MINE FIELD GAME DESIGN SPECIFICATION

This document details the design specifications of the Mine Field game to be developed by H&R Consulting Inc.

GAME OVERVIEW AND OPERATION

The game will feature a map with restricted pathways. Clusters of pixels on the available pathways will be used to display exploding mines.

The player must navigate through the map and attempt to survive for as long as possible. Each explosion survived will add to the player's total. The final game score will comprise of the number of explosions survived.

An image of the map is shown on the left in a 1:16 scale. The shaded square represents the tank and all the other shapes are areas of the map that cannot be occupied by the tank.

The 'mines' will be displayed on screen two seconds before they are set to 'explode', selected using a predefined pattern or multiple patterns which will be hard-coded.

PERIPHERALS THAT WILL BE USED

The peripherals to be used, and their functions are listed in the table below:

PERIPHERAL	FUNCTION
Joystick	Controls direction of the tank
Joystick Push Button	Sets the tank to move in the specified location
INT0 Push Button	Sets the tank to stop
LED	Used to keep score
LCD Screen	Displays map and animates movement of tank

Since the number of peripherals used is three, the peripherals requirement is satisfied.

TASK IMPLEMENTATION IN THE SYSTEM

TASK	FUNCTION
1	Updates the position of the tank
2	Updates the mine state to one of three states (not present, present, exploded)
3	Updates the display using data from tasks 1 and 2
4	Checks for collision of tank and exploded mine
5	Updates score on LEDS

Task one will continuously compute the position of the tank, while task two will continuously generate the positions and states of the mines. Task three will take both of these sets of data and update the game map to display the tank and its position. Task four will compute and update the score on the LED in binary format. The score is not expected to exceed or equal 256, therefore the LEDs are appropriate to display the score. Tasks one and two will communicate their progression to task three and four using task rendezvous semaphores. Task four will use a condition variable semaphore to indicate completion to task 5. Since the number of tasks exceed three, this requirement is satisfied.

320 PIXELS

240 PIXELS

SCALE 1:16