Homework 7: Weight Initialization and Batch Normalization 縱軸橫軸單位與數量級皆與助教提供的一樣

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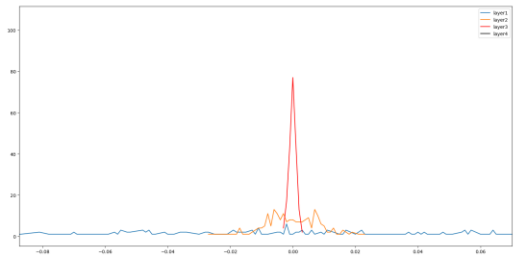
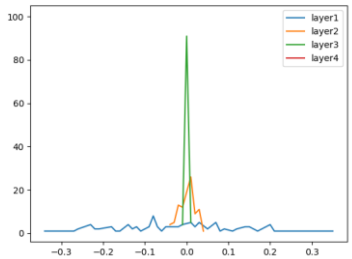
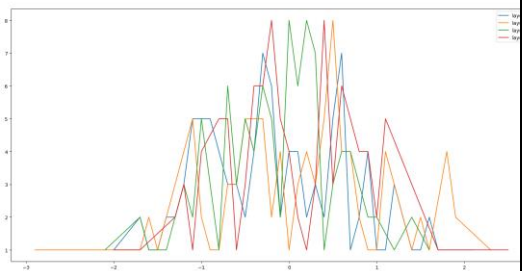
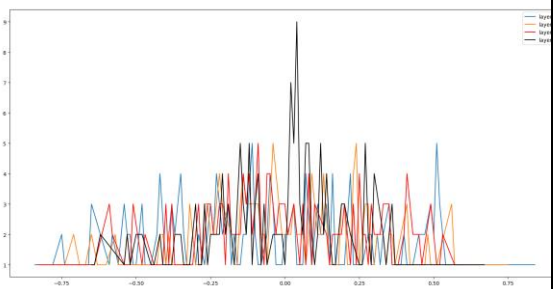
1. **Plot the value distribution picture of output and gradient of output in very layer. (In three different weight initialization method, which are normal, Xavier and orthogonal weight initialization)**

In normal weight initialization

value distribution picture of output	value distribution picture of output gradient
	

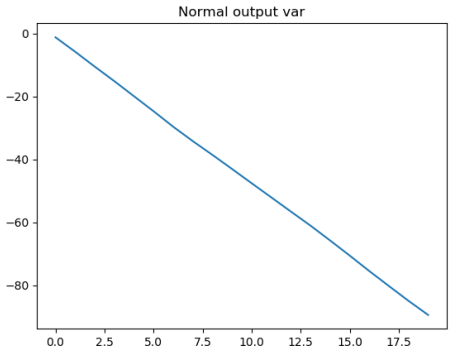
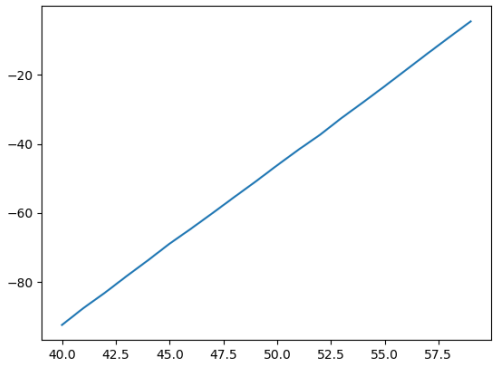
In Xavier weight initialization

value distribution picture of output	value distribution picture of output gradient
	

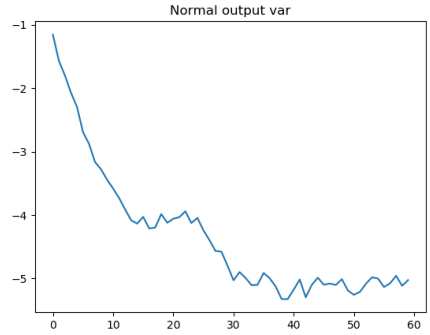
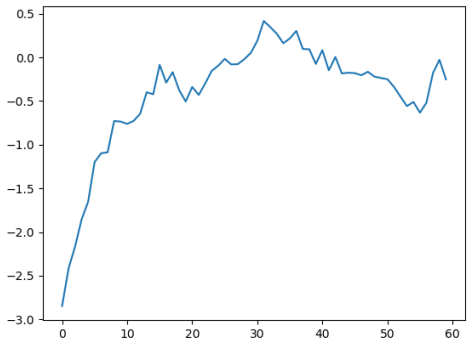
2. **Plot the variance value picture of output and output gradient in very layer. (In two different weight initialization methods, which are normal and Xavier weight initialization)**

In normal weight initialization

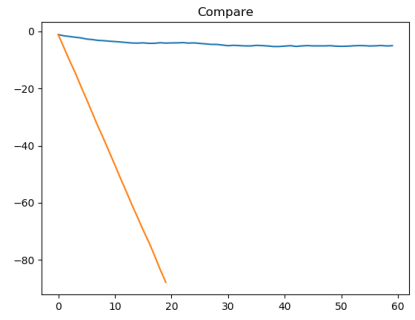
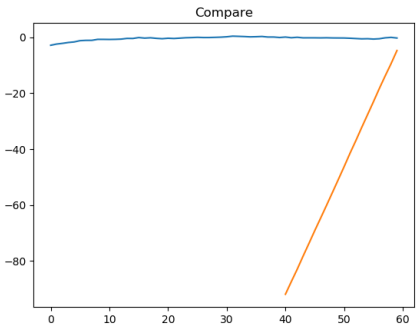
variance value picture of output	value variance picture of output gradient

In Xavier weight initialization

variance value picture of output	value variance picture of output gradient
	

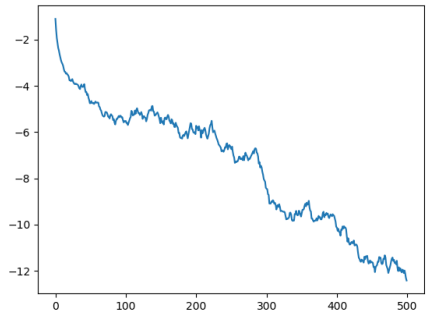
Compare two results

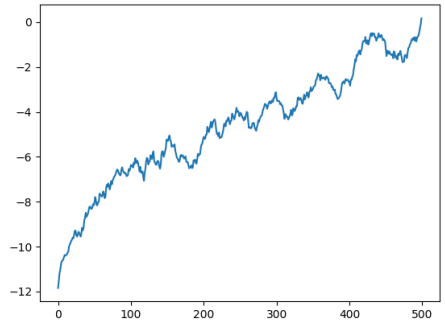
variance value picture of output	value variance picture of output gradient
 藍色為 xavier，橘色為 Normal	 藍色為 xavier，橘色為 Normal

3. Plot the variance value picture of output and output gradient in very layer. (without and with batchNorm in every layer)

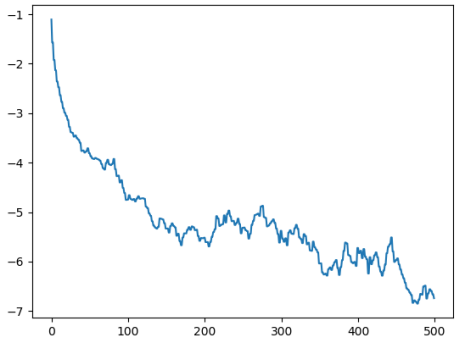
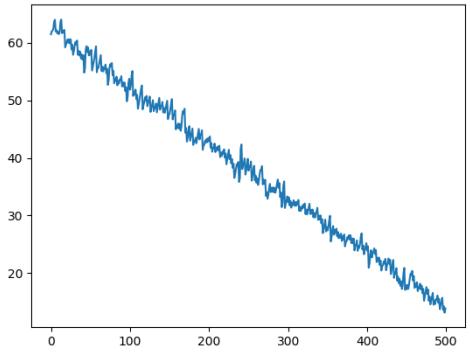
Without batchNorm

variance value picture of output	value variance picture of output gradient

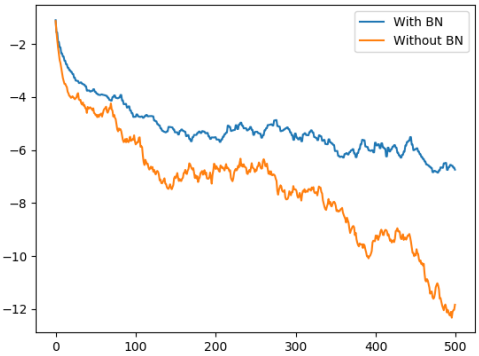
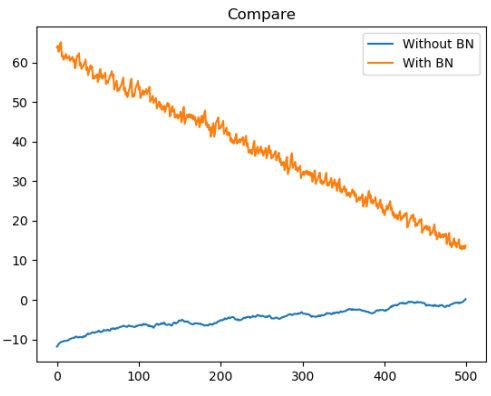




With BatchNorm

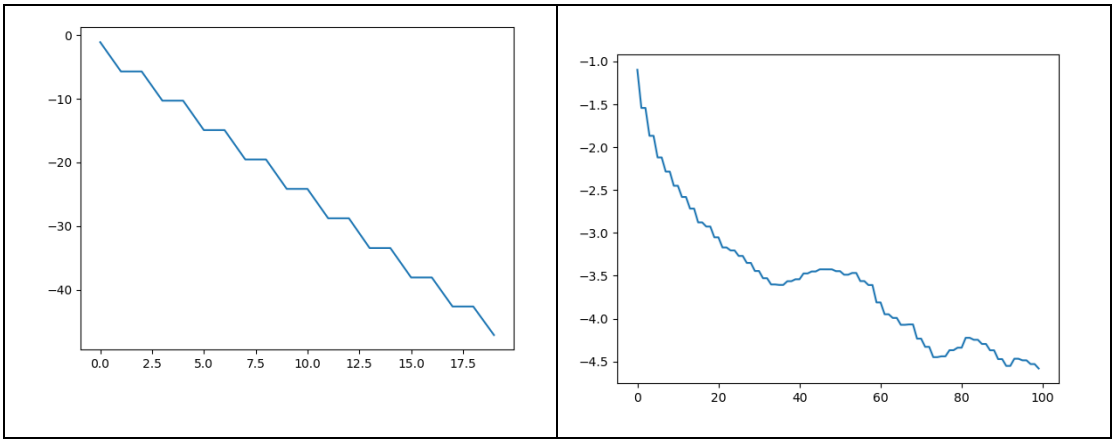
variance value picture of output	value variance picture of output gradient
	

Compare two results

variance value picture of output	value variance picture of output gradient
	

4. Plot the variance value picture of output in very layer. (In two different weight initialization method, which are normal and Xavier weight initialization. Every layer has batchNorm layer)

variance value picture of output(Normal)	variance value picture of output(Xaxier)



5. Xavier weight initialization is for activation function tanh. Which weight initialization is for activation function relu?

Ans: 使用 xavier 的變形，He initialization。