UNIVERSITY OF JOHANNESBURG

FACULTY OF SCIENCE

COMPUTER SCIENCE 1A

Problem Description

Design a turn-baes simulation for The Utopian Sea Exploration in order to train their staff on fuel management. The program must simulate the horizontal movement of a ship across the sea.
(Reference: Practical assessment 6)

Input & Output

Input	
Input Description	*Mechanism*
Direction user wants to move in	Standard input steam
Output	
Output Description	*Stream (optional)*
Fuel Level	Standard output stream
New ship position	Standard output stream

Data Format

Identifier	*Data Type*	*Description*
chInput	Character	Users direction input
FuelLevel	Integer	Amount of fuel remaining
intSeaArr[SEA_LEVEL]	Integer Array	Array of the Sea (includes fuel, ship and sea)
MoveShip(direction, intSeaArr, FuelLevel)	Void Function	Function used to move the ship and replace characters
SEA_LEVEL	Integer	Total number of places in the game
intShip, IntFuel, intSea	Integer	Used to keep track of objects in the game
DisplayGame(intSeaArr)	Void Function	Function used to display the game

Pseudo Code

```
While blnContinue is true

    Clear the system screen.
    Output → "Your fuel level is:" FuelLevel

    Run function: DisplayGame(intSeaArr)

        For all the values in SEA_LEVEL
          If the value is intSHIP
              Output →SHIP
           If the value is intFUEL
              Output →FUEL
            If the value is intSEA
              Output →SEA
         Output → "D: Move Right" "A: Move Left" "Q: Quit"
         Get users input choice ← chInput


    Run function: MoveShip(direction, intSeaArr, FuelLevel)

            Arr[ShipLoacation] ←intSEA
           If user moves ship left or right then:
                If intFUEL is equal to arr[ShipLocation-1] then
                    increase FuelLevel by 5
                or else
                    decrease FuelLevel by 1
           if ShipLocation is not 0 then
               arr[ShipLocation - 1] ← intSHIP
               decrease ShipLocation by 1

    if user wants to quit then blnContinue is false
```

UML Activity Diagram