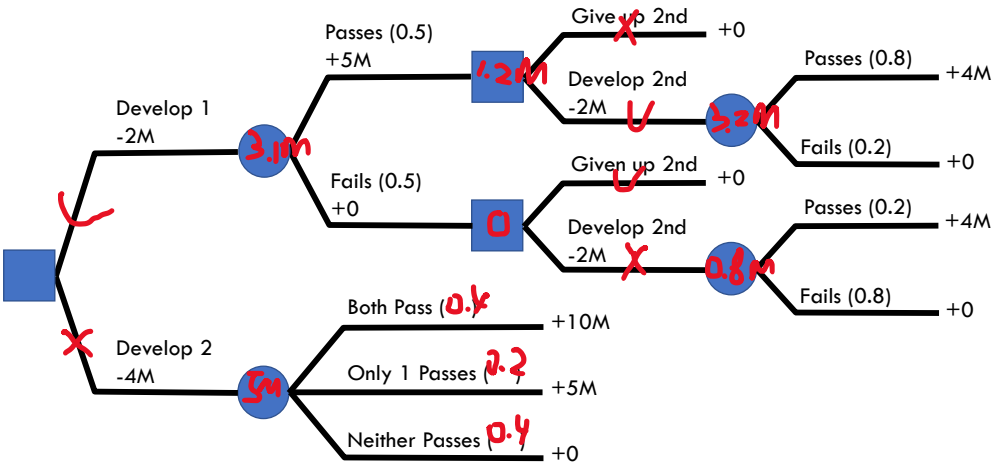
Fivecents (Slides 17 and 18):

Note that the two projects are not independent, so P(SS)=P(S)*P(S|S)=0.5*0.8=0.4.



Café du Donut

Part 1 (please find the details in the excel file)

	Demand							
Options	4	5	6	7	8	9	10	EMV
5	40	100	100	100	100	100	100	97
6	0	60	120	120	120	120	120	105
7	-40	20	80	140	140	140	140	104
Prob	0.05	0.15	0.15	0.2	0.25	0.1	0.1	EVwPI
Best Payof	40	100	120	140	140	140	140	126
EVPI =	EVwPI -	Best EMV						
21	126	105						

Part 2

If we ignore future decisions, then the optimal order quantity for today can be found as follows.

Let F(X) denote the cumulative distribution function of demand X.

Consider order quantity Q is currently used. Should we increase the quantity by 1?

If yes, the additional one can be sold with probability 1 – F(Q) and the gain will be (price – cost).

However, the additional one will not be sold with probability F(Q) and the loss will be (cost).

The additional one is profitable if and only if [1 – F(Q)]*(price – cost) > F(Q)*(cost),

or F(Q) < (price – cost)/(price) = the critical ratio.

Hence, the optimal myopic order quantity is the biggest Q that satisfies the above inequality.

The true optimal order quantity is bigger. We introduce a factor "*a*" and try to set the order quantity Q^* to be the biggest one that satisfies $F(Q^*)$ < the critical ratio + *a*.

We can use the uploaded python code to search for the best factor "*a*".