

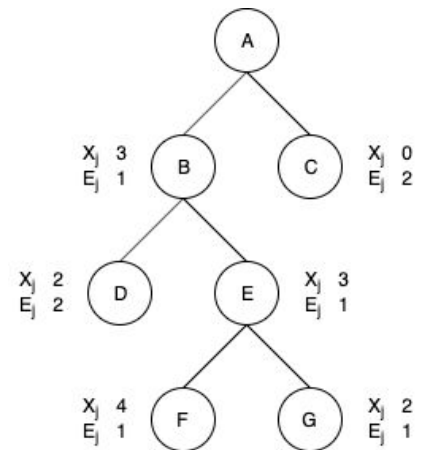
## UCB Equation

$$UCB_j = \overset{\text{Exploitation}}{\bar{X}_j} + C \sqrt{\frac{\ln N}{n_j}} \quad \text{Exploration}$$

In the following question, the Exploitation term will be referred to as  $X_j$ , while the Exploration term will be referred to as  $E_j$ . The  $X_j$  and  $E_j$  values for each node have already been calculated for you, so you do not need to calculate them yourself.

Q1) If you are applying MCTS starting from the root node A what will be the sequence of the selected nodes when:

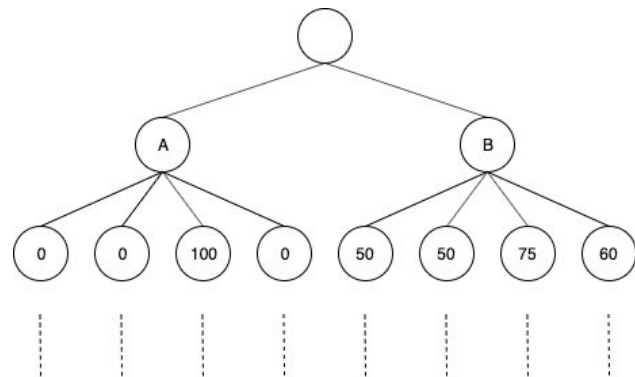
- $C = 0$
- $C = 2$
- $C = 10$



Q2)

a) Which node will be selected from the root node if  $c=0$ ?

b) What node will be selected if the exploitation term is taking the maximum instead of the average?



b) Do you think that using the maximum instead of the average in the exploitation term is a good modification? Explain why or why not with examples.