**ORACLE ACONEX TECHNICAL ASSIGNMENT**

**CONSTRUCTION SITE CLEARING**

- ARPIT SRIVASTAVA

## Why this assignment?

I have chosen the topic Construction Site Clearing as my assignment for this round as I feel Oracle Aconex is dealing mostly in Construction domain and it will make more sense for me to work on this assignment. This will also provide me with an opportunity to gain some insight into the intricacies of site clearing to start a construction work and how IT can help make life easier.

### Code Design

#### Packages and classes -

The code has been divided into 5 packages –

1. **com.oracle.assignment.construction.controller** – This package holds 2 classes – ‘SiteSimulationController’ and ‘SiteSimulationControllerHelper’ which hold the control of the simulation. SiteSimulationController.java holds the main() method which holds the instantiation of the simulation.
2. **com.oracle.assignment.construction.model** - This package holds 2 classes – ‘Bulldozer’ and ‘Layout’ which hold the properties of the bulldozer and the layout respectively.
3. **com.oracle.assignment.construction.calculation** - This package holds 2 classes – CalculateUnitsOfOperations’ and ‘CalculateIndividualAndTotalCost’ which calculates the unit and cost of all operations.
4. **com.oracle.assignment.construction.config** - This package holds 1 class – ‘LookupConfig’ which holds all the fixed values of the project and is used by all classes for reference.
5. **com.oracle.assignment.construction.utility** – This package holds 2 classes – ‘StringUtility’ and ‘WrapperOfUnitAndCost’. StringUtility.class is used for conversion of String to StringArray. WrapperOfUnitAndCost.class is used to wrap the unit and cost to save into a list.

Apart from the above we have **log4j.properties** in the project folder.

The **Unit Tests** have been created in **5 packages** with ‘com.oracle.assignment.construction.test.\*’ annotation which have similar roles like the above defined packages for source code.

TestRunner.java is the test suite which tests all the test cases used during implementation. A message “Test Suite ran successfully” denotes the test suite ran successfully or not.

#### Code Flow –

* The flow starts with the main() method of SiteSimulationController class which creates an object of Layout and Bulldozer classes, takes input commands from the user and performs processing on the commands. Bulldozer has access to the object of Layout.
* The flow moves from processUserCommand() method to Bulldozer and Layout class where traverse() and markFieldAsCovered() methods perform further processing respectively.
* CalculateUnitsOfOperations calculates the quantity of each operation at the runtime.
* CalculateIndividualAndTotalCost class calculates the cost of all the operations and supplies to the controller for displaying to the user.

#### Assumption – It has been assumed that the simulation will end as soon as a protected tree is removed which means the quantity and cost of ‘Destruction of protected Tree’ will always be 1 and 10 respectively. Cost of fuel is also considered for a protected tree.