Take Home 1 — OOP Practise

Classes & UML Design

Objectives

To practice on UML
To practice on Class, its attributes and methods

Activities

The users will provide an input and output file from the command line. Write a program that reads commands from the input file and prints output to the output file.

The input file contains the basic commands.

The command list;

```
start_engine;
stop_engine;
absorb_fuel <quantity>;
add_fuel <tank_id, quantity>;


add_fuel_tank <capacity>;
list_fuel_tanks;
remove_fuel_tank <tank_id>;
connect_fuel_tank_to_engine <tank_id>;
disconnect_fuel_tank_from_engine <tank_id>;

open_valve <tank_id>;
close_valve <tank_id>;

break_fuel_tank <tank_id>;
repair_fuel_tank <tank_id>;

stop_simulation;
```

- The program needs to run until it takes a “stop_simulation;” command.
- There is only one engine. The engine’s attributes are;
  - fuel_per_second: double
  - status: boolean
- The engine has its internal tank to store fuel.
- There are several fuel tanks. Tank’s attributes are;
  - capacity: double
  - fuel_quantity: double

    - broken: boolean
- The engine needs a minimum of one connected tank to start; otherwise, the engine can not start.
- Each tank has a valve to connect the tanks and the engine.
- Engine stops when there is no fuel in connected fuel tank.
- Engine stops when a fuel tank disconnected from engine.
- Connected fuel tank must be removed to connect another.

Task List;

1. Draw a UML diagram about the system.
2. Implement the class which will read the input file.
3. Implement other classes. The classes need to include possible attributes and methods.

Problem Solving Tips

1. UML and source code has to match
2. Do not implement logic in Main. Do it in class, which is responsible.