370CT Concurrent and Real-time System Design

Mars Curiosity Rover Docs

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* Utilities

void writeLog(string text)

This function is for writing string to the log file.

void printHelp(int \*sol)

This function is for showing help menu and getting input from user prompt

void printProblem(int \*ctrlValue, int \*probValue)

This function is for showing the problem of a specific wheel

* Threads

void generateProblem(condition\_variable \*cv,int \*ctrlValue,int \*probValue)

This function is for assigning control value and problem value randomly.Control value has to be between [1...6] and problem value has to be between [1...3] in the beginning of start as a first thread.

void wheelSignal(condition\_variable \*cv, int \*ctrlValue,

int \*probValue,int rank)

This function is for wheel to signal and communicate with incoming robot signals.If our control value matches with it’s rank then this thread will run. The wheel will print a problem and try to solve it with random solutions that are provided by robot signals.If it is solved this thread will end, if it is not solved it will try to notify different robot signals

void robotSignal(condition\_variable \*cv, int \*ctrlValue, int \*probValue, int \*solValue, int \*attemptCounter,int correctSolution)

This function is for robot to signal and communicate with the wheels by trying some attempts as solutions for the wheels.If the robot doesn’t have correct thread number we lock other threads.If it has the correct thread number we try to solve it by trying 3 random solutions that are provided by different robot signals. If it doesn’t succeed in 3 times in a row. If it is still not solved we ask the user to solve our problem of the wheels.

void robotStart(condition\_variable \*cv)

This function is for robot to indicate that is running. After each problem is solved this will print “robot is moving”. It will start printing this as the first line and the last line when all threads end.