

METHOD TO DETECT INCONSISTANCIES FROM CLASS AND SEQUENCE DIAGRAMS

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Abstract

This research paper put forward loom to verify Inconstancies from the UML diagrams by considering their specifications, mapping with standard model for checking and analyzing their structure.

Semantic web generates an Application which is explicable by the computer for e.g. Raman eats Mango which is known by human but not by machine in such cases it is useful. Ontology is the main element of semantic web since it supply semantic of data. Web Ontology Language generates Ontology, assist Application to manually develop and combine the data, Unified Modeling Language provide to generate image models and help in scheming and in manuscript of an applications.OWL produce from UML because like possessions live between them. The class diagram is chief element and based on classes and their relationship. At the time of translation repetition in design gets replicate in the OWL. So propose an approach to detect Inconsistencies by mapping XMI file with standard XMI file which was stored in database and then that will appear in the form of DL statements.

Keywords:- Semantic web,Ontology,Web Ontology Language, Description logic.

- **Problem statement**

In the current issue detecting and removing Inconsistencies from the UML diagrams is very difficult task. Now a days there are different tools available for the same .At that time developer used the process for detection in which they convert UML model into Description logic rules and check the inconsistencies by mapping and remove it by using various algorithms then resultant DL is mapped with web Ontology Language .By considering this preconditions The new system is evolved to detect the inconsistencies from class diagram and Sequence diagram. Here the UML diagram is converted into XML file and this file is mapped with the standard XML file of that diagram after that generates the document which consists of Inconsistencies of UML diagram in the form of Description Logic statement.

- **Literature Analysis**

Literature analysis phase is experiential correctly and expand with problem description with the support that has been obtainable till today in the section of inconstancies detection tool for UML Diagrams using Description Logic statements. The available study on Inconsistencies Detection Tool for UML Diagrams by using Description Logic Rules.

A 2011 paper dissect the Ontology, It is depend on the chief component of semantic web and which is created throughout the modeling stage by translating UML diagrams to OWL. Formalization is connected with ontology from UML diagrams equipped with the aid of First order logic with Description logic.[1]

In 2003 researchers offers in series about study of Class diagram by means of Description logic statements. The technique of belief assist to find out their incongruity and redundancy [2]. An elucidation, primary Class diagram expressed within DL statement that made by using DLR transformation.

In the year 2005 a few Developers launch [3] Unified Modeling Language is the outcome of normal formalism for software set up and search. To permit the most significant production applications, complex CASE tools are available in the souk, so as to present simple.To make use of environment planned for change, layup and precise to use numerous Design models.

In 2009 [5] Authors understood that the present days UML tool is widely recognized since the usual structured language for software edifice. In remark with the huge increase convention of UML class diagram and the difficulty to manufacture superior assessment models that will be crucial on condition that unusual UML tools with explanation ability for identifying tribulations within models.

- **Introduction**

We know that UML design model is used to decrease the complexity of system on the other side it generates inconsistencies. So in order to verify diagrams for inconsistencies we develop tool. There are various types of Inconsistencies but here we are discussing Inconsistencies only from Class and Sequence diagram.

Class diagram Inconsistencies:-

- 1) Similar name Error:-It occurs when the same name or attribute of class is used in the class diagram because the user gets confuse that which name is to be used and it will create ambiguity
- 2) Generalization and Disjointness:-These are the characteristics of class diagram. In which indiscretion comes into depiction. Here inconsistency takes place because one class is the super class of other and they are disjoint of each other.
- 3) Multiplicity constraints:-The irregularity in UML diagram is because of wrong way of exchange in the constraints that are used in UML diagram.
- 4) Cyclic Inheritance:- In which relationship among the classes will create a cycle that is nothing but First class is related with second class the second class is related with third Class again the third class related with the first one that will form a cycle and generates Inconsistency.

Sequence Diagram Inconsistencies:-

- 1) Unused Objects:- In this the object which is used in the diagram is not properly used meaning that object does not have any relationship with other object i.e There is no message passing among the other objects .

2) Similar Object name:-This Inconstancy is same as we discuss in the class diagram. Here they use similar object name in the diagram and user gets confuse which object is to refer while designing system.

3) Incorrect format:-In this Irregularity the object is passing messages among the other objects after the process is terminated. The user does not know when the system will stop passing the messages and generates irregularity.

In this paper we try to detect the above Inconstancies from class and Sequence Diagram.

- **Proposed System**

Scientists have generated the several Inconsistencies detection tools for UML diagrams. Now tackle is to enlarge such a relevance for detecting inconsistencies many of developers not having whole java knowledge, so developing Inconsistencies detection tool by using Net Beans 7.2.1 IDE it is incredibly important and time unbearable job such that detecting inconsistencies in class and sequence diagrams have achieve with zero encoding information and quicker error removing method. Still it is having difficulty on condition that explanation to detect inconsistencies in class and sequence diagrams.

The job is anticipated to expand present come up to the inconsistencies resolver. In this the task presenting a loom to produce OWL as of UML diagrams and discuss about various inconsistency. Most significantly here method developers organize the steps for Class diagram and Sequence diagram. The anticipated algorithm determines all above inconsistencies which will take assembly of DL as input and give details about conflicting statement and also present DL statements which are consistent. Following Figure1 demonstrate construction of planned structure. In which at first UML diagram is transformed into structured XMI file. XMI file will map with predefined rules.

The Description Logic Statements are obtained after mapping with XMI file and separate the attributes, operations of the class and store in the database so that it will be retrieved whenever they use.

• Experimental Result

This Tool is use to detect Inconsistencies so the customer is able to draw the correct UML diagrams without any error. Following are some results of the tool

1) Displaying UML Diagram on the screen

This screenshot shows that customer first select the type of diagram after that press browse button and that particular diagram is browsed from the dataset and gets displayed on the screen

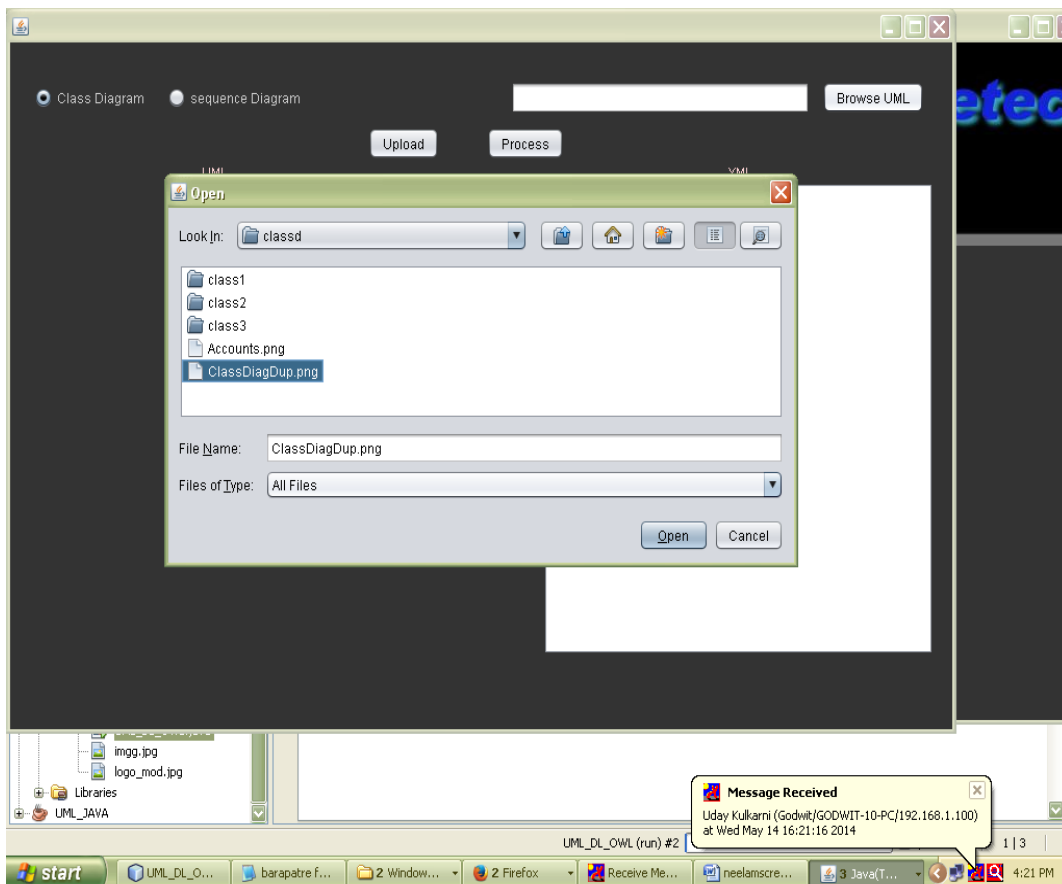


Figure 1:Display UML Diagram

2) Conversion of UML diagram to XMI file:

This screen will depict to convert UML diagram to XMI file internally by using inbuilt tool and store that file in dataset .When we click on XMI file button the method retrieve the particular XMI file from the dataset and display on the screen.

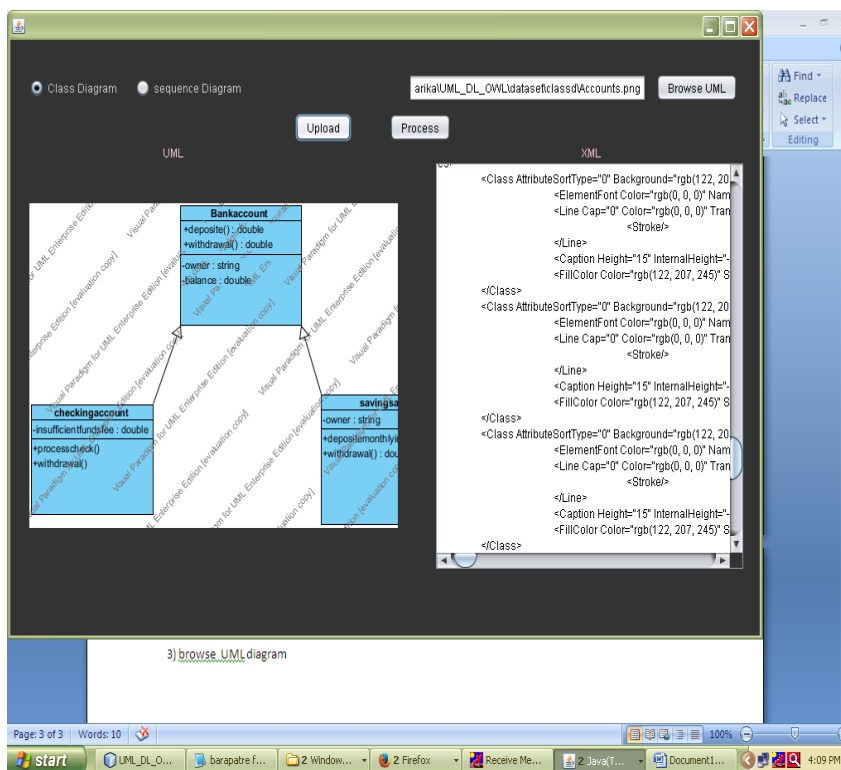


Figure 2: Conversion of UML to XMI file

3) Similar name error Inconsistency in Class Diagram

Here XMI file that is generated by the system is compared with the standard XMI file and display the result in the second window in the form of DL statements which consist of Attributes, Operations and Inconsistencies.

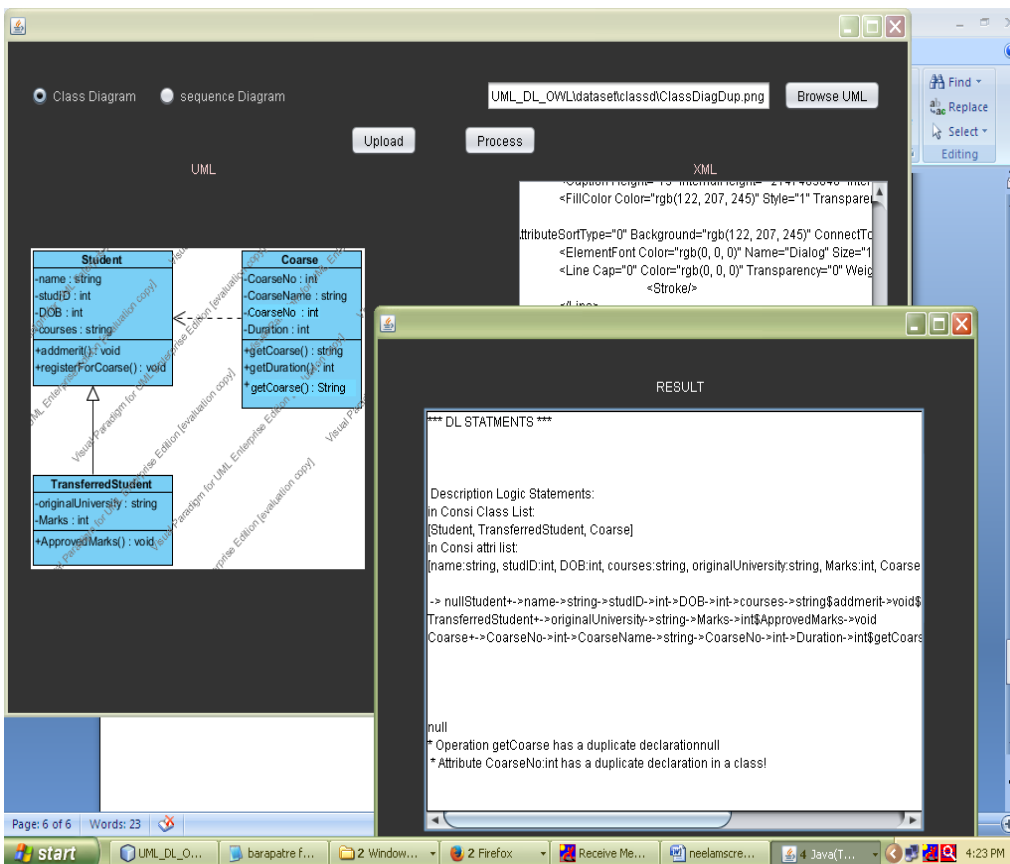


Figure 3: Similar name error in Class diagram

4) Unused Object in Sequence Diagram

In the following screenshot object Registration is never used and no communication with other object. So it will display Inconsistency in another window that Unused Object.

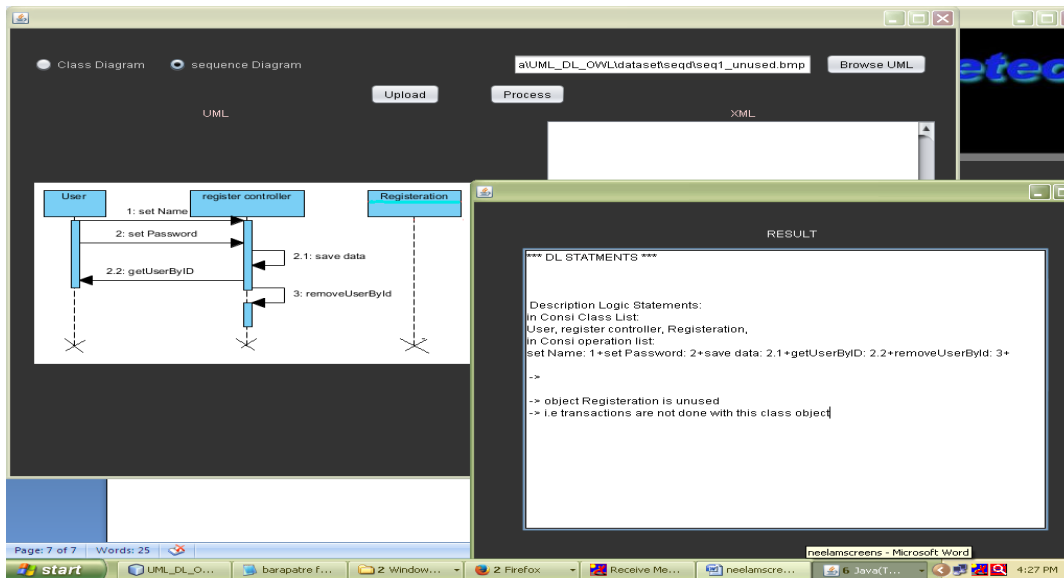


Figure 4:-Unused Object in Sequence Diagram

• Conclusion

The knowledge representation Language OWL is utilized to handle data. It make existing for reasoning purpose and lead semantic awareness to the customer as well as team members of project. UML usually is modeling language make possible to suggest graphical structure and lots of actions in UML. With the facilities of easily reached UML models, OWL formed since they have related features amid. The formed OWL read and connected throughout system services.

This approach implemented to discover Inconsistencies between Class diagram and Sequence diagram so it is accommodating for the Unknown users who don't have even knowledge of computer also helpful for designer to draw correct UML diagrams without any inconsistencies.

- **References**

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