

Engineering Economics & Management

Project Management

28th March 16

Project Decision Techniques

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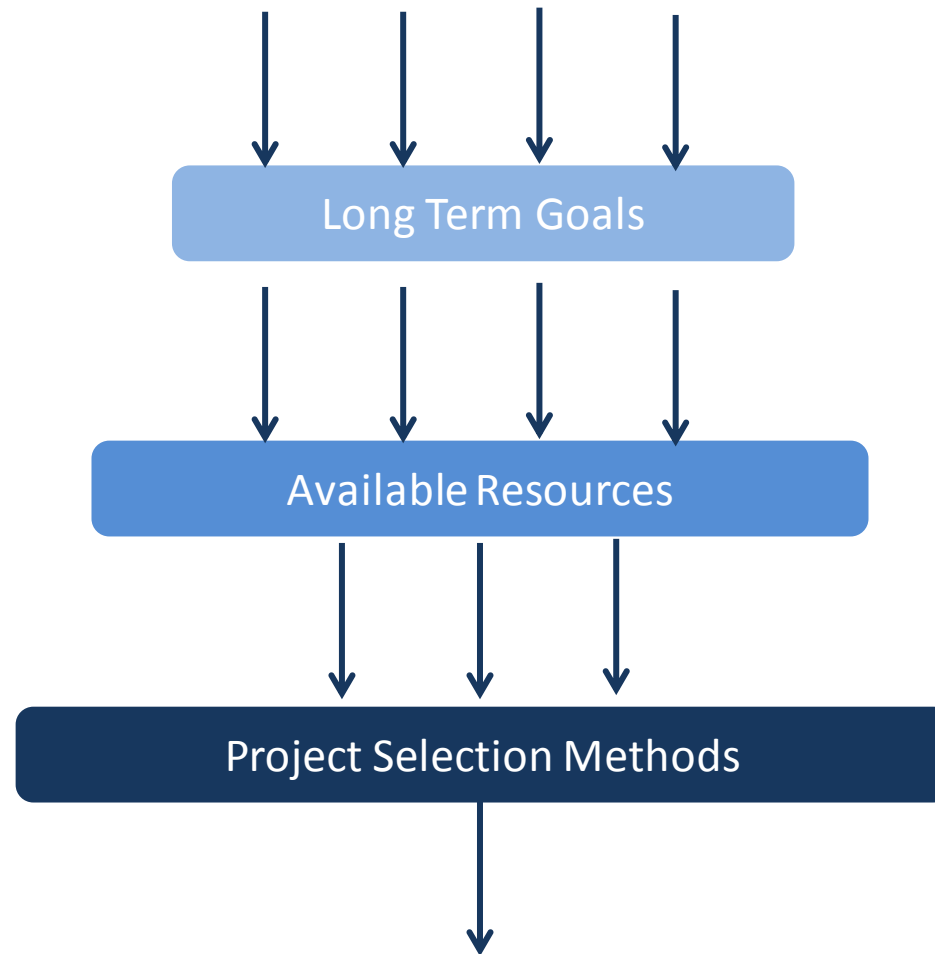
Project Selection

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- Project selection is done on basis of company's interest and profit.
- There are many ways by which project outcomes can be visualized in order to make an intelligent decision.
- We will study following methods
 - Decision trees
 - Logic diagrams

Filtering for selection

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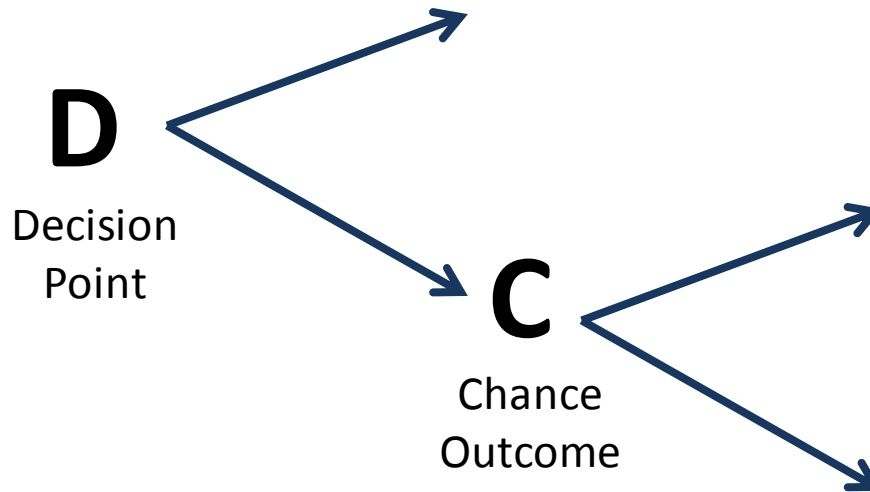
Decision Trees

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Decision Trees

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- Decision Trees
 - Decision point (step taken by choice)
 - Chance outcome (Probability of occurrence)



Decision Tree Example

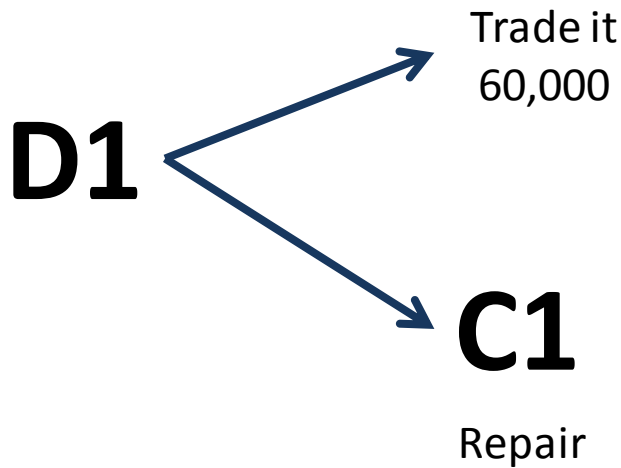
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My car has developed a fault, I have two options, get it repaired or change it.

- The workshop has offered 60,000 trade in offer, to get new one
- If it is major fault repair will cost 80,000
- If it is minor fault repair will cost 16000
- The chance is 50:50 that it will have major or minor fault.

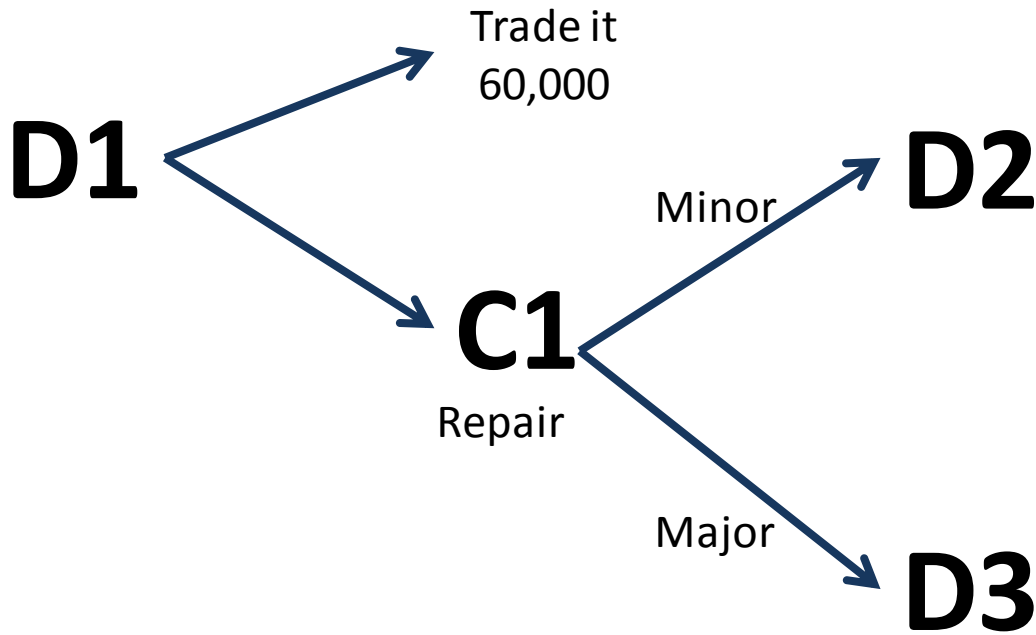
Decision Tree Example (Cont)

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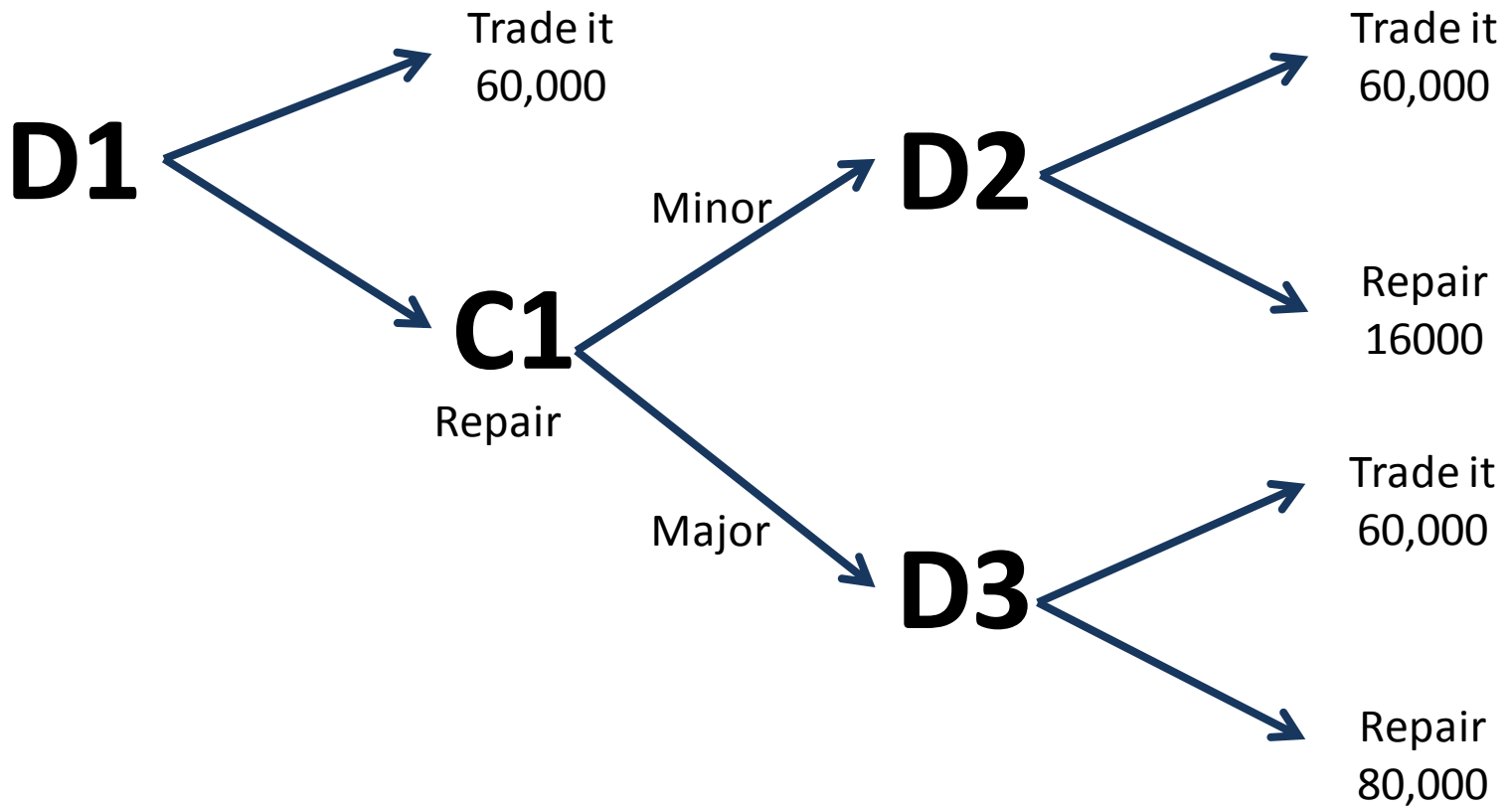
Decision Tree Example (Cont)

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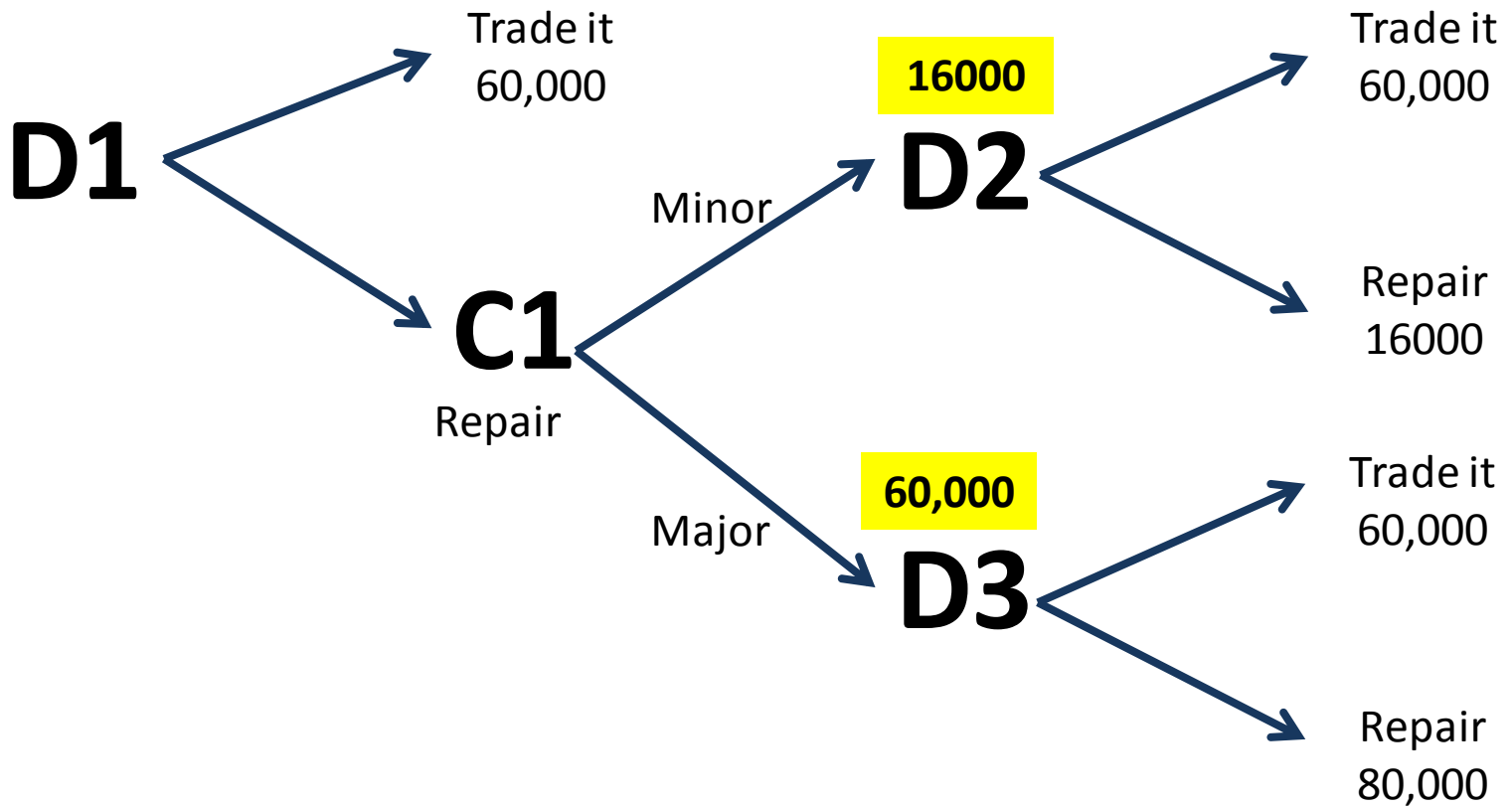
Decision Tree Example (Cont)

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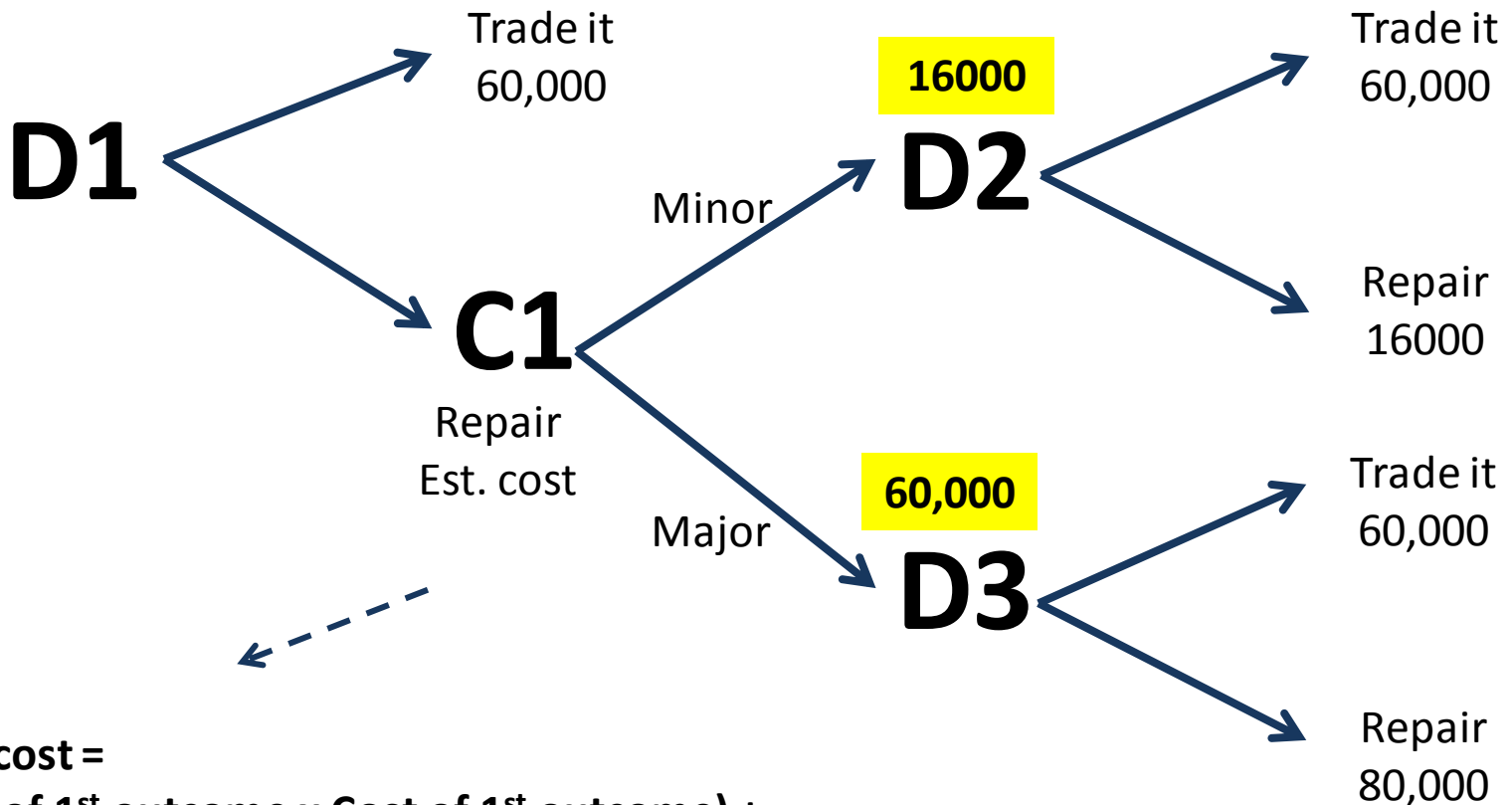
Decision Tree Example (Cont)

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Decision Tree Example (Cont)

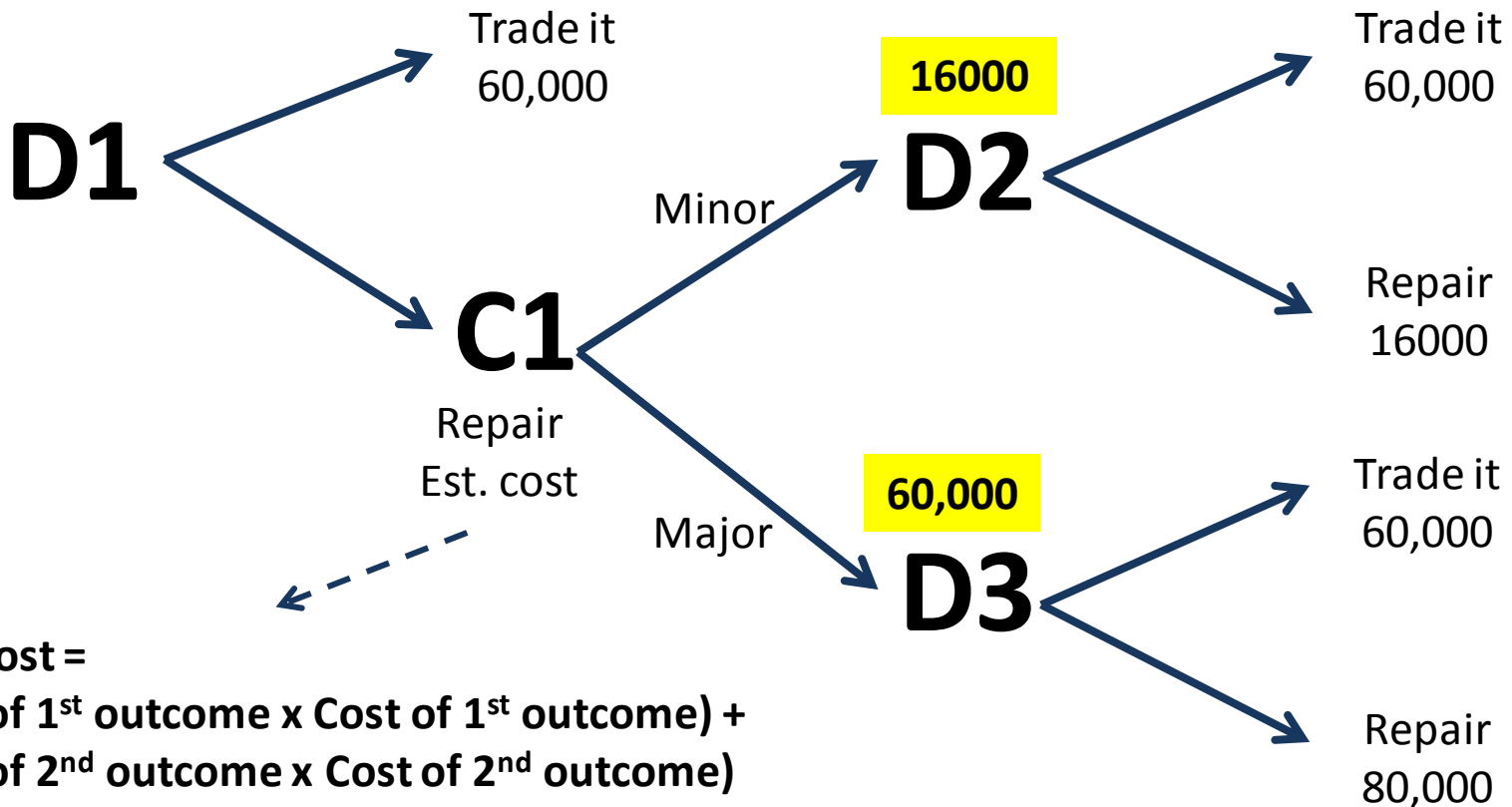
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Estimate cost =
(Probability of 1st outcome x Cost of 1st outcome) +
(Probability of 2nd outcome x Cost of 2nd outcome)

Decision Tree Example (Cont)

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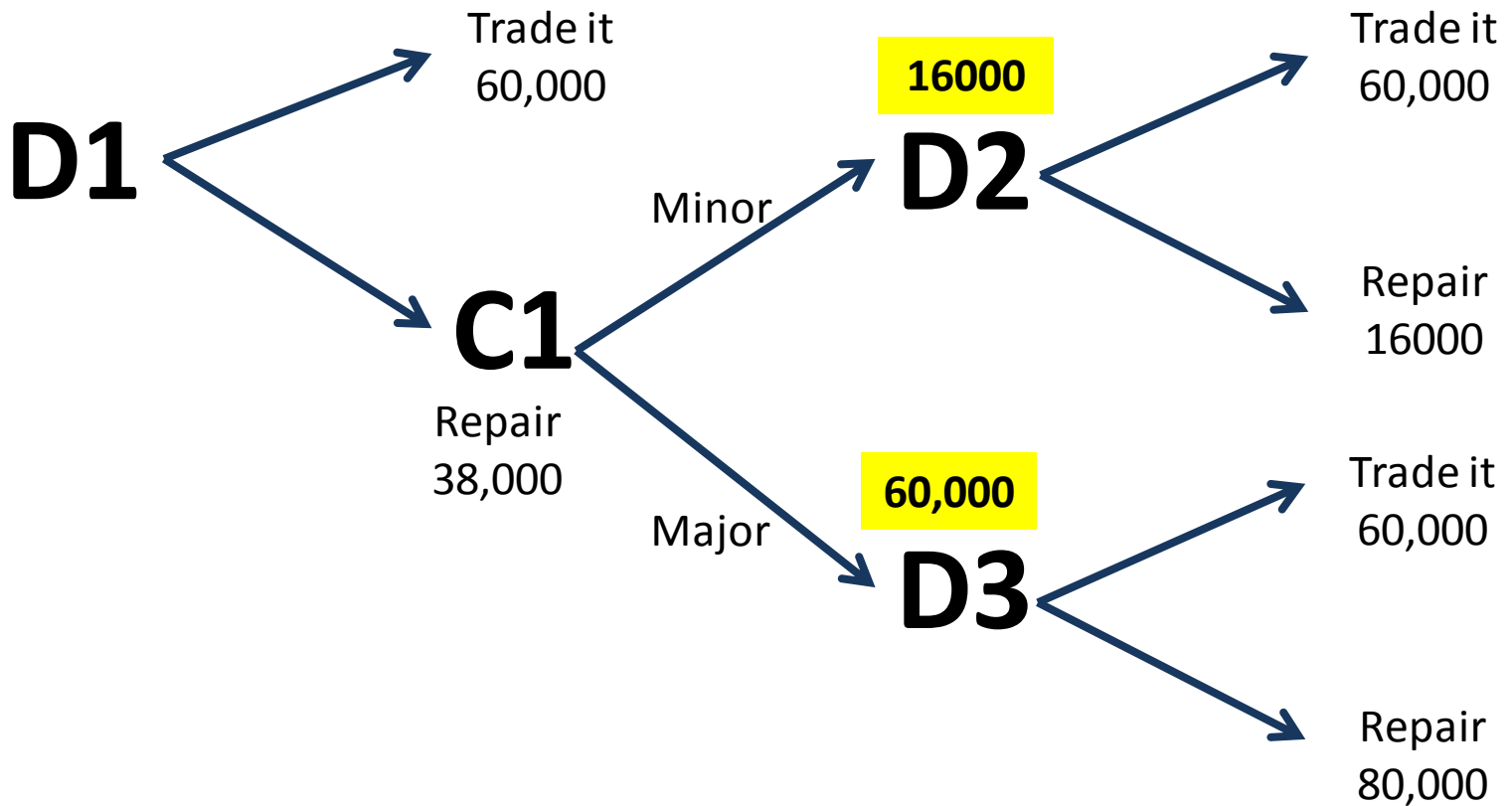


Estimate cost =
(Probability of 1st outcome x Cost of 1st outcome) +
(Probability of 2nd outcome x Cost of 2nd outcome)

$$\begin{aligned}\text{Estimate cost} &= (0.50 \times 16000) + (0.5 \times 60,000) \\ &= 8000 + 30,000 \\ &= 38000\end{aligned}$$

Decision Tree Example (Cont)

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Exercise

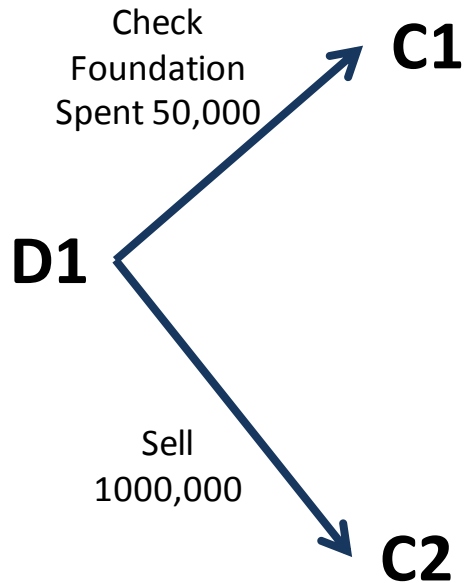
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XYZ private limited are trying to sell their existing factory to build a new one on another site. They also have an option of renovating the current site. They have evaluated some costs and probabilities to make the decision.

- Selling and moving will cost 1000,000.
- Renovating their current site has chance of 60% of costing 500,000.
- But if foundations are found weak after spending 50,000, they will have to sell and move.
- New factory has a 15% chance of problems requiring to do nothing, and has a chance of 50% to loose a major order worth 250,000. Or they can subcontract capacity at a cost of 100,000.
- The renovated factory has 30% chance of problems, with same possible outcomes and solutions

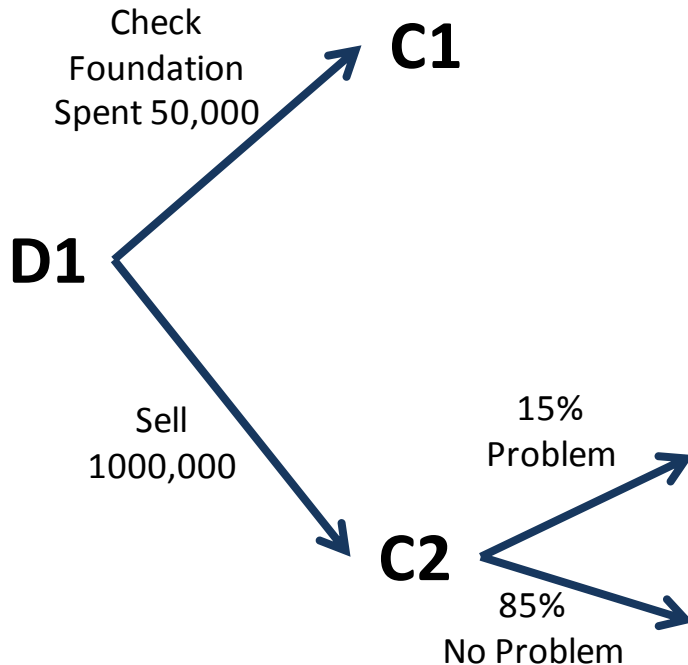
Decision Tree Example (Cont)

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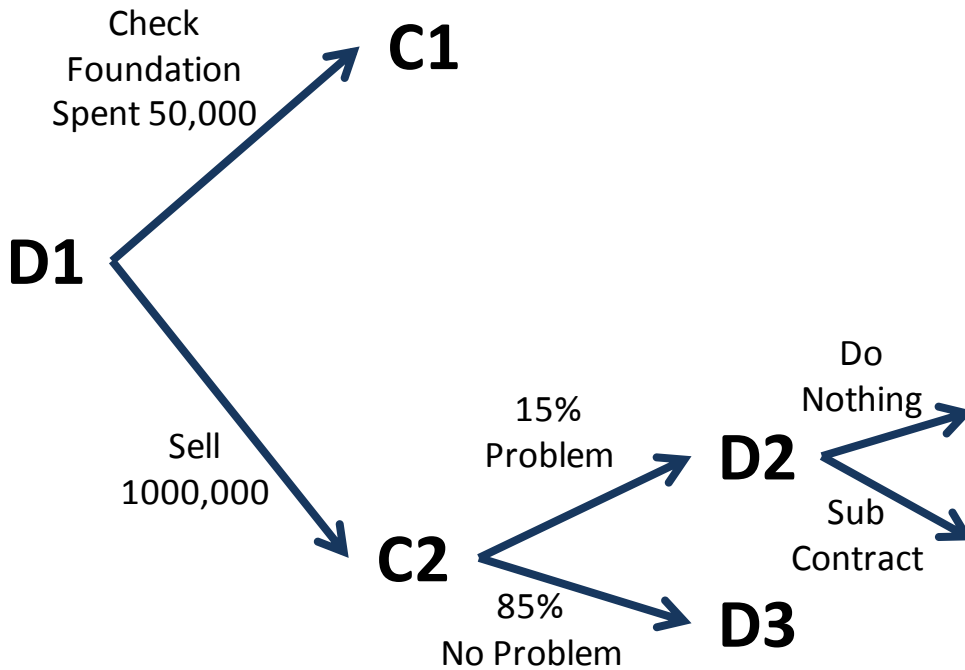
Decision Tree Example (Cont)

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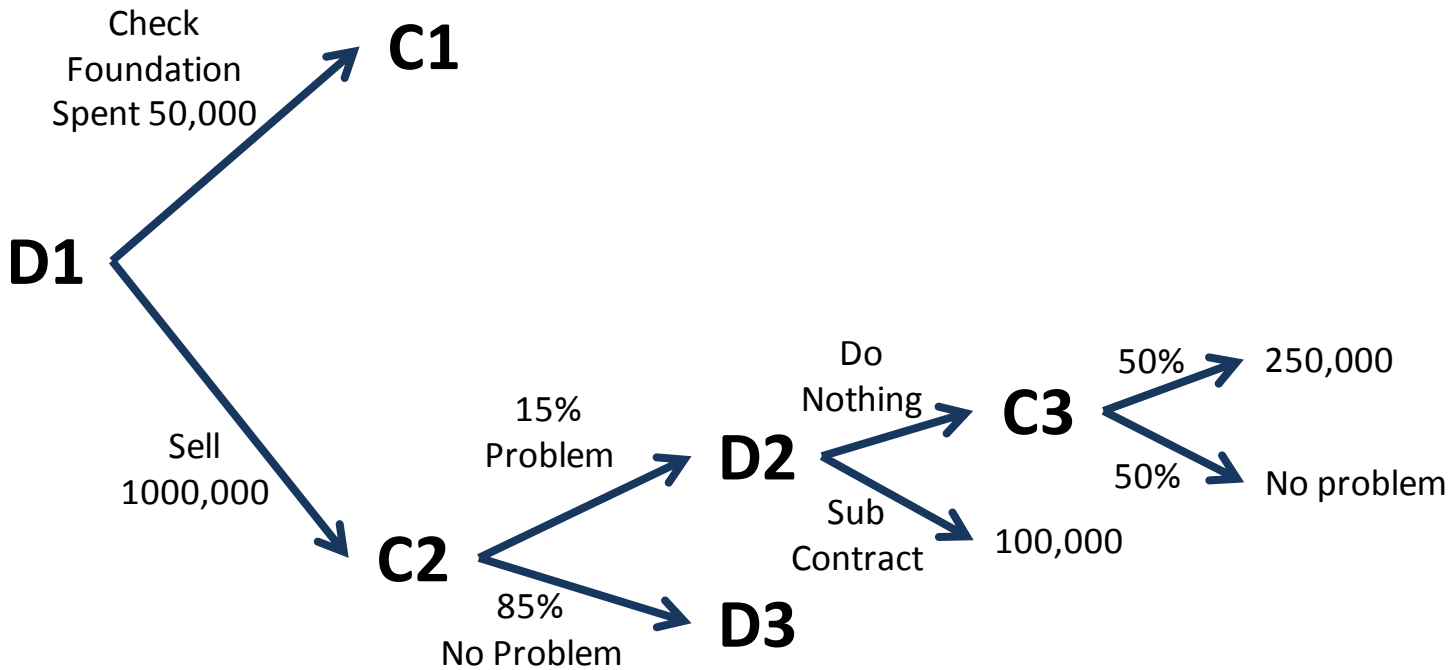
Decision Tree Example (Cont)

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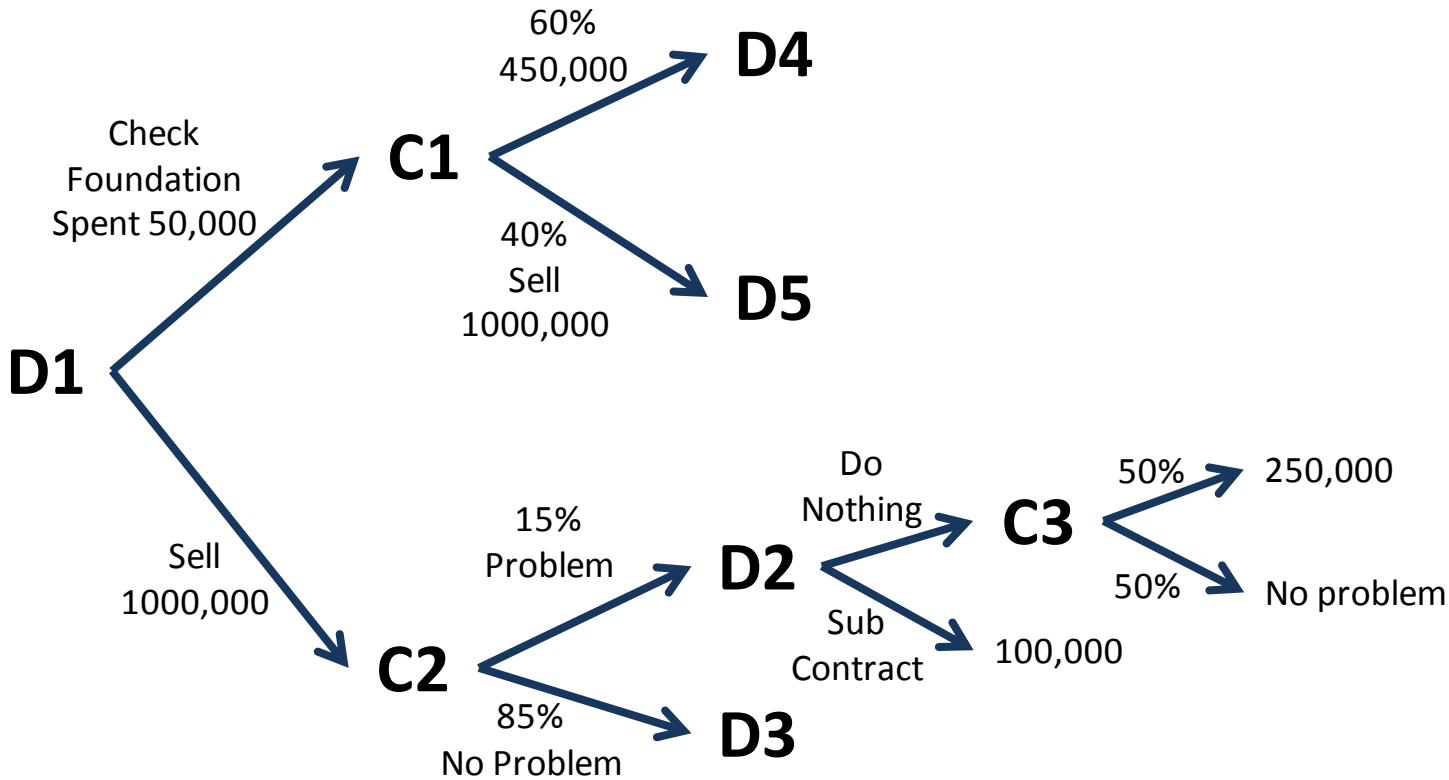
Decision Tree Example (Cont)

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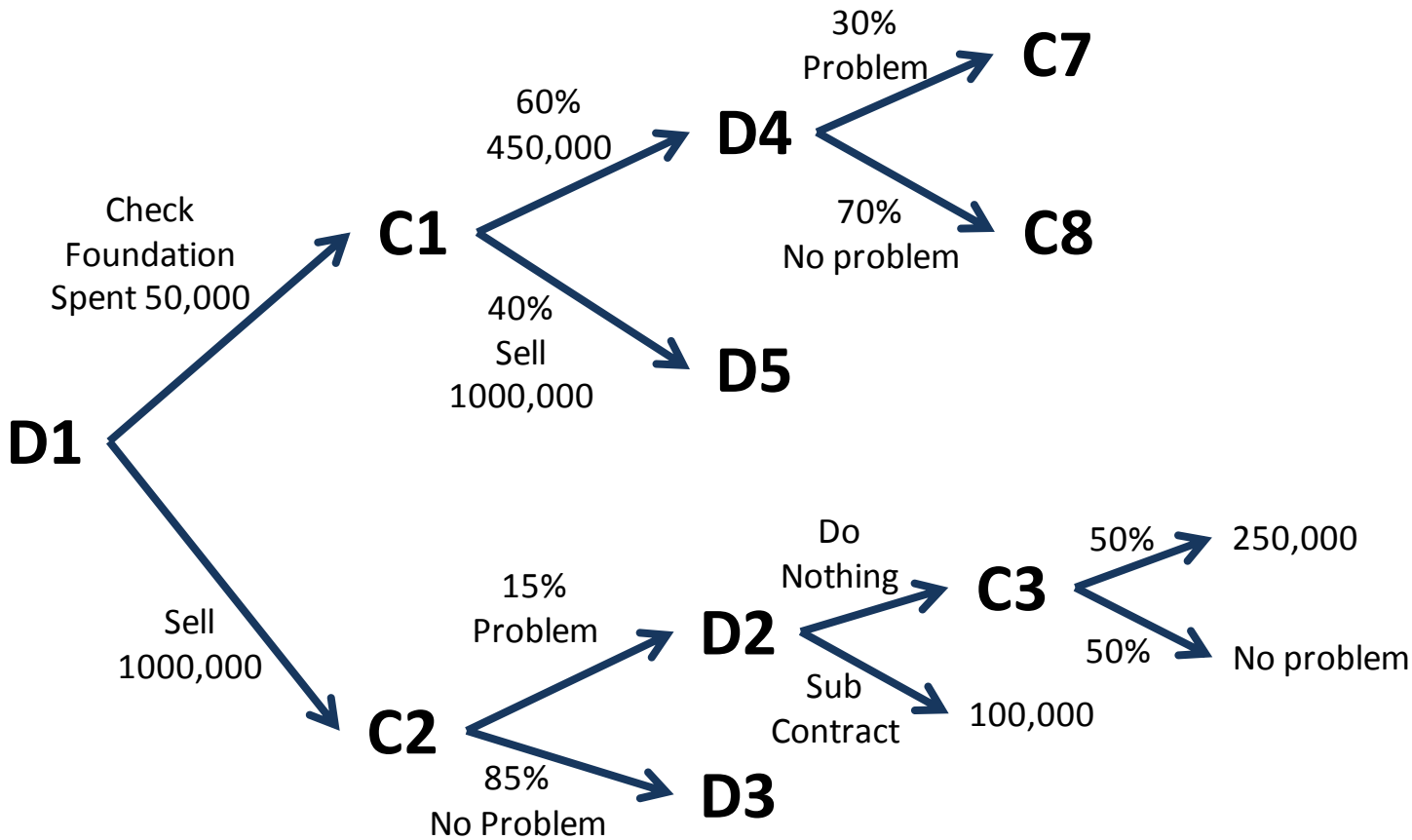
Decision Tree Example (Cont)

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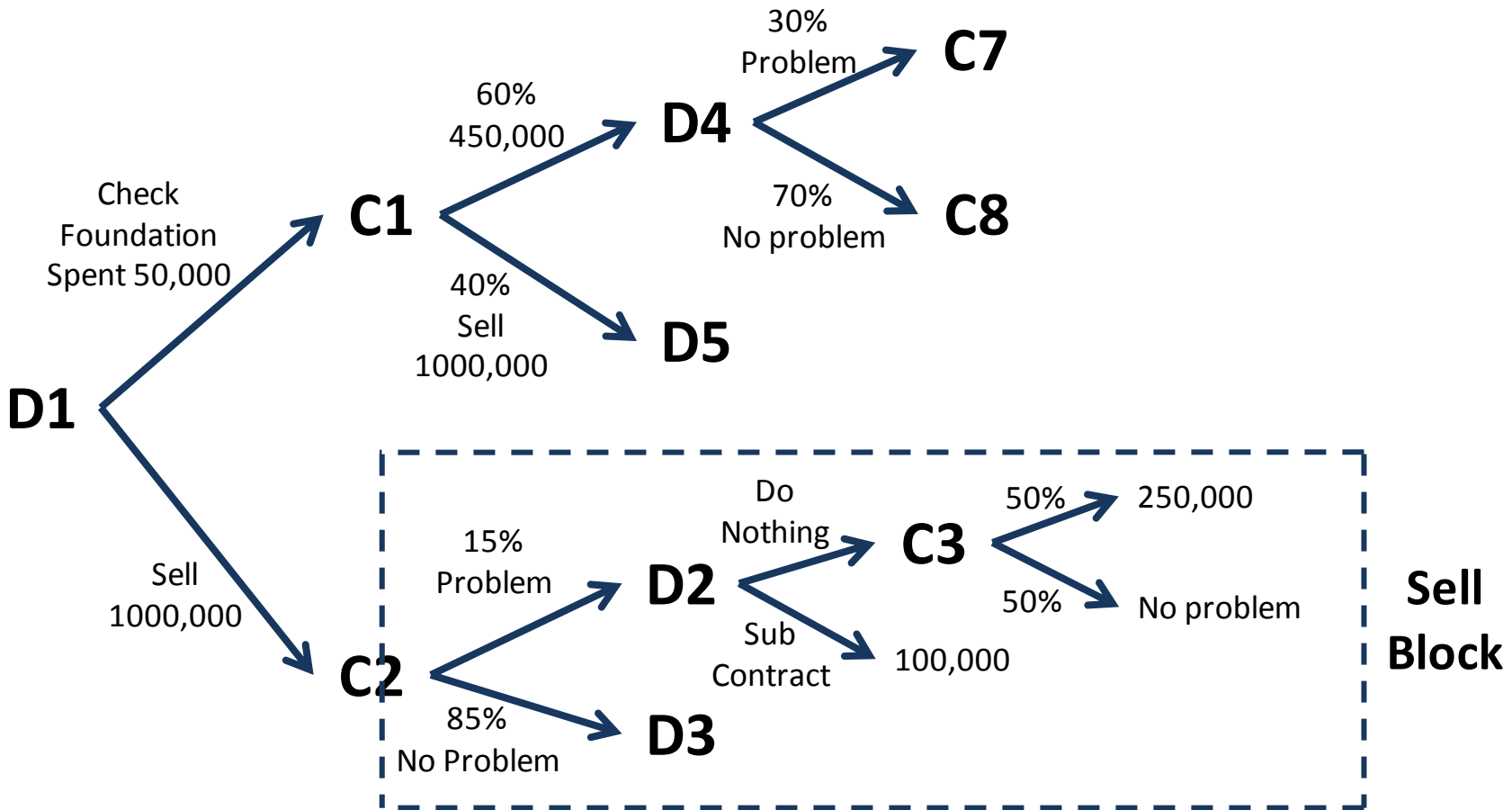
Decision Tree Example (Cont)

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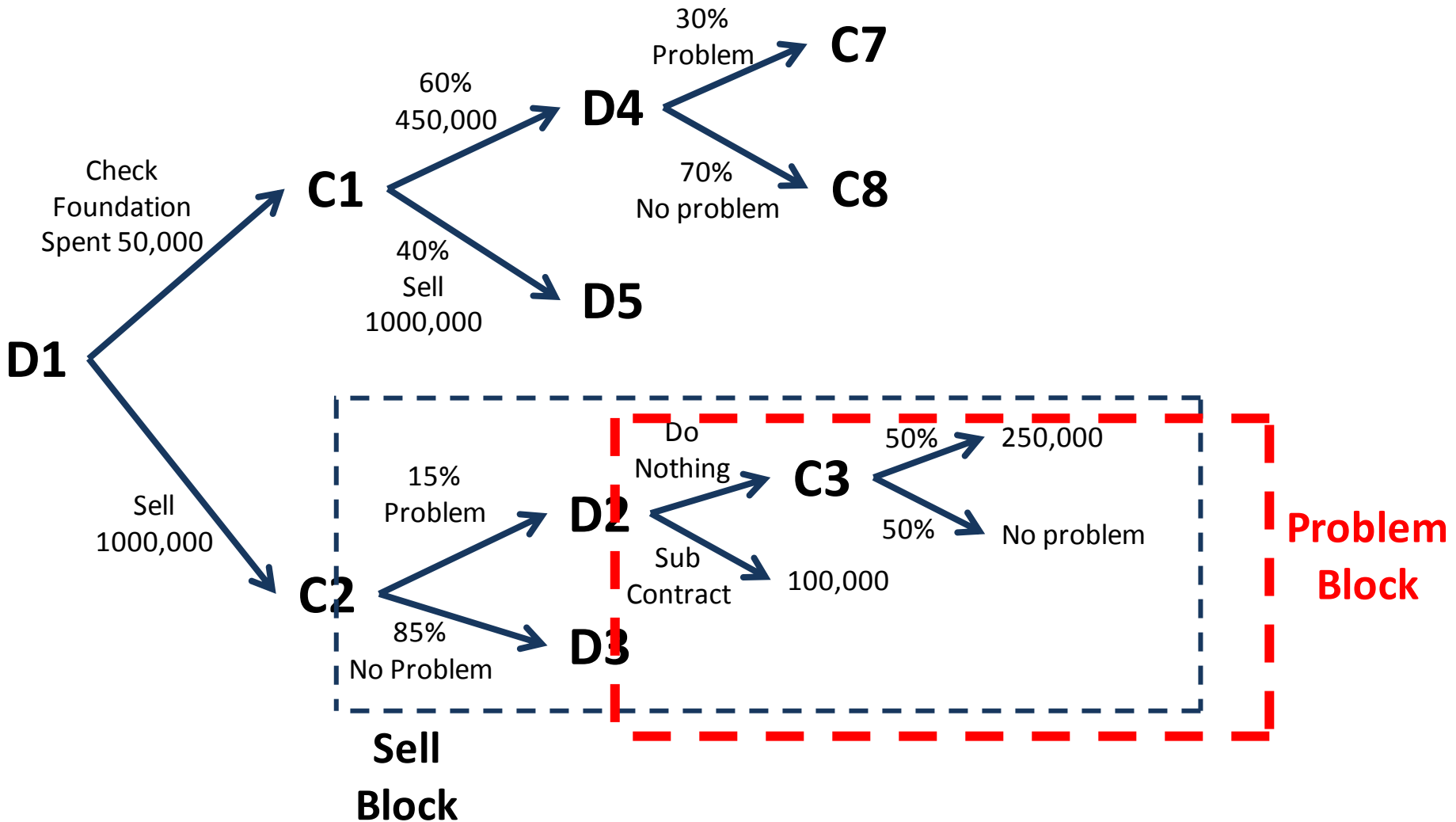
Decision Tree Example (Cont)

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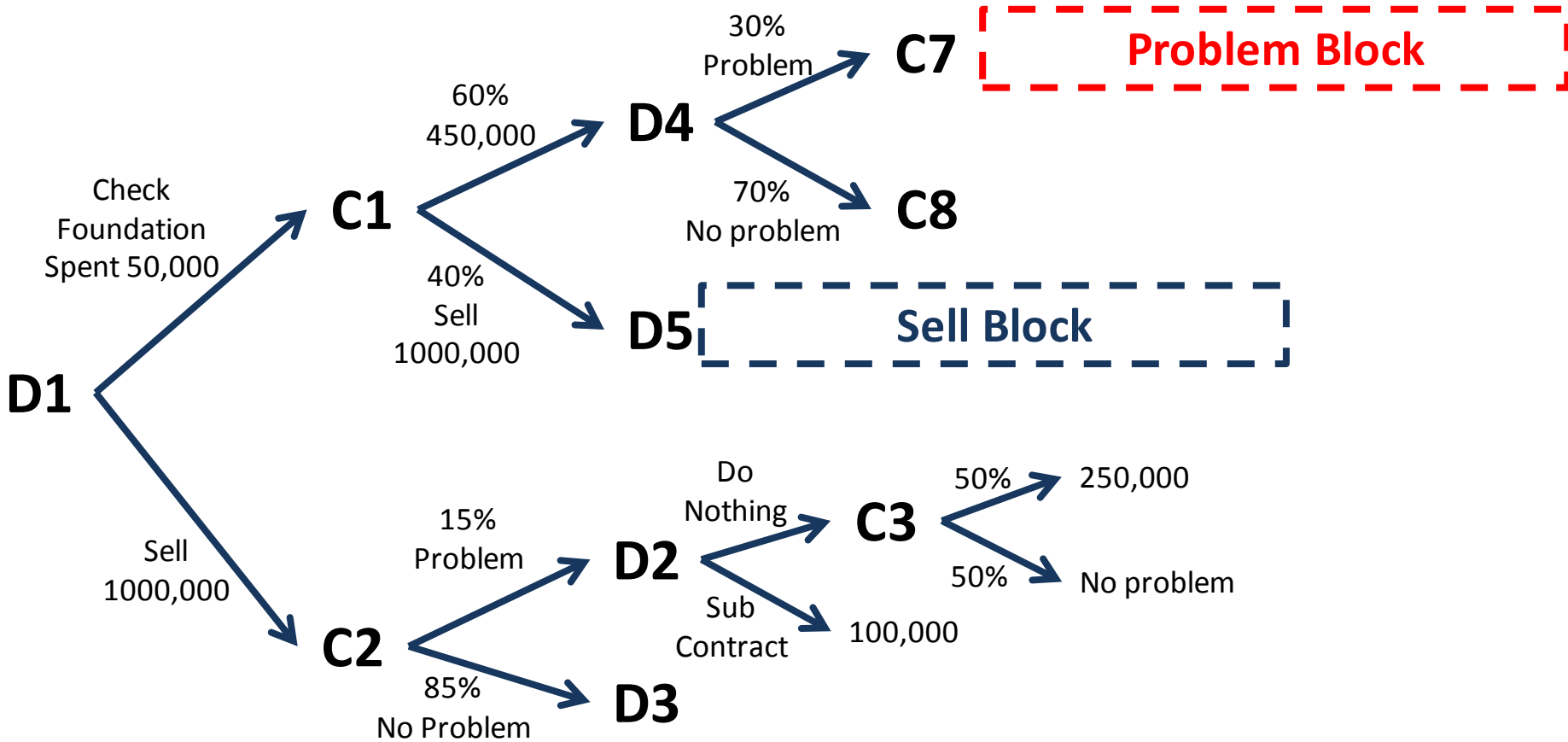
Decision Tree Example (Cont)

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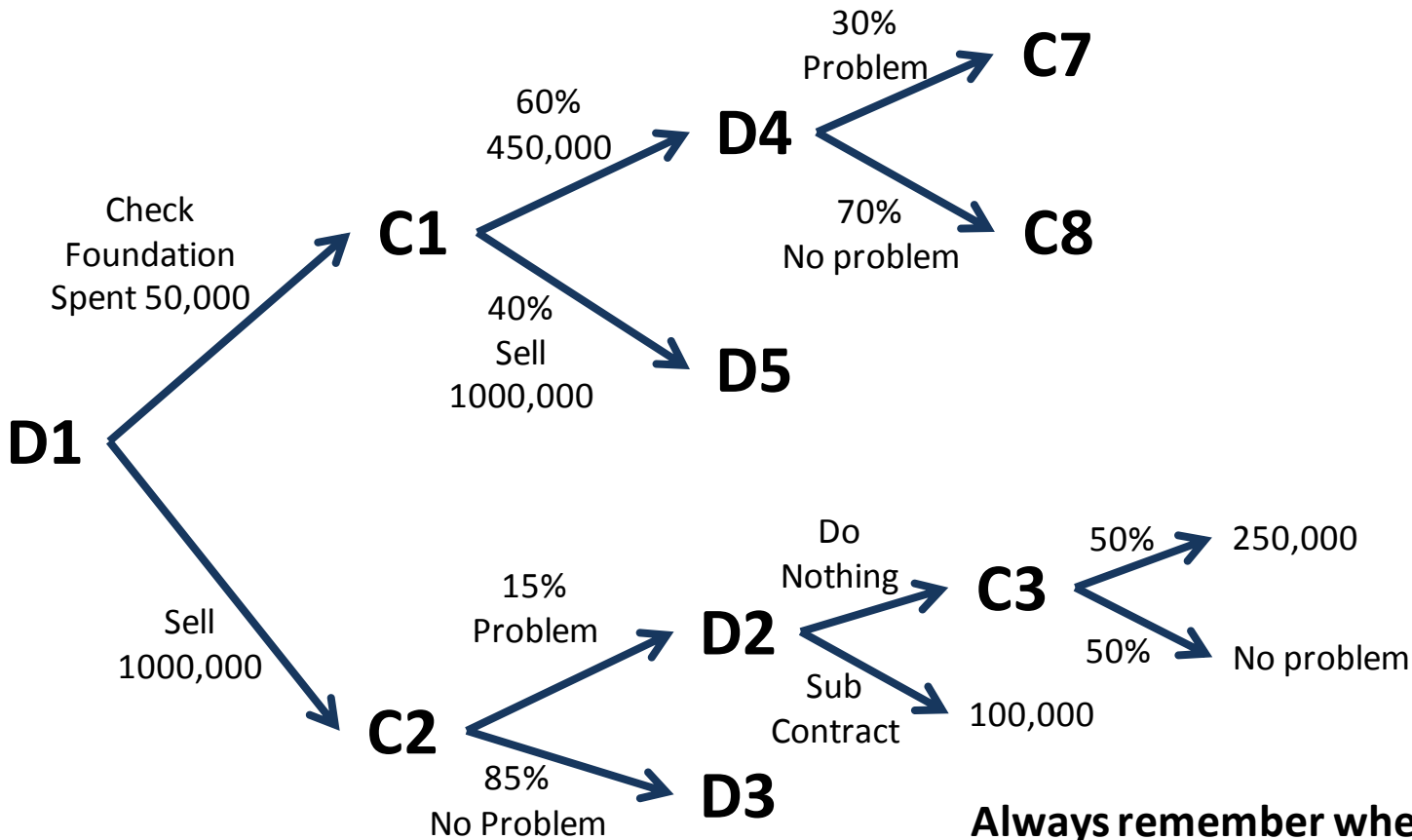
Decision Tree Example (Cont)

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Decision Tree Example (Cont)

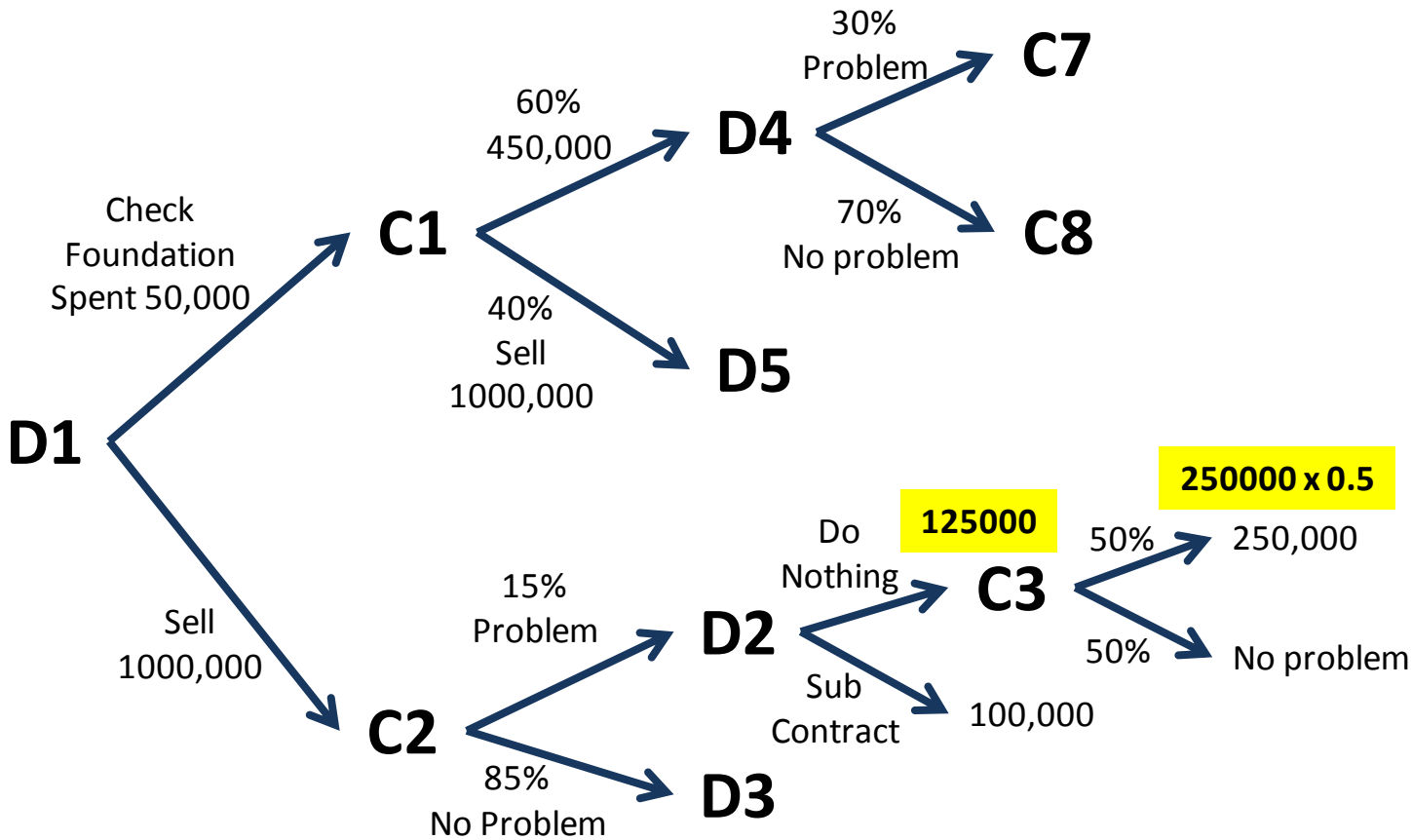
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Always remember when you get 2 cost on one point you take minimum one and when you have one cost you take that

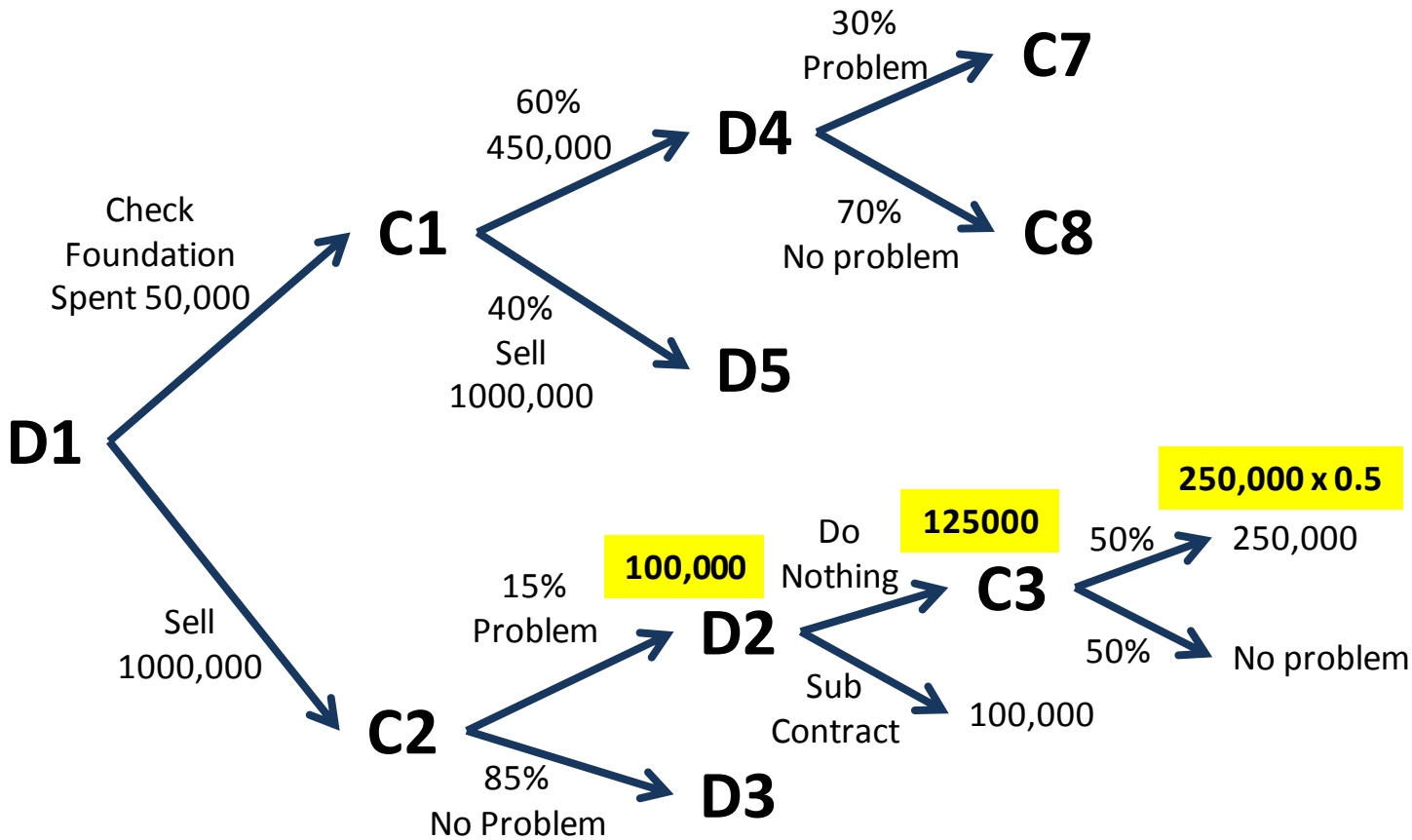
Decision Tree Example (Cont)

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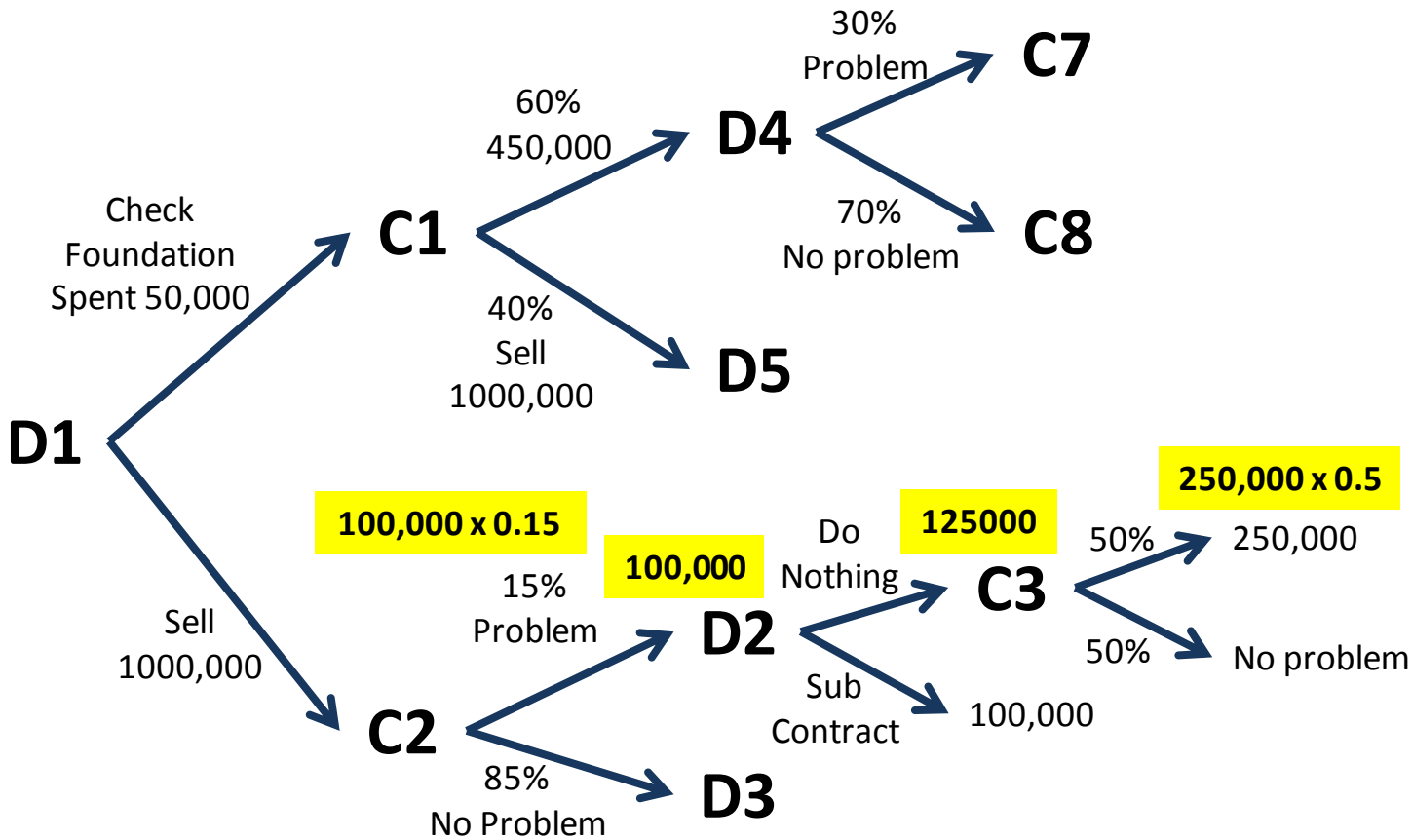
Decision Tree Example (Cont)

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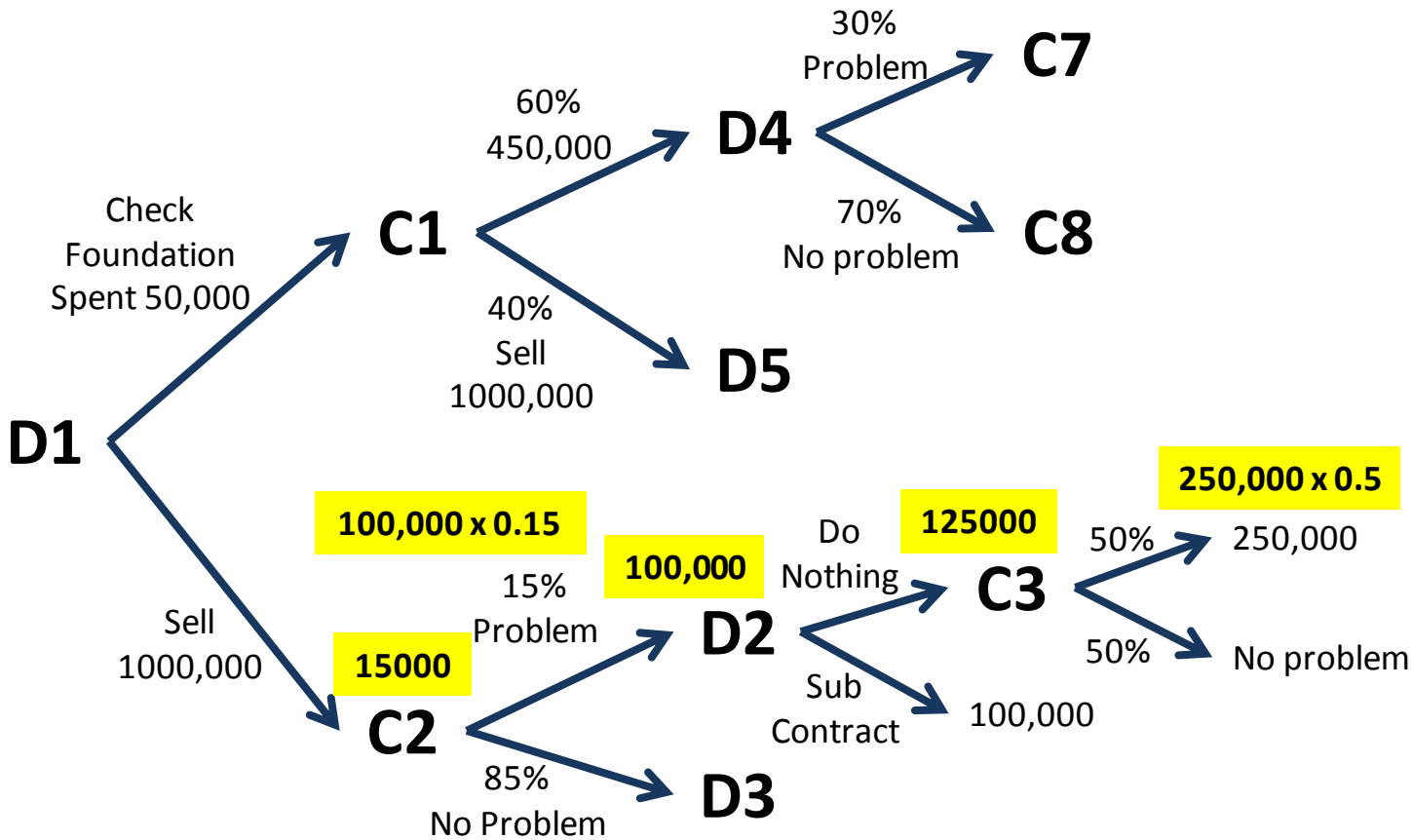
Decision Tree Example (Cont)

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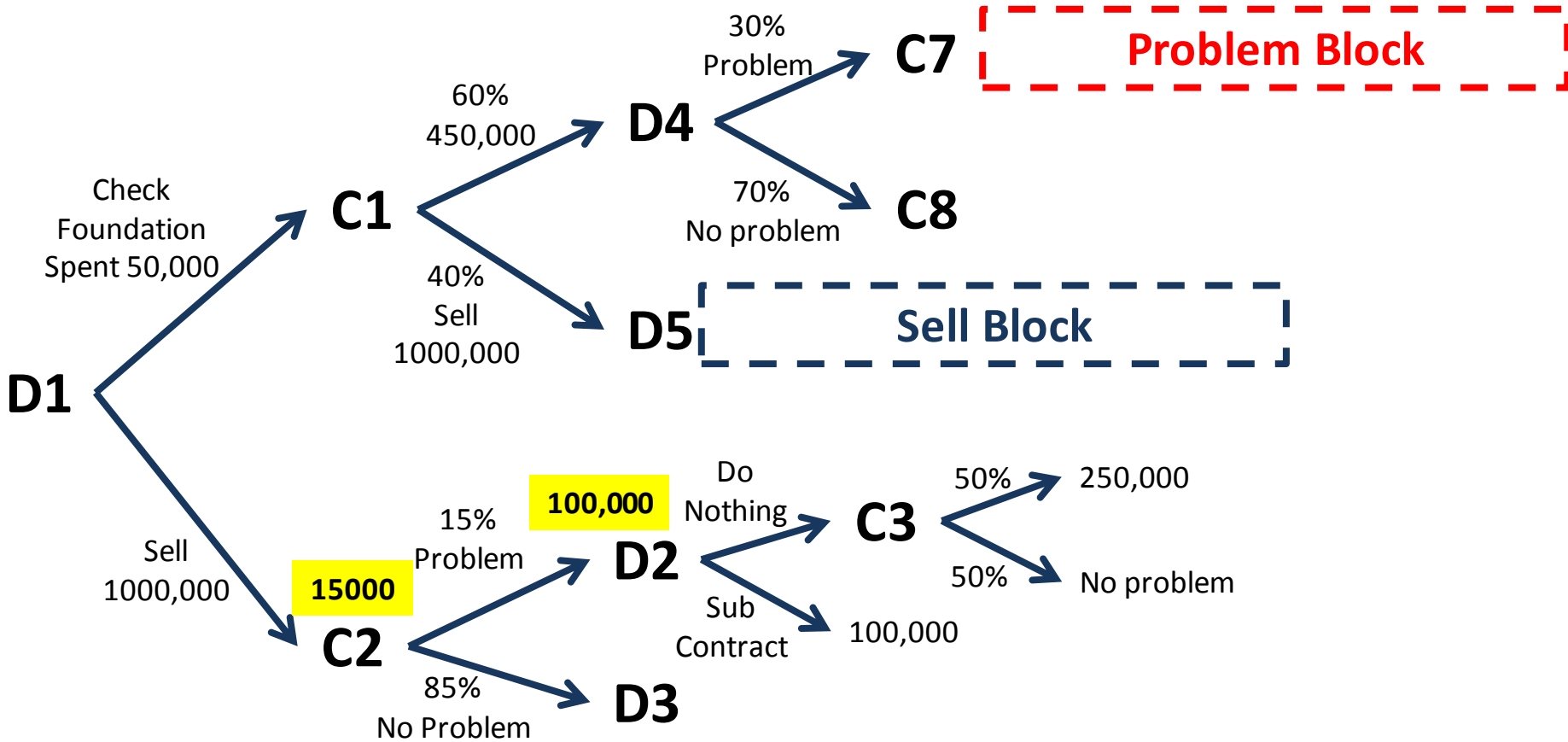
Decision Tree Example (Cont)

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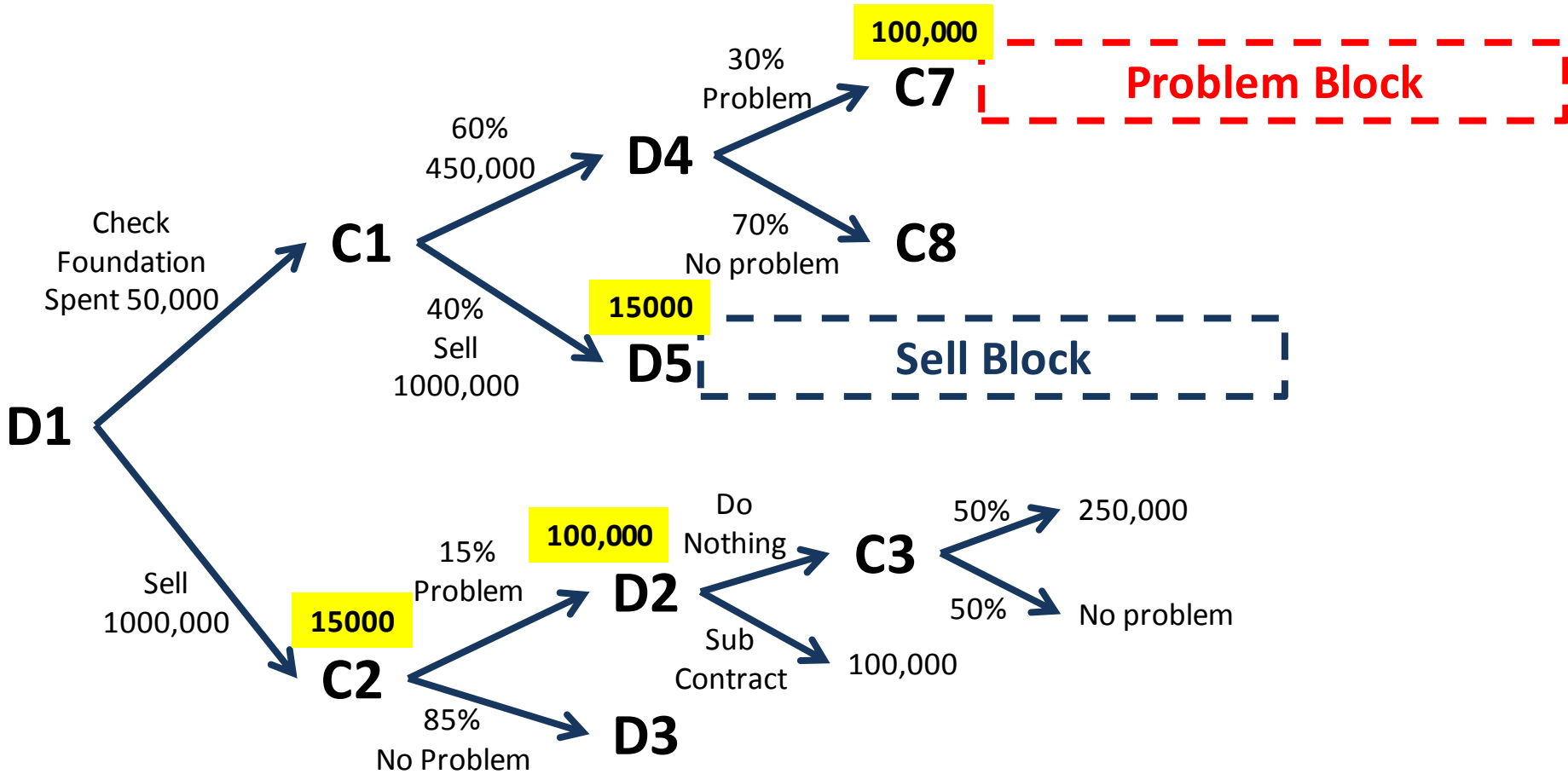
Decision Tree Example (Cont)

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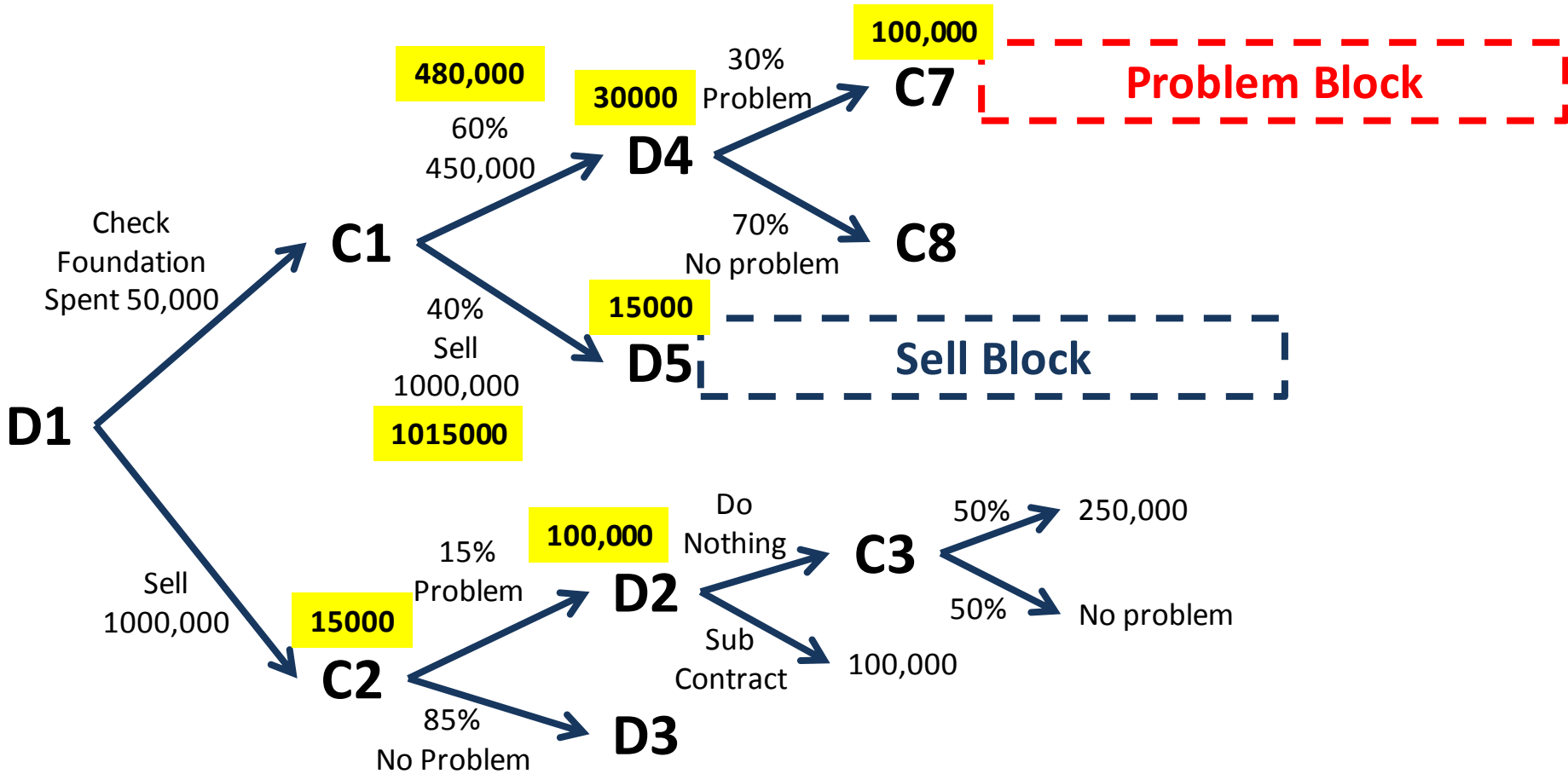
Decision Tree Example (Cont)

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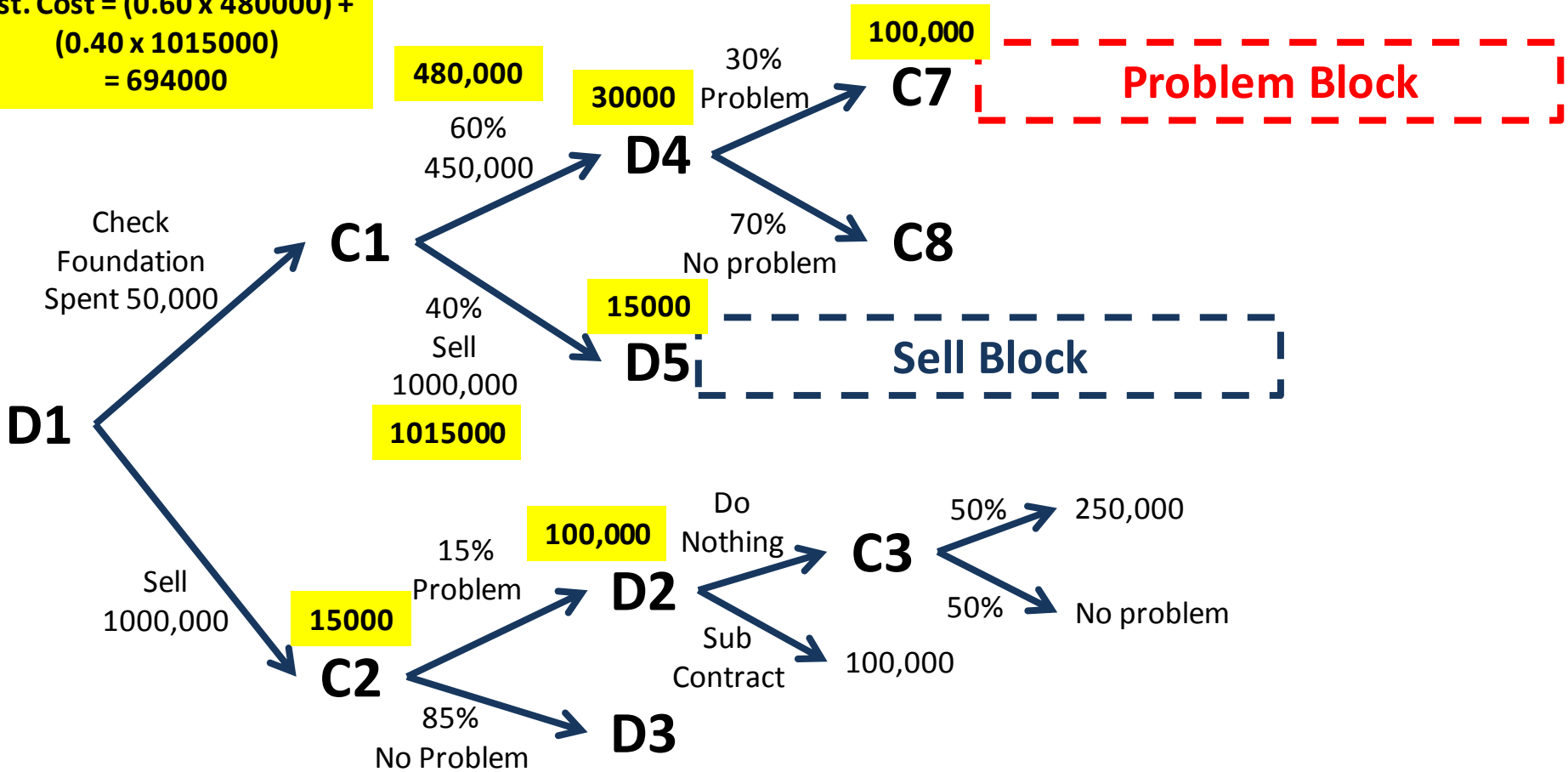
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Decision Tree Example (Cont)

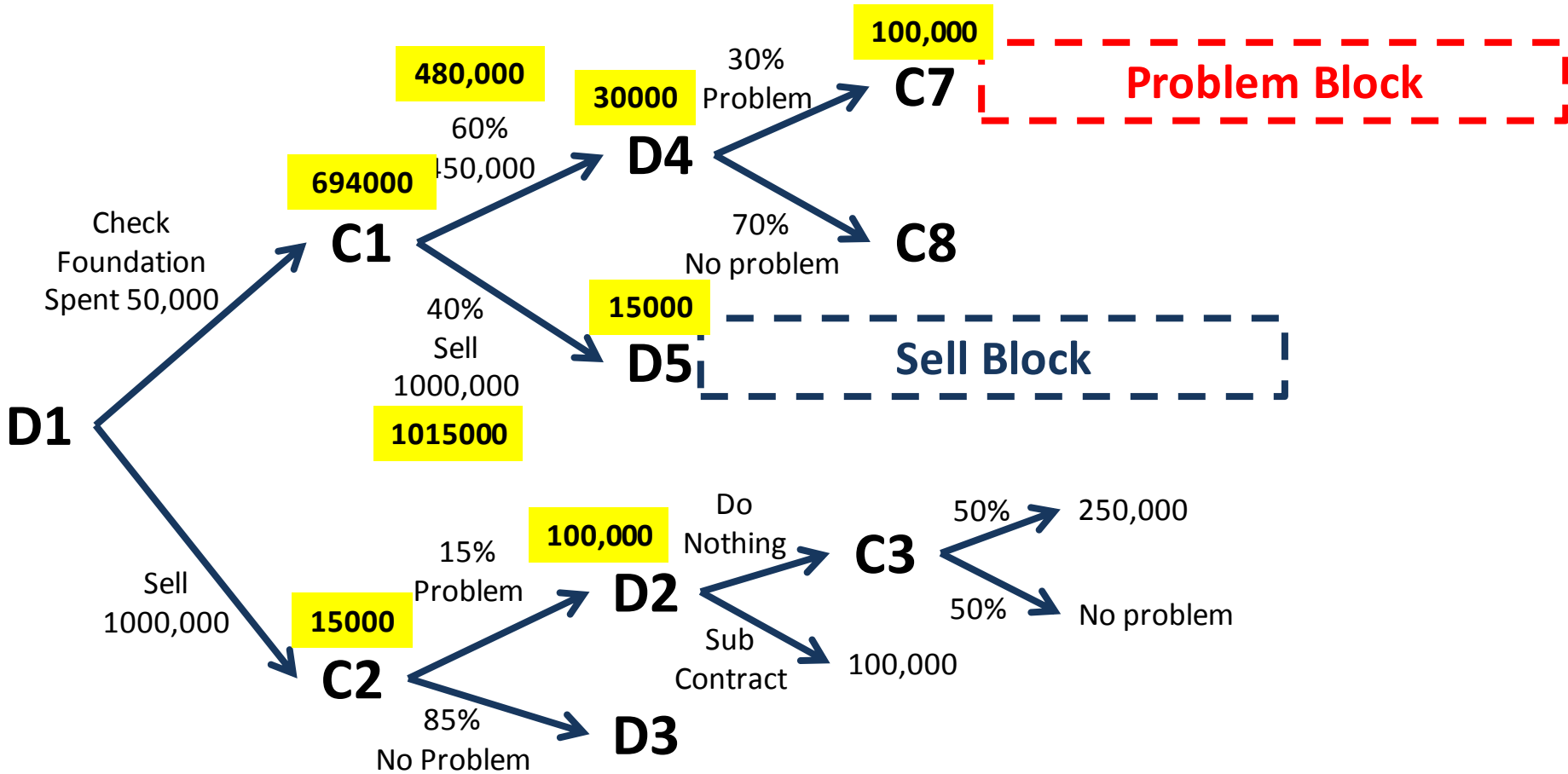
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Est. Cost = $(0.60 \times 480000) + (0.40 \times 1015000) = 694000$



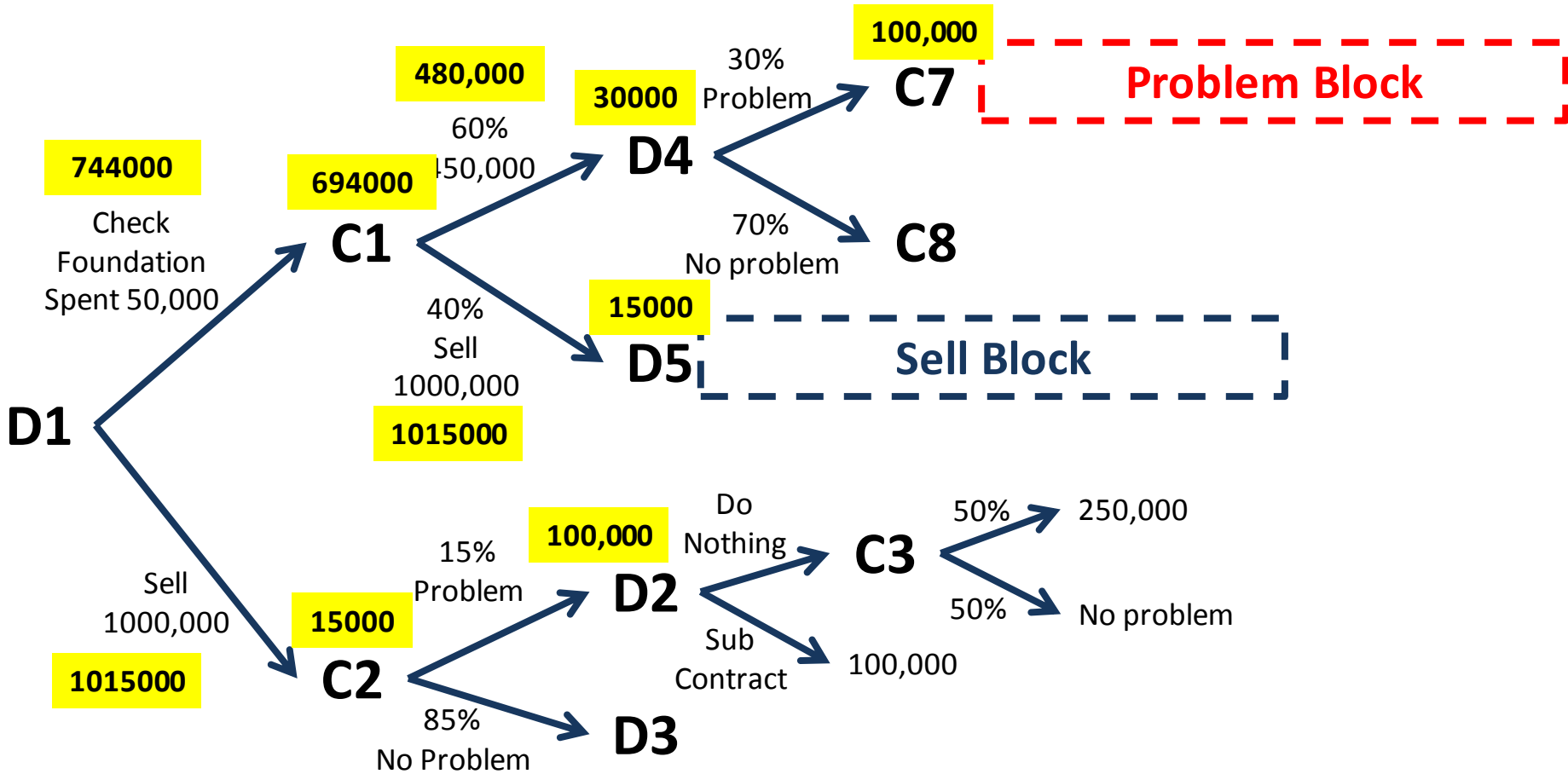
Decision Tree Example (Cont)

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Decision Tree Example (Cont)

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Thankyou

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