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Final Project Report

Algorithms Used: In our main, we first checked the format of the input file given by sending it to parse.c. If the file passed the tests, we then made three structs for the robot and the two obstacles, and sent them to load.c to load their data in from the input file given. We opened the output file, and then sent the data to our move.c which handled movements for the robot and the objects. The movement is dictated by a series of if statements that took into consideration the robot and objects’ positions and future positions to determine the robot’s route. The while loop in the main ends when the robot reached the end space. Every time the robot and objects take a turn, the robot’s position is saved to the output file. The complexity of our algorithms are:

* main.c – O(n)
* load.c – O(1)
* move.c – O(1)
* parse.c – O(n)

which gives our program an overall time complexity of O(n).

Team Contribution: The work was largely done together. Everyone contributed to the logic at first behind the functions before splitting apart to work on different things. Abigail’s focus was on load.c and path.c (no longer used). She also made test files for parse.c to check as well as different input files for move.c to use. Jacob focused on creating the functions in move.c. Austin’s main focus was on parse.c. The types.h and input\_error.h files were edited by everyone as the need arose.