1. An international fashion house of men's wear has just completed the design of the spring/summer collection for year 2021. Before moving the new collection to mass production stage, the company is considering to appoint JJ, the famous Hollywood actor who starred in the latest star war movie, to be the ambassador of the new collection. The appointment of JJ has to be negotiated through an agent. If the negotiation is successful, i.e., JJ becomes the ambassador of the new collection, the company will pay $1 million to JJ and $100,000 to the agent. If the negotiation fails, the company will still have to pay the agent $50,000 for his efforts.

Without JJ as the ambassador, there is a 51% chance that the new collection will be a hit, and a 49% chance that it will be a bomb. In the case of a hit, the company will make a profit of $20 million. In the case of a bomb, the company will suffer a loss of $10 million. There is no gain or loss if the company does not mass produce the new collection.

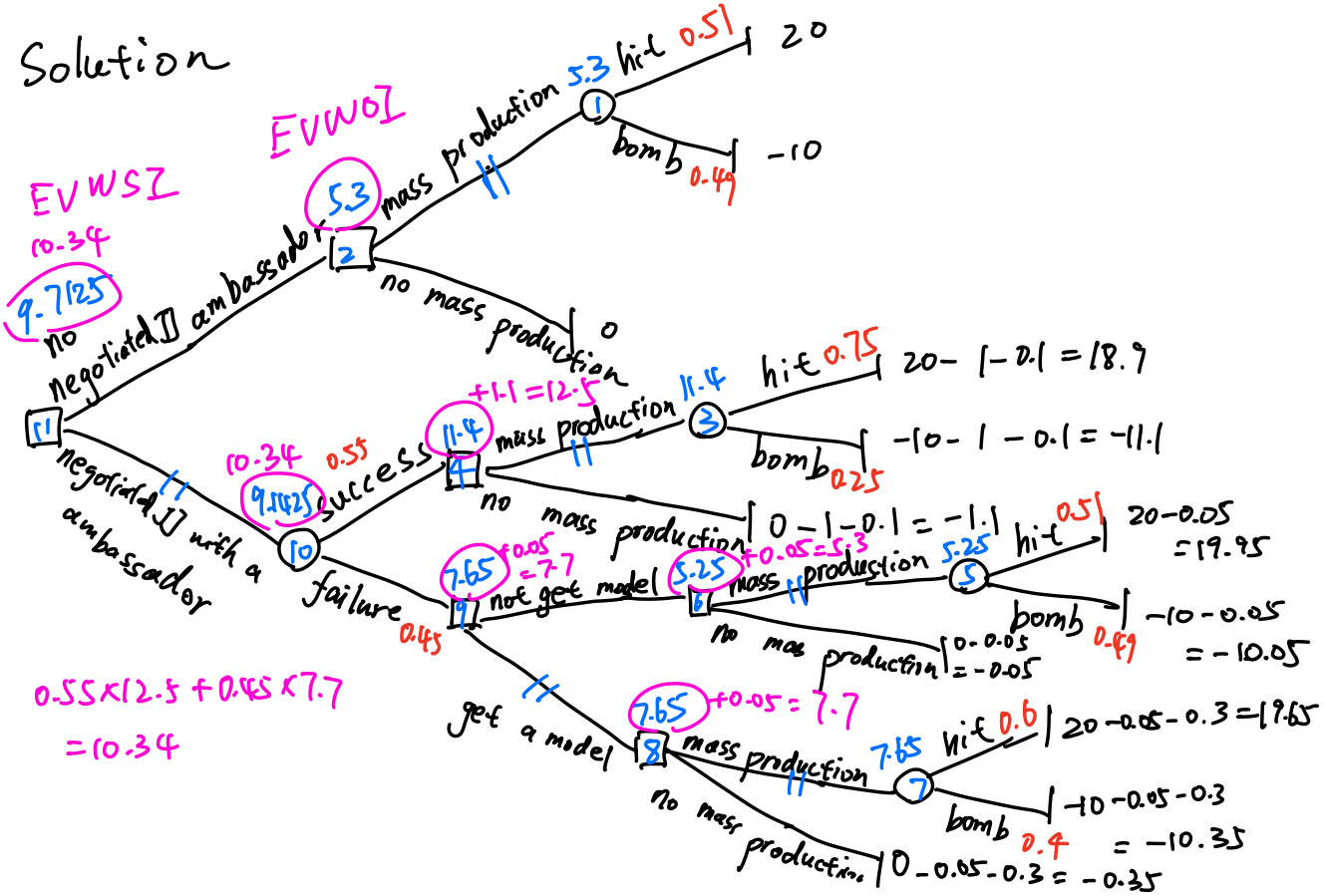
If JJ becomes the ambassador of the new collection, there is a 75% chance that the new collection will be a hit. Based on the negotiating agent's estimation, there is a 55% chance that JJ will agree to become the ambassador.

In the event that a deal cannot be struck with JJ, the company's next plan is to decide whether to engage a handsome model to appear in all the advertisements of the new collection. The model will cost \$300,000. With the model appearing in the advertisements, there is a 60% chance that the new collection will be a hit.

(a) Use a decision tree to represent the above problem.

(b) Recommend a strategy for the company to adopt so that its expected final profit is maximized. What is the maximum expected final profit? What are the possible actual profits/losses of your recommended strategy?

(c) What is the maximum amount of money (including agent fee) that the company can afford to engage JJ as the ambassador?



(b) Recommend the following strategy

1. negotiate to get ambassor JJ through an agent
2. if it is successful to get JJ as ambasser mass produce the colletion for sale.
3. If it is not successful to get JJ as ambasser get a model instead, and mass produce the collection for sale

maximum expected profit of the above strategy
= $9.7125 million

possible actual profits of the above strategy are $18.9 mil - $11.1 mil

$19.65 mil - $10.35 mil

(c) measure the value of test information

EV(after test) - EV(without test)

① largest expected value assuming that the test market study is costless

EVWSI: Expect Value with Sample Information

② largest expected value assuming that the test market study. is not available

EVWOI: Expected Value with Original Information

So EVSI: expect value of sample information

$$EVSI = EVWSI - EVWOI$$

EVWOI = \$5.3 mil ②

Node 10: $0.55 \times 12.5 + 0.45 \times 7.7 = 10.34$ mil ①

EVSI = ① - ② = \$5.04 mil