Background
We are part of a bidding process for leads called the "ping tree". We have a spot saved for us at $75, where we can decide if we would like to purchase the lead at $75, or bid a lower price. The lower the price, the less likely that we win the bid. Currently we are set up to bid only at $75, $50, $35, and $3. After the lead is purchased, we will try to convert it into a loan.

Fields

BidPrice: If this is populated, then we bid this price for this lead
AcceptedBid: This will tell you if the bid was accepted (we "won" the bid)
ExpectedRevenue: This is the amount of revenue we expect to get from the lead if it turns into a loan. Three things need to happen for us to get any revenue:

1. We need to bid
2. We need to win the bid
3. We need to convert the lead into a loan

ExpectedConversion: This is the expected conversion rate of lead into loan.

Example
Let's say we bid on 20 leads. For simplicity, let's say we bid $50 on each, and that all 20 are exactly the same:

ExpectedRevenue	ExpectedConversion
150	0.4

Let's also say we win 10 of these bids and lose 10.
The 10 bids we lost have no revenue or costs.
The 10 bids we won cost $50 each – so $500 total cost.

They each have an expected revenue of $150, and they each have an expected conversion of 40%.
10 Leads * 40% Conversion = 4 Loans
4 Loans * $150 Revenue = $600 Total Revenue
So for this example, we have $600 in total revenue, and $500 in costs – so we have a net revenue of $100.

Problem
We want to see what we could be doing better with our bidding. Given the expected revenue and conversion, and the likelihood of the lead being chosen at a specific price, can you build a model or set of rules that would increase our net revenue?

A very simple ruleset could look something like this:
If *ExpectedRevenue * ExpectedConversion* > 100, (Bid 75)
Else If *ExpectedRevenue * ExpectedConversion* > 75, (Bid 50)
Else If *ExpectedRevenue * ExpectedConversion* > 50, (Bid 35)
Else If *ExpectedRevenue * ExpectedConversion* > 20, (Bid 3)
Else (Don't Bid)

If you can come up with something more elegant, even better!

Notes

- You can assume that Expected Revenue and Expected Conversion are accurate.
- We have a specific volume of leads that the call center can handle, so we want the number of leads purchased (*AcceptedBid = 1)* with your rules to be within 5% of the leads we actually purchased (15224 - 16827).
- Because of the above variability, please optimize your rules for NetRevenue/AcceptedBid instead of raw NetRevenue.
- Assume we can ONLY bid at the only at $75, $50, $35, and $3 price points. i/e you can't bid $7.
- On that note, we don't NEED to bid at any specific price. If you decide that we should only bid $3 on leads, that's perfectly fine.
- Remember you can only bid once. If you decide to bid at $50, and the bid is lost then that lead is lost
- Please be as detailed as possible in presenting your results. We want to see what steps you used, what technology you used. Did you try something that didn't work? What assumptions did you make? We also want to see the actual code used.
- For a sanity check, the net revenue for the file for the bids that actually happened is $1,207,654.