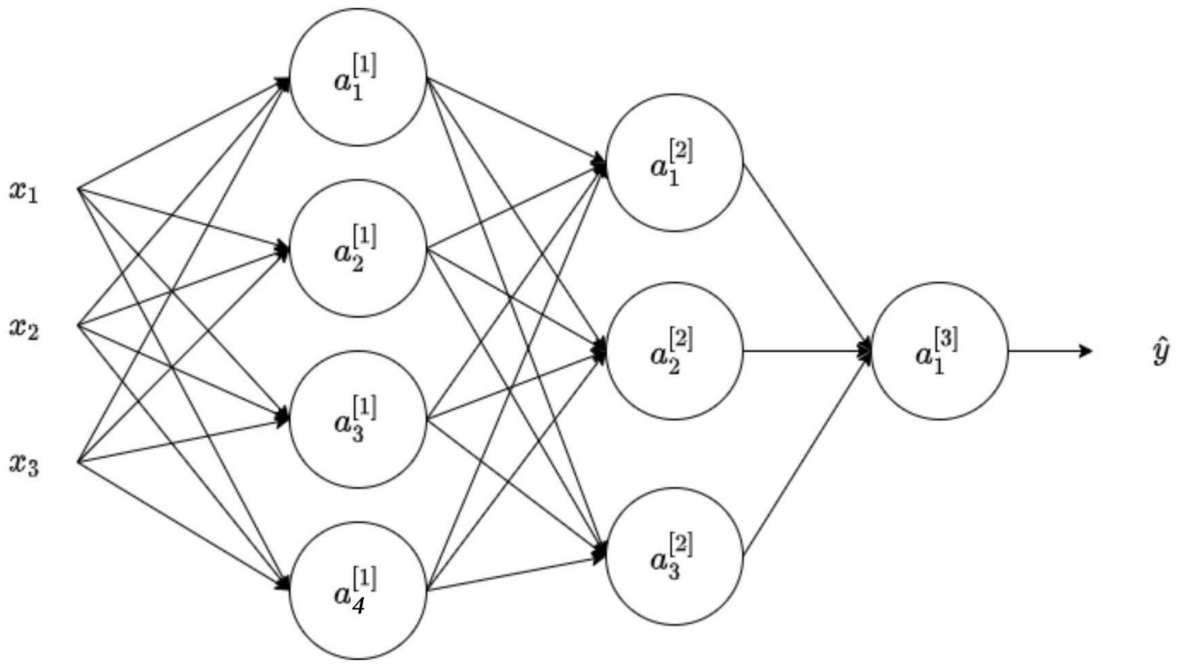
8. A shallow neural network with a single hidden layer and 6 hidden units can compute any function that a neural network with 2 hidden layers and 6 hidden units can compute. True/False? **1 / 1 point**

- (•) False
- ( ) True

Expand

Correct
Correct. As seen during the lectures there are functions you can compute with a "small" L-layer deep neural network that shallower networks require exponentially more hidden units to compute.

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



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

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

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

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

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

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

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

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**

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

Expand

Correct
Yes. The number of rows in $A^{[1]}$ corresponds to the number of units in the l-th layer.