UNIVERSITY OF JOHANNESBURG

FACULTY OF SCIENCE

COMPUTER SCIENCE 1A **DESIGN**

Problem Description

Write a C++ program where you have been tasked with creating a two-dimensional turn-based simulation for navigating dangerous terrain. The aim is for the human-controlled character to move from the bottom of the screen to the top of the screen without stepping on mines. Additionally, character must make it to the top of the screen before running out of energy.

Input & Output;

Input	
Input Description	*Mechanism*
Number of rows, rows	Command-line arguments
Options for game play	Standard input
Gameplay moves	Stndard input
Output	
Output Description	*Stream (optional)*
NewPosition/newWold	Standard Output
Errors	Cerr Output

Data Format

Identifier	*Data Type*	*Description*
numRows	integer	For setting world row dimension
numCols	integer	For setting world column dimension
numObstacles	integer	For number of obstacles
numEnergy	integer	For placing temporary energies
numMines	Integer	For placing number of mines
Move options	char	For moving the player

Pseudo Code

```
Include "terrainSpace.h"
Include <iostream>

using namespace std;
using namespace TerrainSpace;

int main(int argc, char* argv[]) {
   if (argc != 6) {
      Print "Usage: " + argv[0] + " <rows> <cols> <numObstacles> <numMines>
<numEnergy>"
      Return 1
   }

   // Parse command line arguments
   int numRows <- atoi(argv[1])
   int numCols <- atoi(argv[2])
   int numObstacles <- atoi(argv[3])
   int numMines <- atoi(argv[4])
   int numEnergy <- atoi(argv[5])

   // Call function to start the game
   playGame(numRows, numCols, numObstacles, numMines, numEnergy)

   Return 0
}
```

UML Activity Diagram