

Fire Simulator

Design Report

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Overview:

The domain analysis phase allowed us to better visualize the structure of our project, however it was only a basic roadmap of our classes. In order to translate the work we did in the previous phase to a functioning application, we had to focus on the design, the architecture of our project. With such an extensive application, we had to carefully come up with the proper design patterns that would keep our project extensible and maintainable. We ultimately favored singleton facades and the factory pattern. After coming up with a few designs, we finally found one that we were content with and used it throughout our project.

Difficulties Faced and Overcome:

A challenging part of this phase was finding a design that was complex enough to ensure the extensibility and maintainability of our project, but not so complex that it became unnecessary. The first iteration of our design included multiple factories, many different layers of delegation, and as many interfaces as we could use. However, this was clearly superfluous. It took us a few more iterations to land on a good architecture, and when we did, everything else fell into place.

Conclusion:

This phase concluded the pre-implementation of our project. Although we had to rework our design a few times, it was good practice and an overall enriching experience. We were able to apply the work we did in this phase to the entirety of our project, making the implementation phase quick and easy. This experience has allowed us to realize the value and importance of doing most of the work before writing a line of code. We have learned to appreciate, and strive for, a good and robust architecture.