



## MARINE OPERATIONS AND MANAGEMENT SYSTEM IN JETTY

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### ABSTRACT

Marine Operations and Management System is a web application that maintains all the information about marines operations. In order to streamline activities and information flow, computerization on special tasks is most suited option. This shall minimize the paper movements and increase the efficiency, labor as well as time-consuming reports can be generated as when needed. Updating the progress of projects and status of different activities and jobs can be checked easily and regularly. The purpose of "Marine Operations and Management System" to provide the Marine operations process in an electronic form, using the Internet. Present System deals with Jetty's information, Tankers handled information, Ocean loss information, Cargo hose information, Demurrage information, different type of reports etc.

## 1. INTRODUCTION

The function of a harbour is to provide safe anchorage for vessels and to facilitate smooth transfer of cargo between ship and adjoined land. Assured harbour tranquility is not only essential for safe anchorage, but it is also important for efficient port operation. Essentially, harbor tranquility reduces the excitation of ships moored at anchorage or along a wharf and optimizes the mooring forces. Larger ships may not experience wave agitation to the wind-waves, whereas a small boat may be violently swung by the same wave.

In the viewpoint of port operation, the relationship between ship motion and cargo handling works as well falls in the judgment of harbor tranquility. Hence the use of constant tension winches and the stiffness and friction of the fenders, can have a very large influence on the resulting ships motions, the surge motion external forces from wind, waves and or currents [2].

### DESCRIPTION OF SHIP BEHAVIOR AT BERTH.

The movement of a moored ship at berth can be described by the three translator movements, namely surge, sway and heave, and the three movement of rotation, known as pitch, roll and yaw. This project is to determine the effective waves forces acting on the ship mooring line during anchorage at harbor; to determine the various load on ship at Harbor; to determine mooring effect on ship at harbor and to determine safety precautions for ship under wave.

### METHODOLOGY

In the previous system Marine operations information is done manually. As this system needs lots of manpower and as papers will be moving from one place to another manually, lots of time is consumed. So time constraints maintenance is very difficult. As these records move from place to department the security provided to the data is very less. As this is manually done the data cannot be very accurate. Even there can be chance that intermediate person can leak the proposals.

In this we discuss about the proposed Marine Operations and Management system. The system will be getting the input of Jetty's information; Tankers handled information, Ocean loss information, Cargo hose information, Demurrage information, different type of reports etc. Our proposed system is an automated format of the above Slated paper based work. Here the entire process is computerized thus by reducing the man power and the entire manual work. As this is automated system and fully computerized so it is far more fast and accurate than manual work.

The main objective to design this application is to provide day to day update about marine and jetty information to related companies and trading agents who want to book slot of import and export of their items

from other countries. Till now all the updates and bookings are done manually where user need to visit directly the concern office and then take appointment for booking the services

## 2. LITERATURE SURVEY

### INRODUCTION

Literature survey is the most important step in software development process. Before developing the tool, it is necessary to determine the time factor, economy and company strength. Once these things are satisfied, ten next steps are to determine which operating system and language used for developing the tool. Once the programmers start building the tool, the programmers need lot of external support. This support obtained from senior programmers, from book or from websites. Before building the system the above consideration r taken into for developing the proposed system.

### RELATED WORK

### BASIC DEFINITIONS OF FORCES ACTING ON A VESSEL AT HARBOR

Some forces act on a vessel at harbor. The forces are berthing forces, current force, seismic force, active earth pressure, mooring forces. The forces are described as follows:

#### BERTHING FORCE

Horizontal forces act on the berth, whenever a vessel impacts on the berth anytime of the year. The strength of this force wholly depends on the energy in motion that can be absorbed by the fender system. The design vessel will be contacting the fenders at an approach angle of 100. Therefore, the impact as a result of berthing of the ship is at quarter point. When the berthing takes place, the fender system absorbs energy in motion and converts it into strain energy, thereby passing on a reaction force to the structure and the reaction force for which the berth is to be designed can be revealed from this process and deflection-reaction diagrams of the fender system selected [3].

#### CURRENT FORCE

Currents can be described as the relatively constant motion of water caused by tidal action, wind drag, or river discharge. The most common currents considered in offshore structural analysis are tidal currents and wind drift currents. The later is generated from the drag of local wind on the surface of the water. The tidal and wind drift currents are regarded as horizontal and varying with depth. When vessel is fully loaded, pressure usually applies to the part of the vessel below the waterline dues to currents. The part of the vessel covered is 25 Samson Nitonye & Thaddeus C. Nwaoha CJET (2018) 2(2) 24-39 approximately equal to  $wv^2/2g$  per square meter of the part, where  $v$  is the velocity in m/s and  $w$  is unit weight of water in t/m<sup>2</sup>. The

vessels usually berths parallel to the current. On harbor parallel to the direction of the water current, there are two types of ocean current, the surface circulation current and the deep circulation current [4].

## SEISMIC FORCE

In areas susceptible to seismic disturbance horizontal force equal to a fraction of the acceleration of gravity times the weight applied as its centre of gravity should be taken. The fraction will depend upon the likely seismic intensity of the area and shall be taken in accordance with IS: 1893-2002. The weight to be used is the total dead load plus one half of the live load [5].

## ACTIVE EARTH PRESSURE

This type of force is applicable only if the berth has a retaining wall at the landside, thus retains the earth. Active earth pressure is experienced in situations where the wall moves sufficiently away from the backfill by translatory motion, rotation about the base or their combination, which reduces lateral pressure of the backfill. Active earth pressure does not occur in jetty or pier.

## MOORING FORCE

The mooring loads are the lateral loads caused by the mooring lines when they pull the ship into or along the dock or hold it against the forces of wind or current. The load on ropes caused by winds or currents, acting on the ship during berthing cannot be estimated with accuracy. Factors such as tensioning of the rope and its angle to the berthing line are considered during such estimation exercise. Thus, mooring force will be two types; Wind force and Current force [6]. Ships are moored at berth, when the followings below are available.

- Mooring lines connecting ships to berths
- Bollards and storm bitts on shore
- Mooring hooks on mooring and breasting dolphins.
- Fenders between ship and berth
- Mooring winches and bollards that is onboard the vessels to be moored.

## WAVE FORCE

The periodic undulation of the sea surface is known as waves. The complexity of motion of the waves is a major challenge to workers in the ocean environment. Waves cause fatigue type of loading on offshore and exposed coastal structures. They adversely affect coastlines and harbor facilities and induce violent motions in moored ships and floating structure [7].

### 3 .EXISTING SYSTEM

In the existing system Marine operations information is done manually.

1. **Time Consuming:** - As this system needs lots of manpower and as papers will be moving from one place to another manually, lots of time is consumed. So time constraints maintenance is very difficult.
2. **Less Security:** - As these records move from place to department the security provided to the data is very less. As this is manually done the data cannot be very accurate. Even there can be chance that intermediate person can leak the proposals.

### LIMITATION OF EXISTING SYSTEM

The following are the limitation of existing system. They are as follows:

1. **Marine operations cannot be done round the clock:** -

As this is entirely manual work the data should be available round the clock and from any place to any place. but this is not possible with the manual system.

2. **Updating of database is done only after Entering data:** -

As this is a manual process only after the updating is completed the database is updated with all the details.

### 4. PROPOSED SYSTEM

In this we discuss about the proposed Marine Operations and Management system.

### GENERAL DESCRIPTION OF INPUTS & OUTPUTS:

The system will be getting the input of Jetty's information; Tankers handled information, Ocean loss information, Cargo hose information, Demurrage information, different type of reports etc.

#### Fully Automated System: -

Our proposed system is an automated format of the above Slated paper based work. Here the entire process is computerized thus by reducing the man power and the entire manual work.

#### Fast and Accurate: -

As this is automated system and fully computerized so it is far more fast and accurate than manual work.

## ADVANTAGES OF THE PROPOSED SYSTEM

1. The following are the advantages of the proposed system. They are as follows:
2. **Data security:** - In our system the data is updated in database time 10 times and data neither is nor sent via any paper work so data is secured as only the administrator has the access to the database and no one else can modify the database.
3. **Availability of system round the clock:** - As this is an automated system, system is available all the time, so no need for the official availability so no delays in work. The process continues automatically does not need to wait for anyone to keep the proposal.
4. **Continuous updating of database:** - Database is updated from time to time after each effect on the proposal. So data is more accurate and perfect as all the updating are done simultaneously as the process.
5. **Instantaneous retrieval of data:** - As the database is update from time to time the data can be retrieved at any time.

**Generation of reports for decision-making:** - In our project we generate reports so that the higher officials can know the progress of the proposal placed and thus by also take the important decisions regarding the proposal handling.

## 5. SOFTWARE PROJECT MODULES

Implementation is a stage where theoretical design is converted into programmatical manner. The implementation will be divided into number of modules like 2 modules

1. Admin Module
2. User Module

Now let us discuss about each and every module in detail as follows:

### 5.1 Admin Module

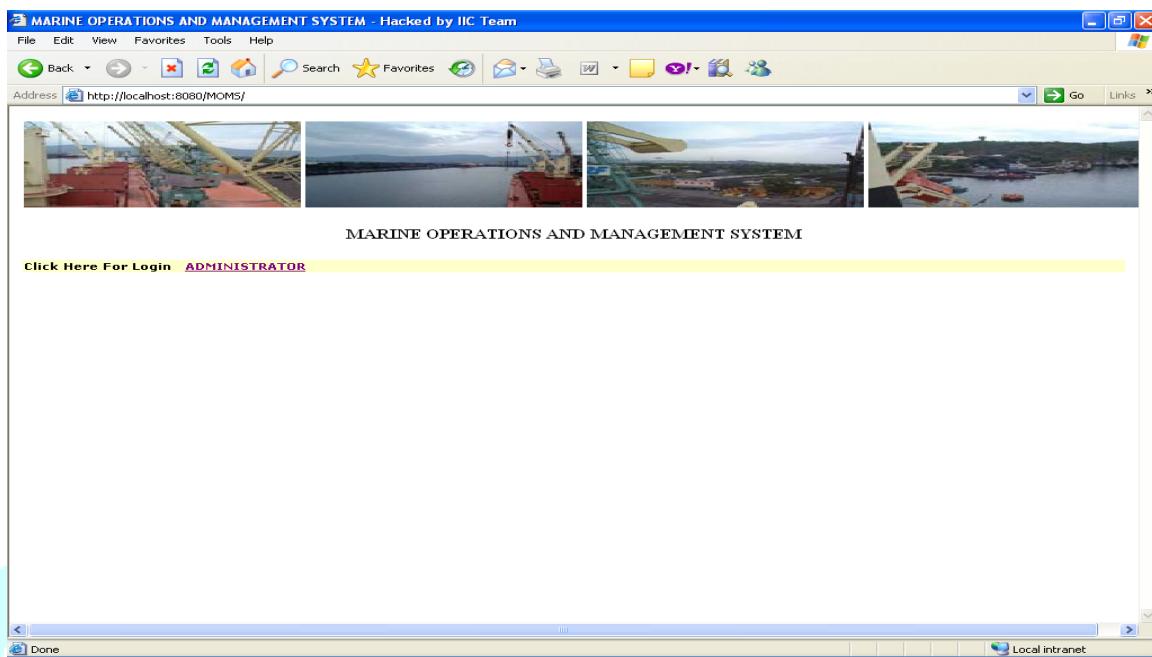
In this module, the admin is one who is mainly responsible to add all the information related to jetty, Tankers handled information, Ocean loss information, Cargo hose information, Demurrage information and view all Reports

### 5.2 User Module

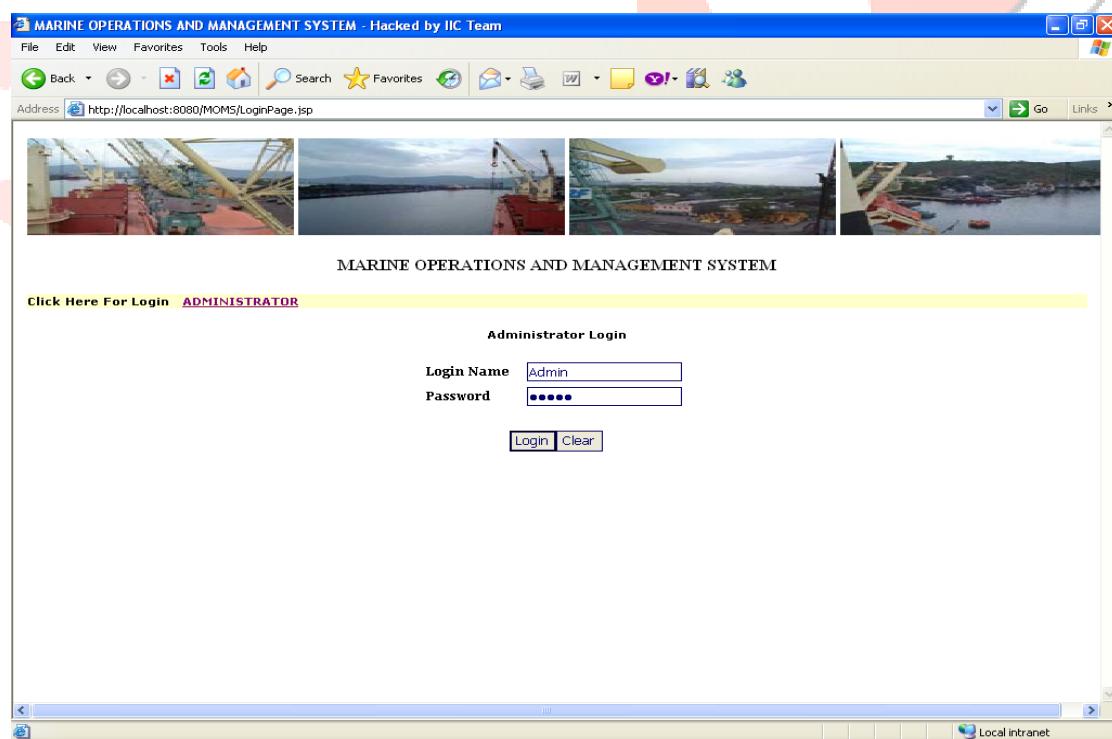
In this module, he logs in by using his/her user name and password. After Login the customer has the following operations such as : View Tankers handled information, View Ocean loss information, View Cargo hose information, View Demurrage information(I.e Rental collected for import and export of ships) and view all Reports.

## 6. RESULTS (OUTPUT SCREENS)

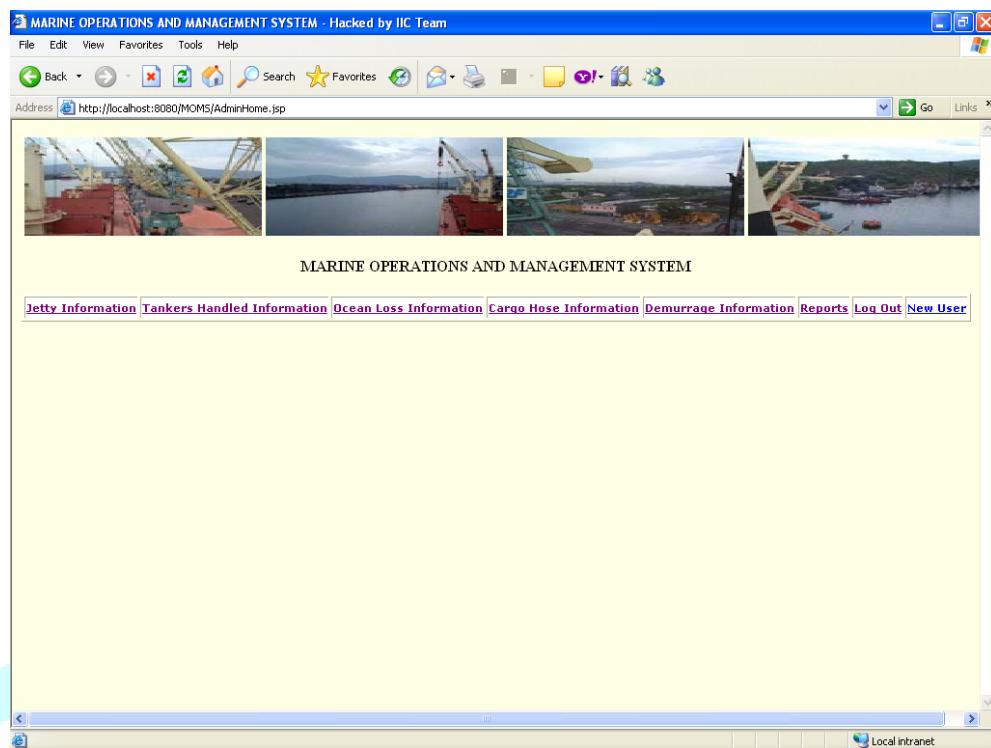
### MAIN PAGE



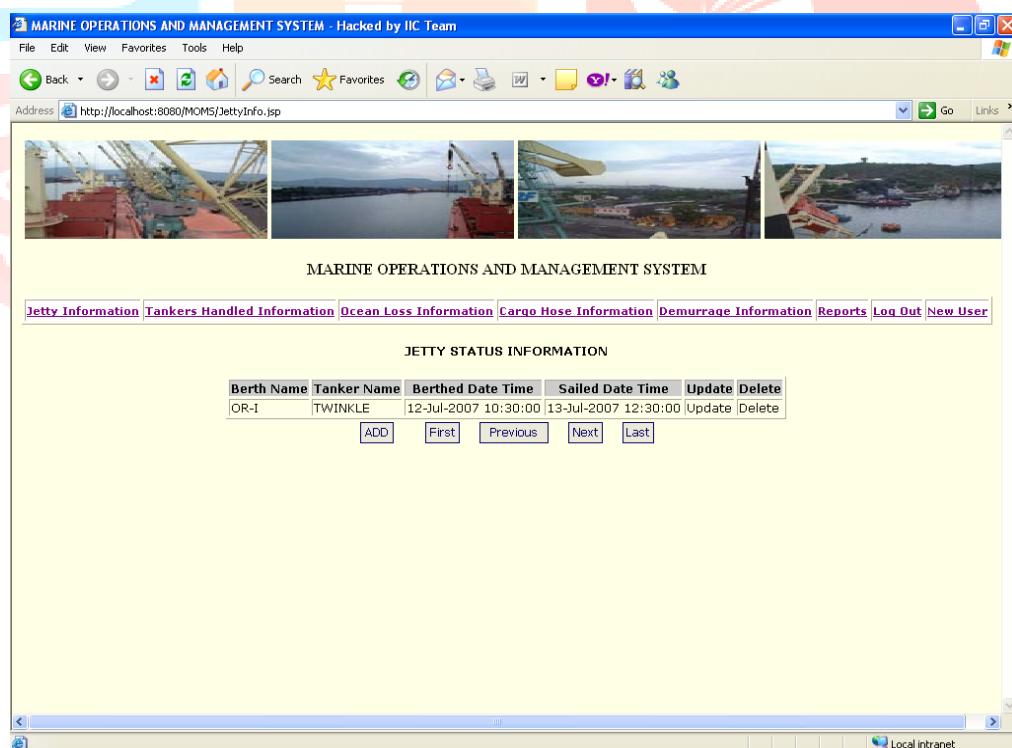
### ADMIN LOGIN PAGE



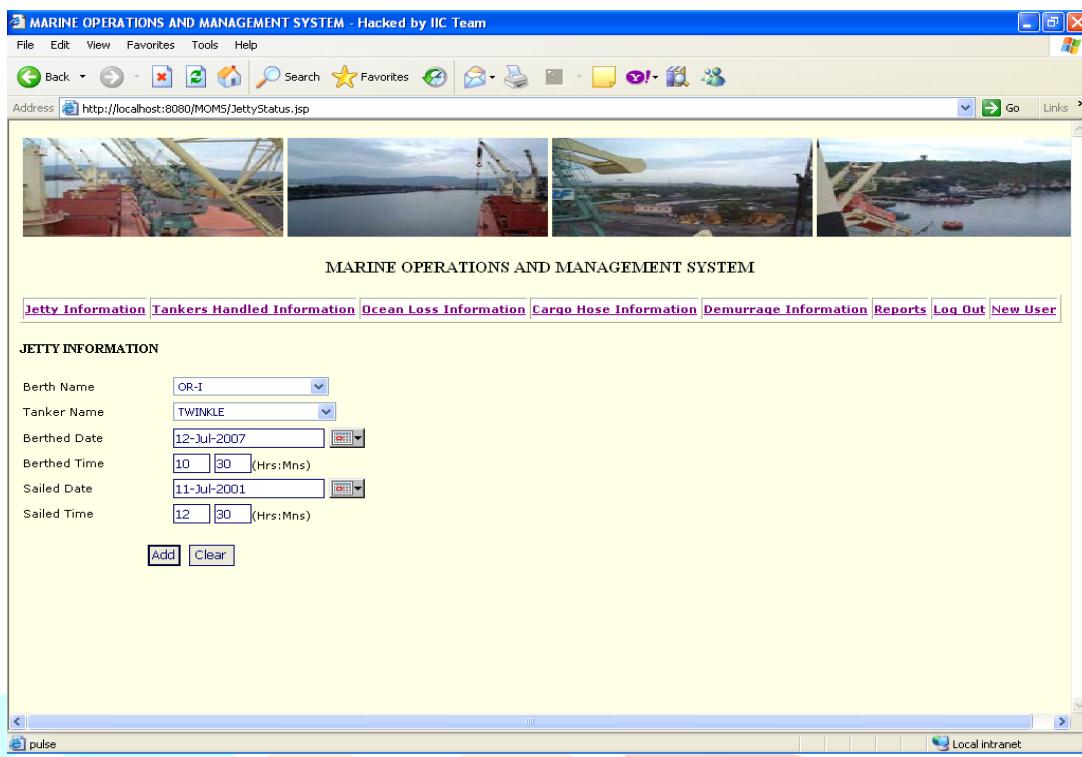
## ADMIN HOME PAGE



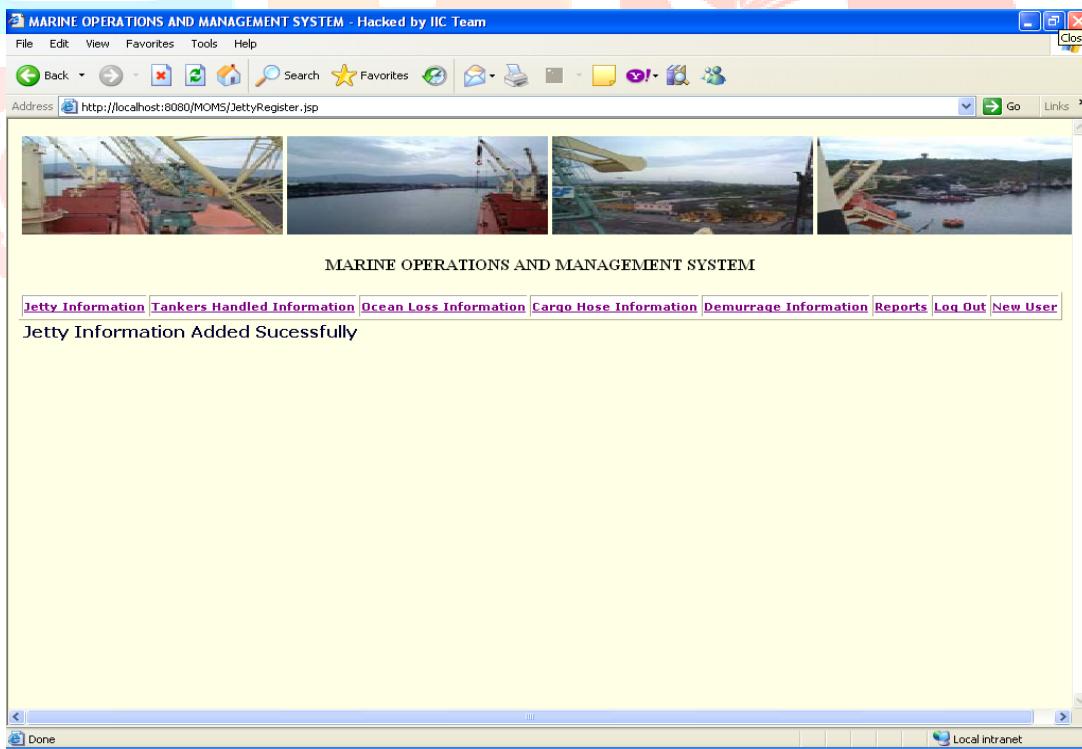
## ADMIN CAN VIEW JETTY STATUS INFORMATION



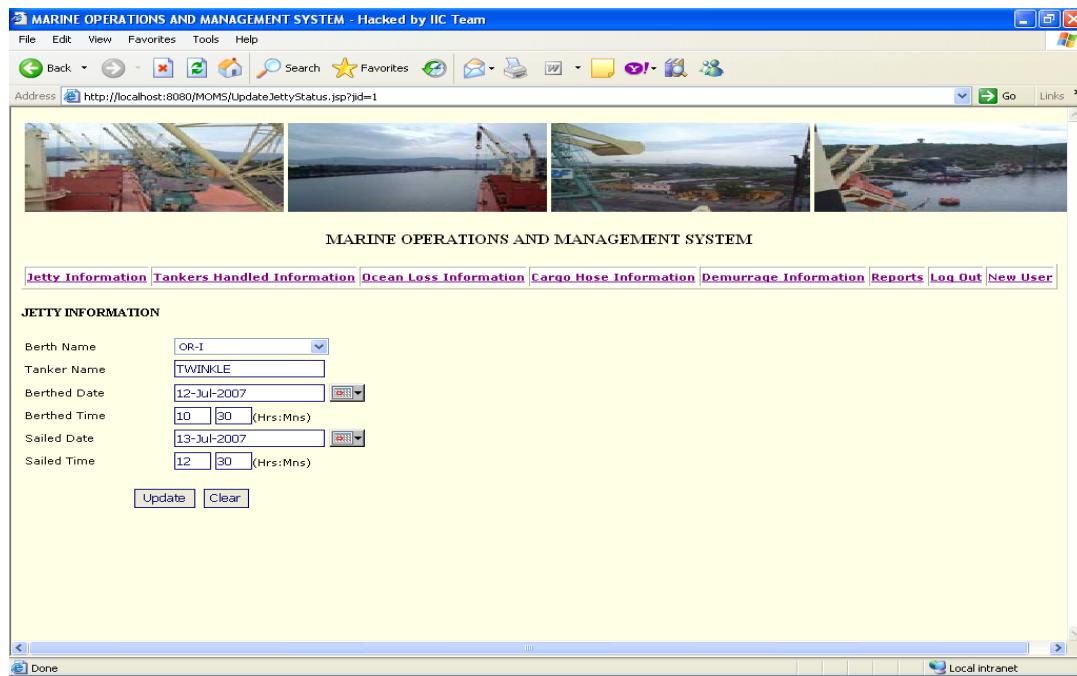
## ADMIN CAN ADD NEW JETTY INFORMATION



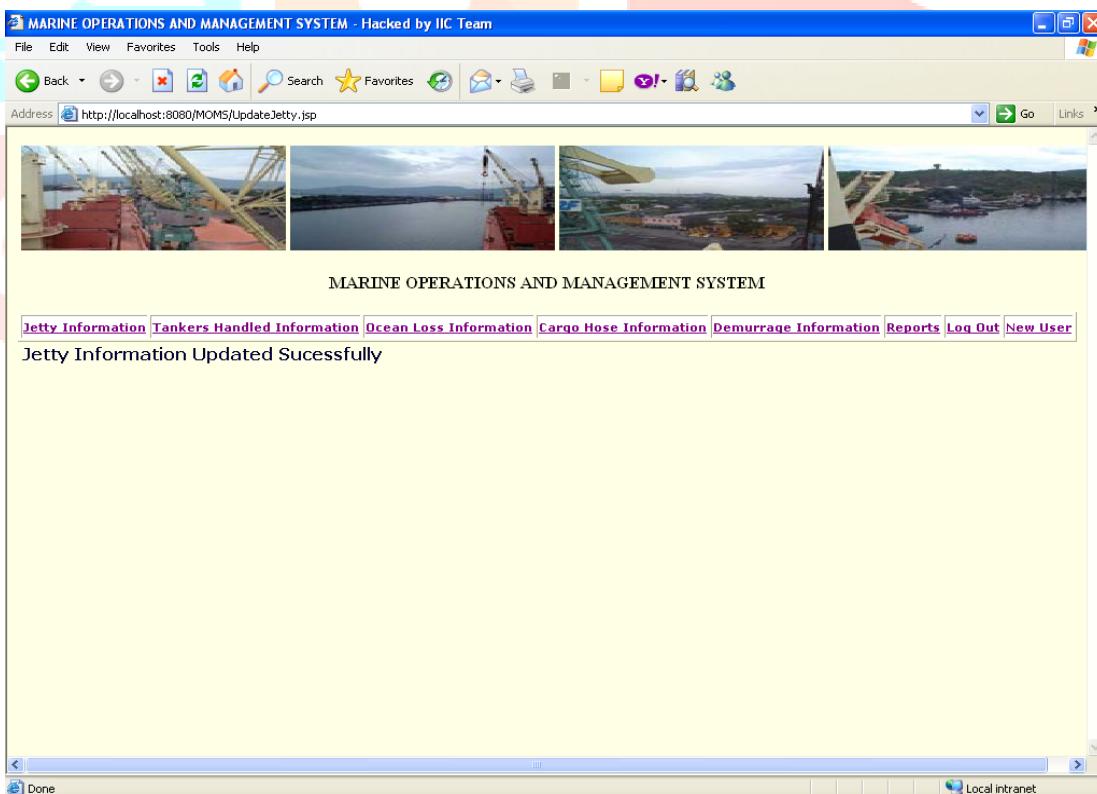
## ADMIN GET CONFORMATION



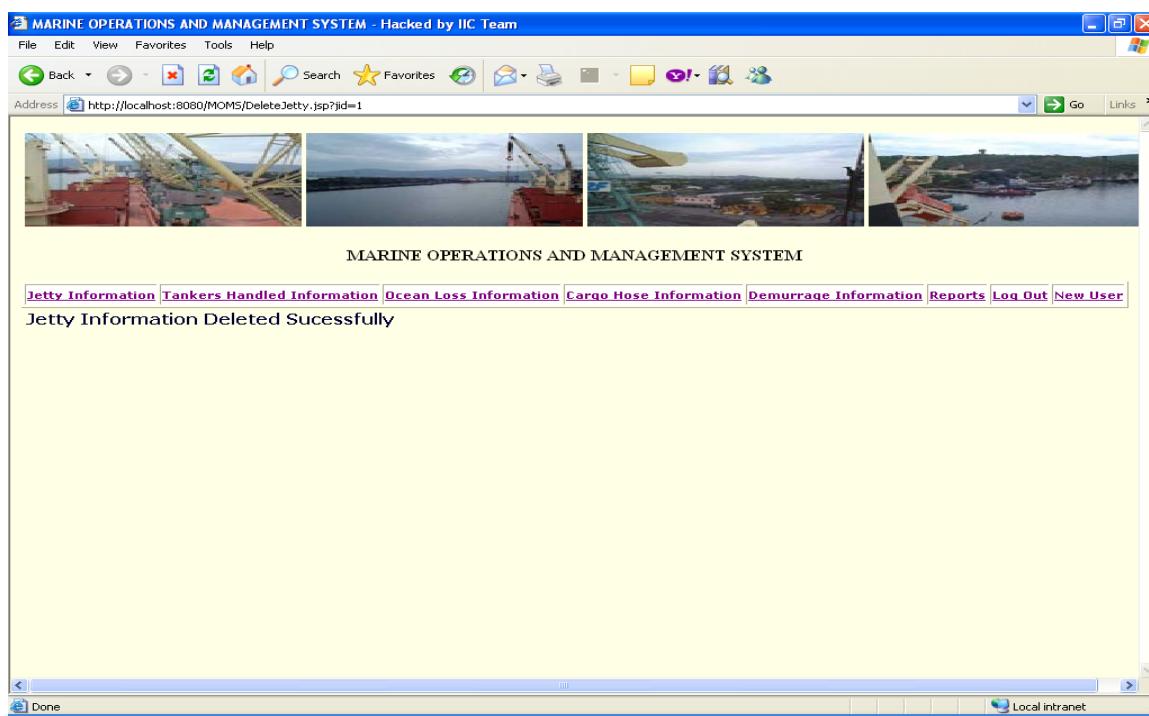
## ADMIN CAN ADD NEW TANKERS INFORMATION



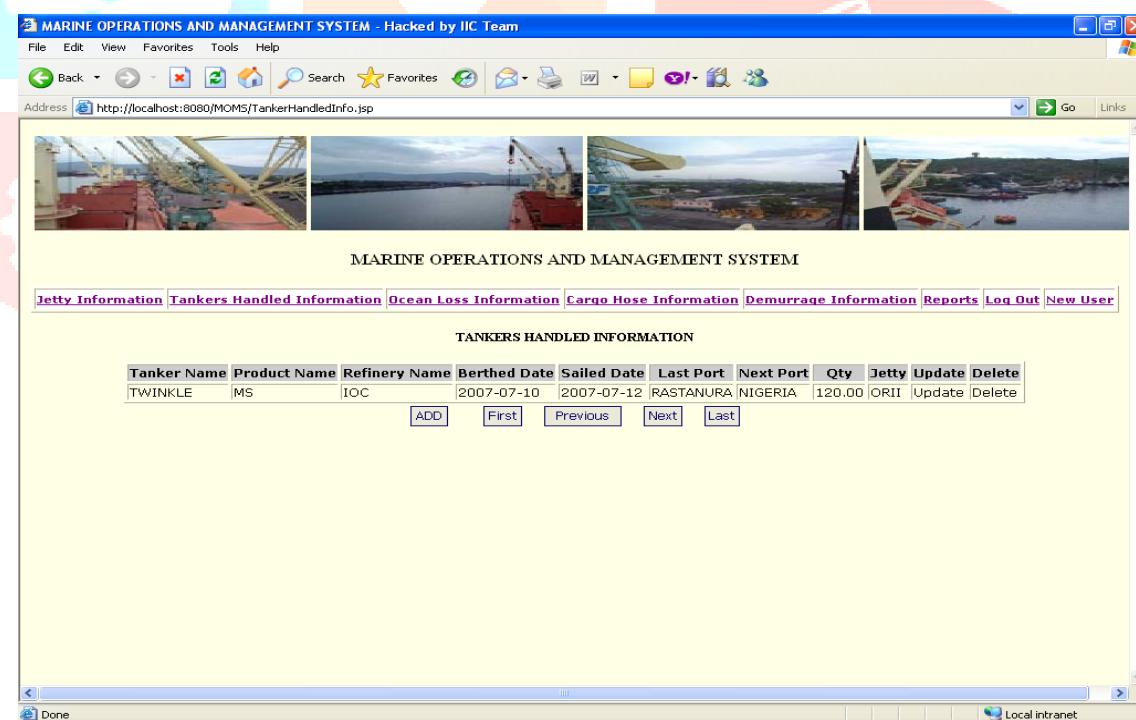
## ADMIN GET TANKER CONFORMATION



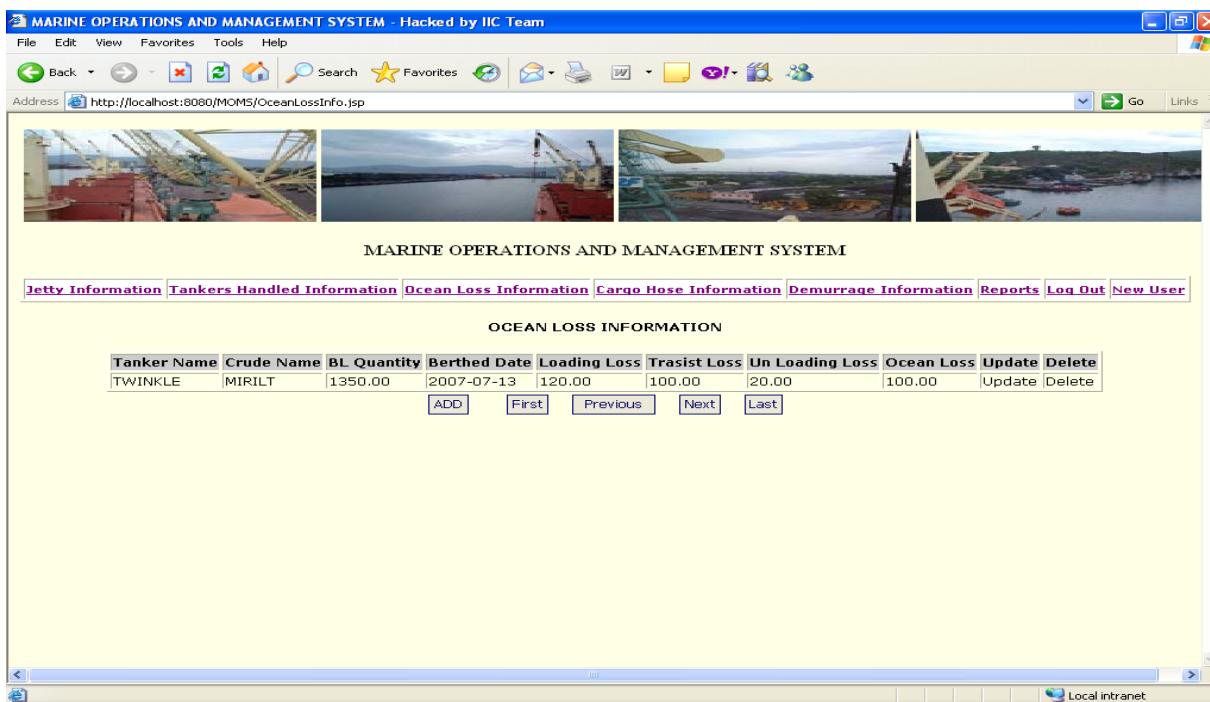
## ADMIN CAN DELETE TANKER INFORMATION IF IT IS NOT REQUIRED



## ADMIN CAN VIEW SET OF TANKERS INFORMATION



## ADMIN CAN ADD OCEAN LOSS INFORMATION



## 7. CONCLUSION AND FUTURE WORK

In this project we finally developed a common platform which can able to provide all details about MARINE OPERATIONS and with this we can able to reduce a lot of user effort .The following are the functionalities present in the proposed application such as :

This system is ever ready to attend the following needs of future:

- Interaction with external software.
- Cross platform functionality.
- Facility to send any report by E-mail.
- Web enabling of student's progress, so that parents can retrieve the information on web.

## 8 . REFERENCES

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