

**Homework 1: Preliminary Design Project Proposal***Due: Thursday, January 22, at 3:00 P.M*Team Code Name: "Chateau de Nemo" Group No. 1

Team Members (#1 is Team Leader):

#1: Ali Shareef Signature:  Date: 1/21/04#2: Sin-Hoe-Lim Signature:  Date: 1/21/04#3: Jason LitJeh Lim Signature:  Date: 1/21/04#4: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: 1/21/04**Abstract:**

Design and build an aquarium that is capable of monitoring the PH and Ammonium level and change the water as necessary. The aquarium will also have other features such as an auto-feeder, a heater, and day-light simulator. The aquarium settings will be input to the system using a serial port from a PC. There will be an associated program on the PC to allow the user to select parameters to the system.

**Design Objectives:**

- 1) Detect level of PH/Ammonium in the water and change water as necessary.
- 2) Feed the fish as necessary over timed intervals auto-feeder.
- 3) Monitor the temperature of the aquarium and activate the heater as necessary.
- 4) Simulate daylight over timed intervals.
- 5) Input user parameters using serial port.

**Design/Functionality Overview:**

The proposed design is an autonomous aquarium system that will monitor the PH/Ammonium level of the water in the fish tank and change the water as necessary. Water will be removed from the tank using a pump located near the bottom of the tank. Additional water will be added to the tank using valves connected to a tap. The system will be able to feed the fish over a timed interval. The system will monitor the temperature of the water in the tank using temperature probes and when required the system will activate a heater. The system will also simulate daylight by turning on a light over a timed interval. This system will allow the user to input the necessary parameters using the PC via the serial port.

**Project-Specific Success Criteria (list 5):**

- 1) Demonstrate detection of critical levels of PH/Ammonium and successfully remove and add water.**
- 2) Demonstrate ability to feed fish based on user schedule.**
- 3) Demonstrate ability to turn heater on and off based on temperature of the water in the aquarium.**
- 4) Demonstrate ability to turn lights on and off based on user input schedule.**
- 5) Demonstrate ability to input all necessary parameters using serial port from PC.**

# *Le Dessin de "La Chateau de Nemo"*

