✓ **Congratulations! You passed!**

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

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1. Which of the following are true? (Check all that apply.)   1 / 1 point

☑ $w_3^{[4]}$ is the column vector of parameters of the fourth layer and third neuron.

✓ **Correct**

Yes. The vector $w_j^{[i]}$ is the column vector of parameters of the i-th layer and j-th neuron of that layer.

☐ $w_3^{[4]}$ is the row vector of parameters of the fourth layer and third neuron.

☐ $w_3^{[4]}$ is the column vector of parameters of the third layer and fourth neuron.

☑ $W^{[1]}$ is a matrix with rows equal to the transpose of the parameter vectors of the first layer.

✓ **Correct**

Yes. We construct $W^{[1]}$ stacking the parameter vectors $w_j^{[1]}$ of all the neurons of the first layer.

☐ $W^{[1]}$ is a matrix with rows equal to the parameter vectors of the first layer.

☐ W_1 is a matrix with rows equal to the parameter vectors of the first layer.

[↗ Expand]

⊘ **Correct**
Great, you got all the right answers.

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2. In which of the following cases is the linear (identity) activation function most likely used?   1 / 1 point

○ The linear activation function is never used.

○ As activation function in the hidden layers.

○ For binary classification problems.

◉ When working with regression problems.

[↗ Expand]

⊘ **Correct**
Yes. In problems such as predicting the price of a house it makes sense to use the linear activation function as output.

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3. Which of the following is a correct vectorized implementation of forward propagation for layer 2?   1 / 1 point

○ $Z^{[2]} = W^{[2]} A^{[1]} + b^{[2]}$
$A^{[2]} = g(Z^{[2]})$

◉ $Z^{[2]} = W^{[2]} A^{[1]} + b^{[2]}$
$A^{[2]} = g^{[2]}(Z^{[2]})$

○ $Z^{[1]} = W^{[1]} X + b^{[1]}$
$A^{[1]} = g^{[1]}(Z^{[1]})$

○ $Z^{[2]} = W^{[2]} X + b^{[2]}$
$A^{[2]} = g^{[2]}(Z^{[2]})$

4. When building a binary classifier for recognizing cats (y=1) vs raccoons (y=0). Is better to use the sigmoid function as activation function for the hidden layers. True/False

1 / 1 point

- ◉ False
- ○ True

5. Consider the following code:

0 / 1 point

```python
#+begin_src python

x = np.random.rand(4, 5)

y = np.sum(x, axis=1)

#+end_src
```

What will be y.shape?

- ○ (5,)
- ○ (1, 5)
- ◉ (4, 1)
- ○ (4,)

6. Suppose you have built a neural network with one hidden layer and tanh as activation function for the hidden layer. You decide to initialize the weights to small random numbers and the biases to zero. The first hidden layer's neurons will perform different computations from each other even in the first iteration. True/False?

1 / 1 point

- ◉ True Yes. Since the weights are most likely different, each neuron will do a different computation.
- ○ False No. Since the weights are most likely different, each neuron will do a different computation.

7. A single output and single layer neural network that uses the sigmoid function as activation is equivalent to the logistic regression. True/False

1 / 1 point

○ True

○ False

↗ **Expand**

✓ **Correct**
Yes. The logistic regression model can be expressed by $$\hat{y} = \sigma\left(W \, x + b \right)$$. This is the same as $$a^{[1]} = \sigma(W^{[1]}\, X + b)$$.

8. Which of the following is true about the ReLU activation functions?

1 / 1 point

⦿ They are the go to option when you don't know what activation function to choose for hidden layers.

○ They are only used in the case of regression problems, such as predicting house prices.

○ They are increasingly being replaced by the tanh in most cases.

○ They cause several problems in practice because they have no derivative at 0. That is why Leaky ReLU was invented.

↗ **Expand**

✓ **Correct**

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9. Consider the following 1 hidden layer neural network:

0 / 1 point
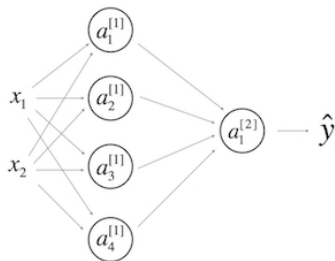
Which of the following statements are True? (Check all that apply).

☑ $W^{[1]}$ will have shape (2, 4)

! **This should not be selected**

☑ $b^{[2]}$ will have shape (4, 1)

! **This should not be selected**

☑ $b^{[2]}$ will have shape (1, 1)

✓ **Correct**

☑ $W^{[1]}$ will have shape (4, 2)

✓ **Correct**

☑ $b^{[1]}$ will have shape (4, 1)

✓ **Correct**

☑ $W^{[2]}$ will have shape (1, 4)

☑ $W^{[2]}$ will have shape (4, 1)

! This should not be selected

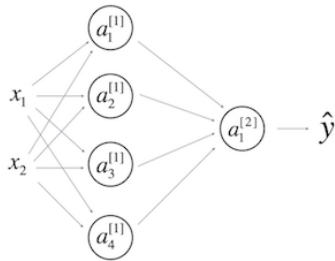☑ $b^{[1]}$ will have shape (2, 1)

! This should not be selected

⤢ Expand

10. What are the dimensions of $Z^{[1]}$ and $A^{[1]}$?

1 / 1 point

○ $Z^{[1]}$ and $A^{[1]}$ are (4,1)

◉ $Z^{[1]}$ and $A^{[1]}$ are (4,m)

○ $Z^{[1]}$ and $A^{[1]}$ are (4,2)

○ $Z^{[1]}$ and $A^{[1]}$ are (1,4)

⤢ Expand