**Practical No 10**

**Aim: Study of UML tools and techniques for web-based/object-oriented applications.**

**Theory:**

UML stands for Unified Modelling Language. It is a standard which is mainly used for creating object-oriented, meaningful documentation models for any software system present in the real world. It offers rich models that describe the working of any software/hardware systems. There are many tools available in the market for designing UML diagrams. Followings are the list of UML tools with popular features are given below:

**I. StarUML**

StarUML is an open source software modelling tool. It provides eleven types of diagram. StarUML 2 is compatible with UML 2.x versions.

**Features of StarUML are:**

* Allows you to create Obje3ct, Use case, Deployment, Seque3nce, Communication, Activity, and profile Diagram.
* Allows you to discover and install third-party extensions.
* Work with same UX in multiple platforms including macOS, Windows, and Linux.
* No limit for using this commercial software for evaluation.

**II. Edraw Max**

Edraw Max is a UML builder software that helps you to make diagrams using ready-made symbols and templates. It allows you to import your drawings to file formats such as PDF, PPT, Word, HTML, etc.

**Features of Edraw Max are:**

* You can create a flowchart, mind map, UML, electrical diagrams, network diagrams, etc.
* It provides a user-friendly interface similar to MS Word.
* Edraw Max helps you to share designs anytime, anywhere.
* This tool provides 280+ latest flowchart and diagram solutions.

**III. UML designer tool**

UML Designer tool offers a set of common diagrams to work with UML 2.5 models. The tool provides an easy method for the transition from UML to domain-specific modelling.

**Features of UML designer tool are:**

* Allows user to re-use provided representations and work in total transparency on both DSL and UML models
* Helps you to create a Class diagram, Component Diagram, and composite structure Diagram
* Allows you to use legacy UML models and start working with DSL.

**IV. Altova**

Altova UModel is another useful UML tool which makes visual software design practical for any project. Visually design application models in UML which can be generated using Java, C++, C#, or Visual Basic.

**Features of Altova are:**

* Intuitive Visual Modelling for all UML Diagrams
* Helper windows allow you to build your desired models.
* It allows you to add hyperlinks to any element in any UML diagram.
* You can assign an element to the specific layer, and layers can be locked to prevent changes.

**V. Visual Paradigm**

Visual Paradigm is a software design tool which is tailored for engine software projects. This UML tool helps the software development team to a model business information system and development processes.

**Features of Visual Paradigm are:**

* It offers support for BPMN, UML, ERD, DFD, SysML.
* It offers a complete tool like for process analysis, system design, database design, etc.
* Offers user story feature to capture and maintain user's needs.

**VI. Draw.IO**

Draw.IO is a free online UML tool. It allows users to create and manage the drawing easily these tools. A lot of the wide and early share available with this tool.

**Features of Draw.IO are:**

* No limit on the number of sizes
* Templates are present in software design itself.
* Allows you to save the model in your preferred location

**VII. UMLetino**

It is accessible to the user as an open source UML tool for developing UML diagrams. It can directly run in your browser, and it does not need any installations.

**Features of UMLetino are:**

* Diagrams can be exported as XML or any other image files.
* Allows you to store diagrams with other teammates
* Offers you to export diagrams in SVG, Gif or JPEG format.

**VIII. Lucidchart**

Lucidchart is an HTML-5 based UML tool that allows user interaction while drawing, editing, and sharing diagrams and charts. With Lucidchart, you can create simple flowcharts as well as complex technical diagrams.

**Features of Lucidchart are:**

* It works faster with keyboard shortcuts.
* It constitutes the concept of containerization as the complex diagram involves several steps and people.
* It manages user account by increasing security.
* It is platform-independent.

**IX. Astah**

Astah is a UML editor which is integrated with Mind mapping features. The tool helps you to visualize the essence of your ideas before you code.

**Features of Astah are:**

* Faster to create UML compares with Excel or non-UML-specific drawing tools.
* Visualize requirements and functional requirements, all the relations between them and to other model elements.
* Merge, exclusive control, copy & paste support.

**X. BOUML**

BOUML is a free UML2 tool which includes modeler. This helps you to specify and generate code in C++, Java, Php, Python, and MySQL.

**Features of BOUML are:**

* It runs under Windows, Linux and MacOS X versions.
* it helps you to program simultaneously in C++, Java, Php, Python, MySQL, etc.
* it is very fast and not need much memory to manage several thousands of classes, see benchmark

**Conclusion: We have studied the UML tools and techniques for web-based/object-oriented applications.**