Major Changes: There have been no major changes in the scope of my project. A small change is that I’m shifting to trying to prove tight upper bounds on a specific algorithm, rather than general lower bounds, which I was initially trying.

What I Have Accomplished Since My Last Meeting: I found an expression for the recurrence I was previously analyzing. I also thought about an algorithm that could possibly efficiently solve the problem (in $O(\sqrt{N}/\epsilon)$ many queries) that I am now analyzing with my mentor. We made progress towards proving some of the conditions necessary to bound the overall query complexity by graphically visualizing the problem and reducing it to a probability question. I also thought about another related possible algorithm that seems like it could potentially be easier to analyze.

Meeting Your Milestone: I have met my milestone of getting an idea that seems promising and exploring it more deeply. I will need to now think about it more deeply and try to either prove it or rule it out.

Surprises: There have not been any major surprises in my project since my last bi-weekly status meeting. One surprise is I was trying to prove a lower bound last week but now am exploring an idea that could maybe give a tight upper bound instead.

Looking Ahead: I will analyze the algorithm more precisely and work through the details of whether it can indeed solve the problem in the required number of queries.

Revisions to Your Future Milestones: I don’t have any revisions to future milestones – if this idea is successful, it will involve making it precise; otherwise, like before, they involve thinking about and developing more ideas.

Resources Needed: I have all of the resources I need to complete my 15-400 project.