**What are the pros and cons of bootstrap?**

Bootstraping might increase the runtime of the episode since it requires more computations. It also has less variance than MC, since it depends not on a sample from a start state to an end state, but rather on the current reward and states close to the current one. MC on the other hand is guranteed to converge with better accuracy given enough samples (i.e iterations), while bootstraping has the potential to converge with less iterations. In short, Bootstraping is good to infer predictions from a sample, while MC is better in getting better results for the sample itself.

# Would you expect bootstrapping to help more in blackjack or Easy21?

In Easy21 even if the player gets total sum of 21, s/he can still hit and get a red card which will get him back from a decicive win. Therefore, bootstraping might work better than in blackjack due to the fact that episodes can be longer (in fact they can go forever! i.e. the player keeps hitting and getting one black card and the next is a red one resetting his total sum), since it will consider this scenario. In MC though, a single episode might take too long while in fact it is not contributing much to the model.

# What are the pros and cons of function approximation in Easy21?

Linear function approximation bundles overlapping states which results in a significant reduction in the space state and thus the space complexity and the learning time of the simulation. However, some variables are lost and thus some accuracy too. It is also worth mentioning that LF is not guranteed to converge.

# How would you modify the function approximator suggested in this section to get better results in Easy21?

The overlapping cuboid intervals lead to bad results, since some states would trigger multiple features whose sum may be out of the actual reward limits (i.e. 0 < reward < 1), not to mention that those overlapping intervals don't introduce significant improvement in the model.