Requirements Specification

for

Oil Field Monitoring

Programming Assignment 1
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1.0 System Overview

Oilfield Instrumentation-USA relies on a complex array of sensors on each drilling rig to monitor the state of all operations. These sensors feed data to a server mounted on the rig. The server is connected to a network which enables workers on there rig as well as managers back at the company offices to monitor all aspects of the operations. This program has been designed to simulate those sensors on oil rigs and display the relevant information in a command prompt.

2.0 Relevant Terms and Acronyms

- ROP - an acronym for rate of penetration, the rate at which the drill bit is drilling
- PSI - pounds per square inch, a unit of measurement for pressure
- BBL - an abbreviation for barrels (of oil in this instance)
- casing pressure - pressure inside of the bit casing

3.0 Requirements

3.1 Architectural Requirements

The objects to be considered in the construction of this simulation are:

- Simulation
- Oil wells
- Sensors
- Display layer
- Messaging layer

3.2 Interface Requirements

- Upon startup the instructions for operating the simulation will be display.
- The user will be asked to enter the name of the XML file that contains the configuration for the well and sensor data.
- Users can interact with the simulation through the menu which can be brought up by a keystroke.
- The menu will allow the user to add and remove wells and sensors to the display.
- Wells and sensors make up the core of the application and are passing data through the simulation interface.

3.3 Functional Requirements

- At a set interval, the simulation will trigger an update cycle that refreshes the data output.
- The application shall allows the user to select any combination of wells and sensors from a list of active sites for addition to or removal from the display.
- All data outlining the active wells and sensors shall be read from a data file.

3.4 Database Requirements

- There is no structured form of data storage in this application. The data is randomly generated. Therefore, no database requirements exist.

3.5 Performance Requirements

- The system must update at the specified five second interval.
- There shall be an error check put in place to validate the existence of any well or sensor.
- The application should run as long as the user has not terminated it.

3.6 Non-functional requirements and constraints

- The project built shall be a Win32 console application.
- The application shall be developed in C++ using Visual Studio
- The application must be compatible with the Windows 7 operating system.
- The project shall follow the naming conventions outlined in the statement of work.
- The deadline for this project is July 2, 2015.