Project Summary:

LARS (Lava Avoiding Reward Searcher) is a reinforcement-learning AI designed to efficiently solve mazes and collect various rewards. It operates in a Minecraft environment of a coble stone maze containing items surrounded by lava. LARS does not receive any knowledge of the world prior to starting, and thus learns about its environment through trial and error exploration based on our own implementation of a Q-learning algorithm.

---------ADD IMAGE OF MAZE HERE-----------------------------------------------------------------------

The primary goal was to create the most efficient and flexible agent that could easily adapt to a variety of challenges without omniscience of its environment. Here we had several choices in approach and decided that Q-Learning was had the best potential for optimization and adaptability given the changeable environment. We use a random maze generator to test the algorithm though many combinations of sub-optimal paths and then rigorous evaluations to determine the best combinations of parameters.

Our focus shifted over the course of the project from the original aim of creating an agent to solve mazes and craft items based on its findings, into a project to test the limits and capabilities of Q-learning. Our work is now centered around our modified Q-agent and rigorous testing, analysis, and development.

--------------------------------FANCY Q LEARNING PIC HERE----------------------------

**Approaches: Use another level-two header called Approaches, In this section, describe both the baselines and your proposed approach(es). Describe precisely what the advantages and disadvantages of each are, for example, why one might be more accurate, need less data, take more time, overfit, and so on. Include enough technical information to be able to (mostly) reproduce your project, in particular, use pseudocode and equations as much as possible.**

Approaches: