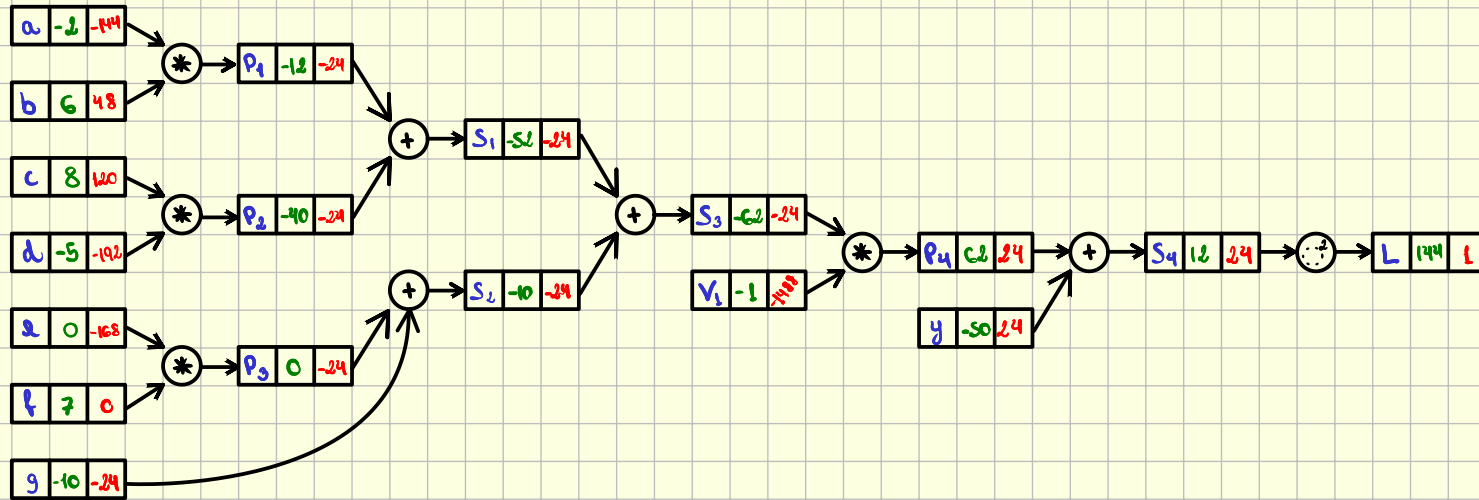


monstrinho 3.1:

$$L = (y - (a * b + c * d + e * f + g))^2$$

- forward pass
- backpropagation



$a = -2$	$P_1 = a * b = -12$
$b = 6$	$P_2 = c * d = -40$
$c = 8$	$P_3 = e * f = 0$
$d = -5$	$P_4 = S_3 * V_1 = 62$
$e = 0$	$S_1 = P_1 + P_2 = -52$
$f = 7$	$S_2 = P_3 + g = -10$
$g = -10$	$S_3 = S_1 + S_2 = -62$
$y = -50$	$S_4 = P_4 + y = 12$
$V_1 = -1$	$L = S_4^2 = 144$

$$\frac{\partial L}{\partial L} = 1$$

$$\frac{\partial L}{\partial S_4} = 2S_4 = 2 * 12 = 24$$

$$\frac{\partial L}{\partial y} = \frac{\partial L}{\partial S_4} * \frac{\partial S_4}{\partial y} = 24 * 1 = 24$$

$$\frac{\partial L}{\partial P_3} = \frac{\partial L}{\partial S_2} * \frac{\partial S_2}{\partial P_3} = -24 * 1 = -24$$

$$\frac{\partial L}{\partial P_2} = \frac{\partial L}{\partial S_1} * \frac{\partial S_1}{\partial P_2} = -24 * 1 = -24$$

$$\frac{\partial L}{\partial P_1} = \frac{\partial L}{\partial S_1} * \frac{\partial S_1}{\partial P_1} = -24 * 1 = -24$$

$$\frac{\partial L}{\partial P_4} = \frac{\partial L}{\partial S_4} * \frac{\partial S_4}{\partial P_4} = 24 * 1 = 24$$

$$\frac{\partial L}{\partial V_1} = \frac{\partial L}{\partial P_4} * \frac{\partial P_4}{\partial V_1} = 24 * -62 = -1488$$

$$\frac{\partial L}{\partial S_3} = \frac{\partial L}{\partial P_4} * \frac{\partial P_4}{\partial S_3} = 24 * -1 = -24$$

$$\frac{\partial L}{\partial f} = \frac{\partial L}{\partial P_3} * \frac{\partial P_3}{\partial f} = -24 * 0 = 0$$

$$\frac{\partial L}{\partial e} = \frac{\partial L}{\partial P_3} * \frac{\partial P_3}{\partial e} = -24 * 7 = -168$$

$$\frac{\partial L}{\partial d} = \frac{\partial L}{\partial P_2} * \frac{\partial P_2}{\partial d} = -24 * 8 = -192$$

$$\frac{\partial L}{\partial S_3} = \frac{\partial L}{\partial S_3} * \frac{\partial S_3}{\partial S_2} = -24 * 1 = -24$$

$$\frac{\partial L}{\partial S_1} = \frac{\partial L}{\partial S_3} * \frac{\partial S_3}{\partial S_1} = -24 * 1 = -24$$

$$\frac{\partial L}{\partial g} = \frac{\partial L}{\partial S_2} * \frac{\partial S_2}{\partial g} = -24 * 1 = -24$$

$$\frac{\partial L}{\partial c} = \frac{\partial L}{\partial P_2} * \frac{\partial P_2}{\partial c} = -24 * -5 = -120$$

$$\frac{\partial L}{\partial b} = \frac{\partial L}{\partial P_1} * \frac{\partial P_1}{\partial b} = -24 * -2 = 48$$

$$\frac{\partial L}{\partial a} = \frac{\partial L}{\partial P_1} * \frac{\partial P_1}{\partial a} = -24 * 6 = -144$$