

## Practical 6 (due 2023-03-31 @ 09:00)

The purpose of this assignment is for you to use functions and user-defined libraries of functions as well as work with static, one-dimensional arrays.

Please note: Your code will be checked for originality. If you use someone else's code or code is taken from the Internet, your prac will come under scrutiny for a potential copy, which may result in zero marks being awarded.

The Utopian Sea Exploration Company has requested that you design a turn-based simulation to train its staff on fuel management. The program must simulate the *horizontal* movement of a ship across the sea according to the following requirements:

1. The length of the sea must be 50.
2. Four (4) fuel sources must be placed at random locations in the sea. A fuel source cannot be placed in the middle of the sea.
3. The ship starts in the middle of the sea when the game starts.
4. A pilot must be able to move the ship to the right or left.
5. Each time the ship moves, its fuel level must decrease by 1. The fuel level of the ship is 20 at the start of the simulation.
6. When the ship moves over a fuel source, its fuel level is automatically increased by 5.
7. The pilot loses the game if the ship's fuel level reaches 0.
8. The pilot wins if the ship reaches either end of the sea without depleting its fuel (left or right side of the sea).
9. The game entities must be displayed on the screen using the following characters:
  - a. Water must be displayed using the '\_' character.
  - b. A ship must be displayed using the 'O' character.
  - c. A fuel source must be displayed using the '^' character

You must use user-defined libraries with functions defined and declared in the **ShipSpace** namespace. The program **MUST** make use of a fixed-length array. Solutions NOT making use of a fixed-length array will be capped at 50%.

### Design

The design should cover the player's movement. Make sure to save your design as a PDF document.

Please format your practical for submission according to the structure established in the previous practical (Docs directory containing design, Source directory containing \*.cpp and \*.h files). The submission archive must be named according to the convention established in the previous practicals.

**Please note:** Programs that do not compile will be capped at 40%

Mark sheet		
	Using the correct namespace	5
	Declaring functions in both header and implementation file	5
	Initialise array with zero values	5
	Placing fuel sources in the game world	10
	Placing the ship in the middle of the sea	10
	Moving the ship horizontally	10
	Updating the ship's fuel level	10
	Correctly displaying the game world and remaining	15
	Using a menu to provide options for the user	10
	Random number generation	10
	Design	10
		/100