Congratulations! You passed!

Grade received 90% **Latest Submission Grade** 90% **To pass** 80% or higher

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1. In logistic regression given $\mathbf{x}$ and parameters $w \in \mathbb{R}^{n_x}, b \in \mathbb{R}$. Which of the following best expresses what we want $\hat{y}$ to tell us? **1 / 1 point**

- $\sigma(W\mathbf{x} + b)$
- $P(y = 1|\mathbf{x})$
- $P(y = \hat{y}|\mathbf{x})$
- $\sigma(W\mathbf{x})$

Expand

Correct
Yes. We want the output $\hat{\mathrm{y}}$ to tell us the probability that $y = 1$ given x.

2. Which of these is the "Logistic Loss"? **1 / 1 point**

- $\mathcal{L}^{(i)}(\hat{y}^{(i)}, y^{(i)}) = -(y^{(i)} \log(\hat{y}^{(i)}) + (1 - y^{(i)}) \log(1 - \hat{y}^{(i)}))$
- $\mathcal{L}^{(i)}(\hat{y}^{(i)}, y^{(i)}) = max(0, y^{(i)} - \hat{y}^{(i)})$
- $\mathcal{L}^{(i)}(\hat{y}^{(i)}, y^{(i)}) = | y^{(i)} - \hat{y}^{(i)}|^2$
- $\mathcal{L}^{(i)}(\hat{y}^{(i)}, y^{(i)}) = | y^{(i)} - \hat{y}^{(i)}|$

Expand

Correct
Correct, this is the logistic loss you've seen in lecture!

3. Suppose img is a (32,32,3) array, representing a 32x32 image with 3 color channels red, green and blue. How do you reshape this into a column vector x? **1 / 1 point**

- x = img.reshape((32*32,3))
- x = img.reshape((1,32*32,3))
- x = img.reshape((3,32*32))
- x = img.reshape((32*32*3,1))

Expand

Correct

4. Consider the following random arrays a and b, and c: **1 / 1 point**

$a = np.random.randn(2, 3)$ # $a.shape = (2, 3)$

$b = np.random.randn(2, 1)$ # $b.shape = (2, 1)$

$c = a + b$

What will be the shape of c?

- c.shape = (2, 3)
- The computation cannot happen because the sizes don't match. It's going to be "Error"!
- c.shape = (3, 2)

c.shape = (3, 2)

c.shape = (2, 1)

Expand

Correct
Yes! This is broadcasting. b (column vector) is copied 3 times so that it can be summed to each column of a.

5. Consider the two following random arrays a and b: **1 / 1 point**

$a = np.random.randn(1, 3)\ \#\ a.shape = (1, 3)$

$b = np.random.randn(3, 3)\ \#\ b.shape = (3, 3)$

$c = a * b$

What will be the shape of c?

- The computation cannot happen because it is not possible to broadcast more than one dimension.
- c.shape = (3, 3)
- The computation cannot happen because the sizes don't match.
- c.shape = (1, 3)

Expand

Correct
Yes. Broadcasting allows row a to be multiplied element-wise with each row of b to from c.

6. Suppose you have n_x input features per example. Recall that $X = [x^{(1)}x^{(2)}...x^{(m)}]$. What is the dimension of X? **1 / 1 point**

- (m, n_x)
- $(1, m)$

- $(m, 1)$
- (n_x, m)

Expand

Correct

7. Recall that $np.dot(a, b)$ performs a matrix multiplication on a and b, whereas $a * b$ performs an element-wise multiplication. **1 / 1 point**

Consider the two following random arrays a and b:

$a = np.random.randn(12288, 150)$

$\#\, a.shape = (12288, 150)$

$b = np.random.randn(150, 45)$

$\#\, b.shape = (150, 45)$

$c = np.dot(a, b)$

What is the shape of c?

- c.shape = (150,150)
- c.shape = (12288, 150)
- The computation cannot happen because the sizes don't match. It's going to be "Error"!
- c.shape = (12288, 45)

Expand

Correct

Correct, remember that a np.dot(a, b) has shape (number of rows of a, number of columns of b). The sizes match because: "number of columns of a = 150 =

number of rows of b"

8. Consider the following code snippet: **1 / 1 point**

$a.shape = (3, 4)$

$b.shape = (4, 1)$

for i in range(3):

for j in range(4):

c[i][j] = a[i][j] + b[j]

How do you vectorize this?

- c = a.T + b.T
- c = a + b
- c = a + b.T
- c = a.T + b

Expand

Correct

9. Consider the code snippet: **0 / 1 point**

$a.shape = (3, 3)$

$b.shape = (3, 3)$

$c = a**2 + b.T**2$

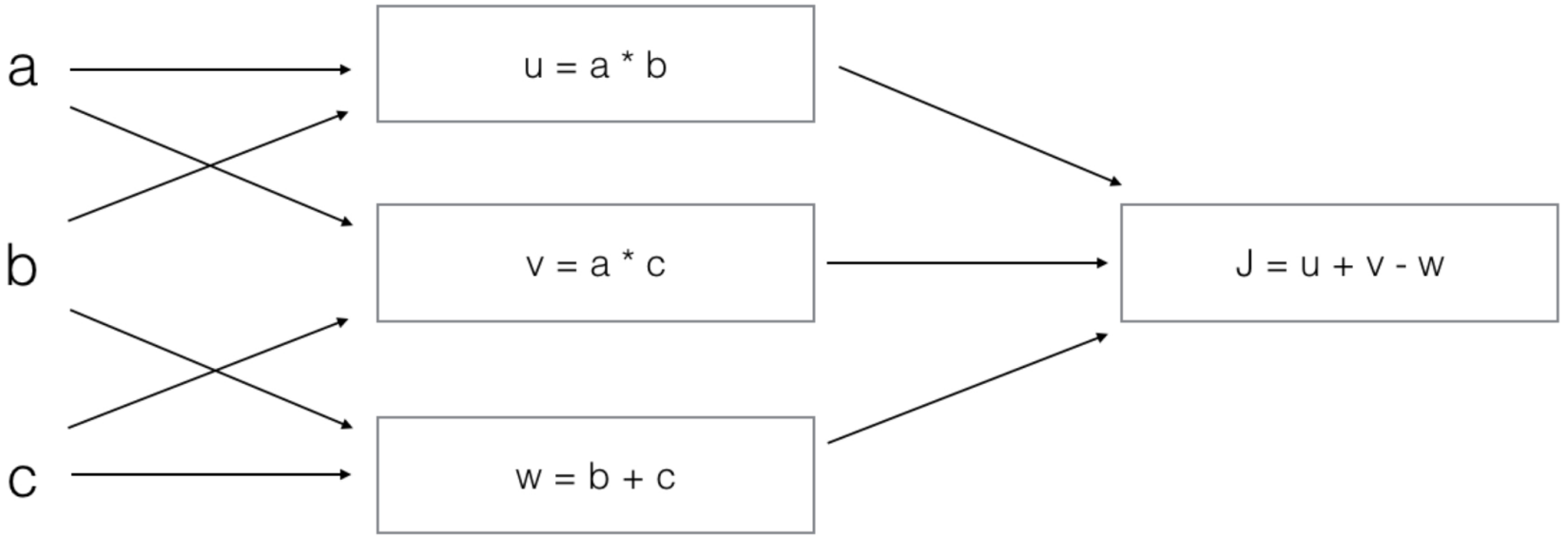
Which of the following gives an equivalent output for c?

- The computation cannot happen because the sizes don't match. It's going to be an "Error"!
- for i in range(3):
  for j in range(3):
  c[i][j] = a[i][j]**2 + b[i][j]**2
- for i in range(3):
  c[i] = a[i]**2 + b[i]**2
- for i in range(3):
  for j in range(3):
  c[i][j] = a[i][j]**2 + b[j][i]**2

Expand

Incorrect
No. We are adding the rows of a**2 with the rows of b**2, not with the columns.

10. Consider the following computation graph. **1 / 1 point**



What is the output J?

- $J = a * b + b * c + a * c$
- $J = (a - 1) * (b + c)$
- $J = (c - 1) * (b + a)$
- $J = (b - 1) * (c + a)$

Expand

Correct

Yes. $J = u + v - w = a * b + a * c - (b + c) = a * (b + c) - (b + c) = (a - 1) * (b + c)$.