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Part 1

Discuss general benefits of CASE tools and list CASE tools with brief description of each tool. Also, download (install and use) two available CASE tools and discuss (compare advantages and disadvantages) of the tools.

CASE stands for Computer-Aided Software Engineering. It is a tool used to design and help in the development of softwares. These tools help us to maintain a consistent format when designing a software or a part of a software. Also, these speed up the process of software making by providing inbuilt tools to facilitate in diagram making like UML diagrams, Use-Case diagrams and more.

CASE tools can be categorized broadly into three categories:

1. Upper CASE
2. Middle CASE
3. Lower CASE

Upper and Middle CASE (usually termed together as Upper CASE tools) tools are used for high level software development diagram making while Lower CASE tools are generally for program and testing phases.

There are various CASE tools, some of which are listed below:

- **Artiso Visual Case** is a tool for software development, database design, database maintenance and business analysis developed by Artiso Corp.

- **DB-MAIN** is a modeling tool dedicated to Database Application Engineering. It was originally developed by University of Namur's LBID Lab. in 1991.

- **iGrafx FlowCharter** is process analysis and modeling tool developed by iGrafx.

- **MetaEdit+** is a tool for designing a modeling language and then generate diagramming functionalities. It was developed by Metacase company.

- **Microsoft Visio** is a diagramming program for Microsoft Windows that uses vector graphics to create diagrams.

- **OmniGraffle** is a diagramming application for Mac OS X operating system developed by The Omni Group. It can create diagrams, flow charts, org charts, and illustrations.

- **Rational Rose** is a UML modeling and model-driven development tool which was developed originally by Rational Software. It has the ability to integrate with existing integrated development environments or languages.

- **SmartDraw** is a diagramming tool developed by SmartDraw.com.

- **ArgoUML** is a UML diagramming tool written in Java developed by Tigris. It has an open source BSD License.

- **Visible Analyst** is an integrated Strategic Planning, Data Modeling, Business Process Modeling (BPMN), UML Modeling, and Structured Analysis and Design Modeling developed by Visible.

The two CASE tools that I would like to research upon are OmniGraffle and ArgoUML.

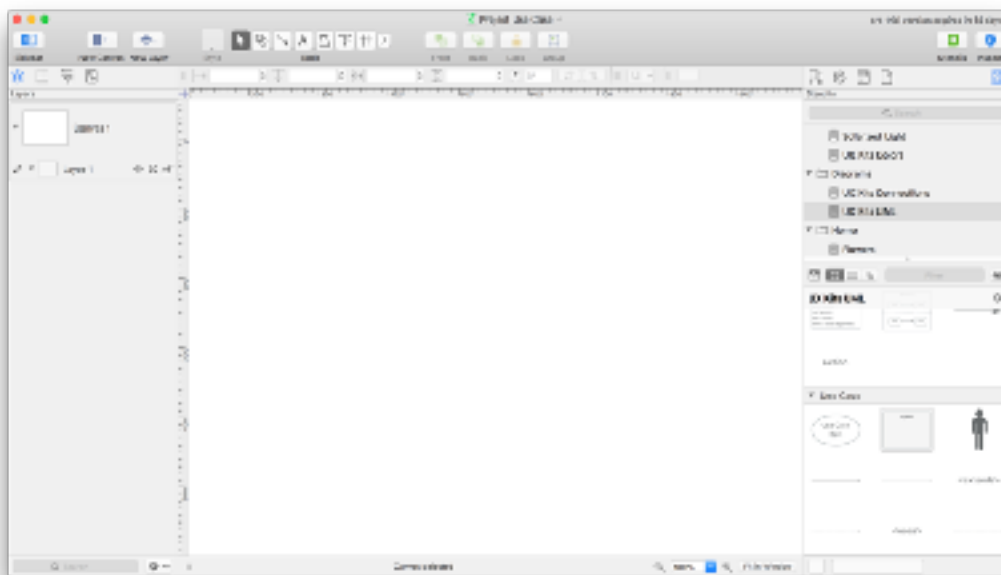| ArgoUML	OmniGraffle
Pros:	**Pros:**
- Written in Java, so runs in all the platforms where Java runs.	- Has wide variety of diagram shapes and templates.
- Supports Code generation from the UML diagram / UML Diagram generation from the code.	- It is the leading software aided CASE tool for Mac systems.
- Currently supported languages are C , C#, Java and PHP.	- It is a downloadable product and can be used for as long as you want.
- Ability to manage ToDo list.	
- Export UML diagram into XMI / JPG / SVG / PS formats.	
Cons:	**Cons:**
- Does not fully support UML 2.0.	- Not very adaptable or user friendly since it only works on Mac systems.
- Lacks formatting options.	- Upfront cost may be too much for small businesses or individuals.
- No options for "undo" or "redo"	- Does not support collective editing.

Part 2

Select one UML diagramming tool to investigate more details. Obtain and use trial copies (free or trial versions are available) of the software to help you understand more how the products work.
Draw your own use case diagram and class diagram for your project work. Capture screens while using the product for presentation. (Screen shots of your diagram must be your own work, not from the web or the vendors.)
Report includes - Introduction of the tool (Features), UML diagrams, benefits of the tool, etc.

I will be using the OmniGraffle tool for my project. It is an awesome tool for Mac users and is easy to use. All elements and components are readily available. It is expensive but has a trial version of 14 days.

OmniGraffle is developed by OmniGroup for Apple products. It has various extensive tools that facilitate precise and neat visual drawing. There are several ready features including:
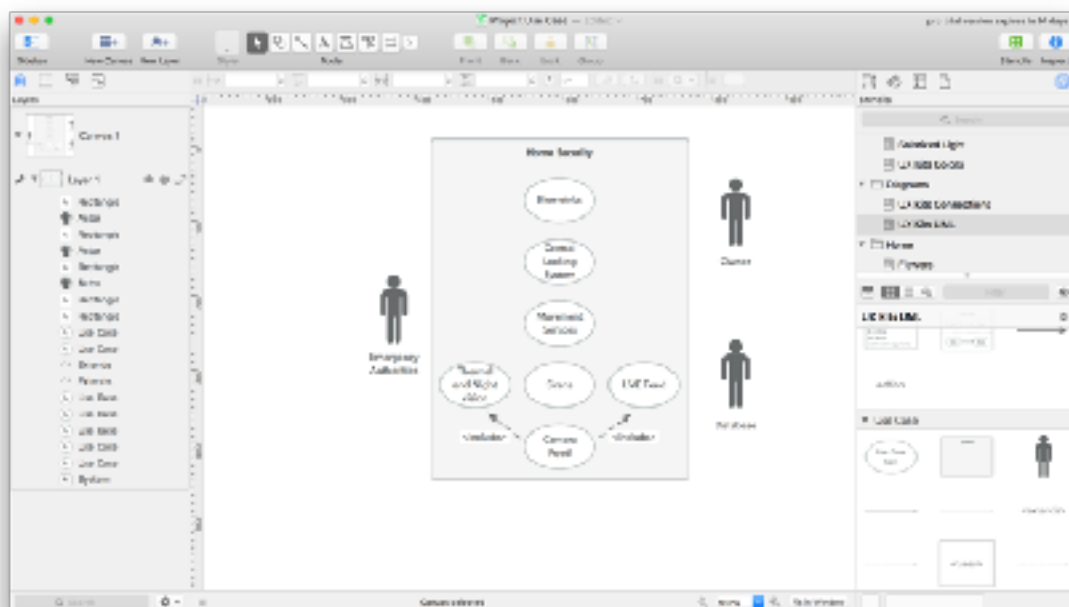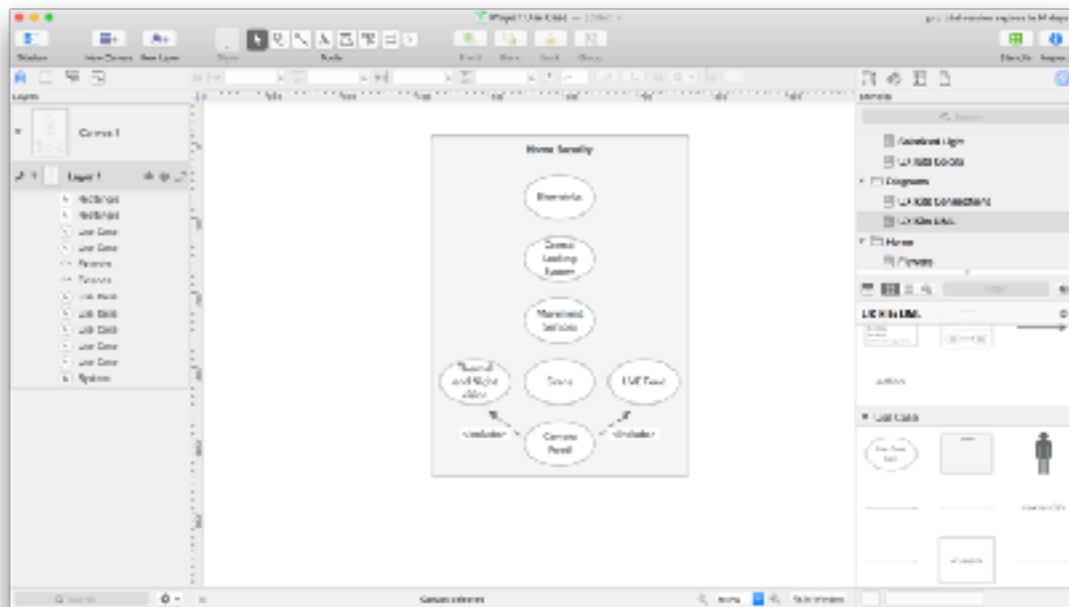
      a. Canvases
      b. Layers
      c. Stencils
      d. Templates
      e. Smart Guides
      f. Vector based drawing tools
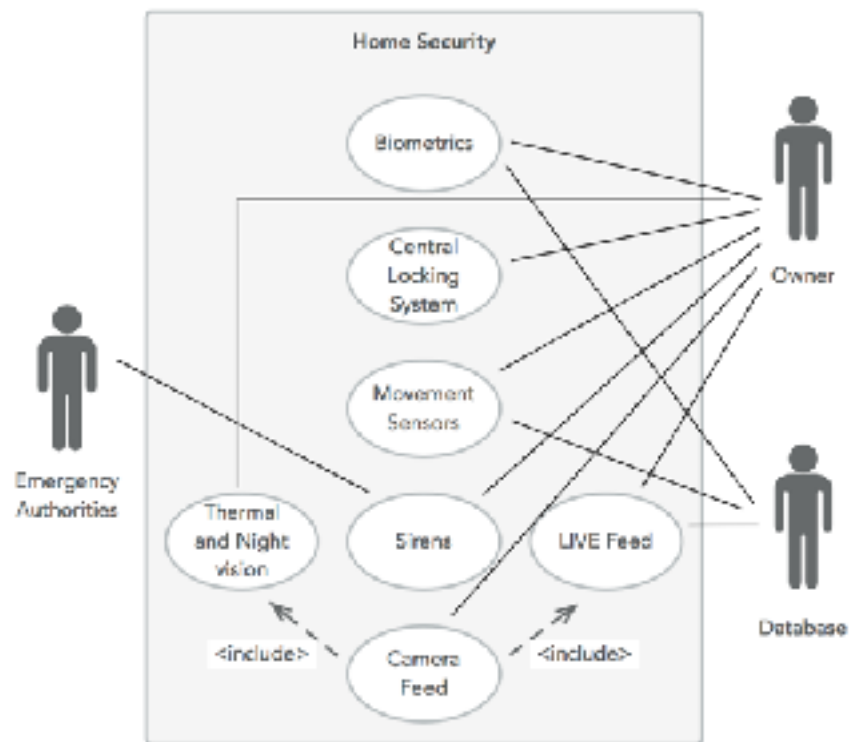   g. Compatibility in import and export of drawings

The main benefits of using OmniGraffle over any other CASE tool are:

- Has a wide range of neat drawing tools, probably more than any other tool available.
- Is very handy for Mac users.
- Can undo, redo, use many different canvases and layers to draw different diagrams for the same project.
- Can save work in pieces and continue at a later time with the same layers and objects.
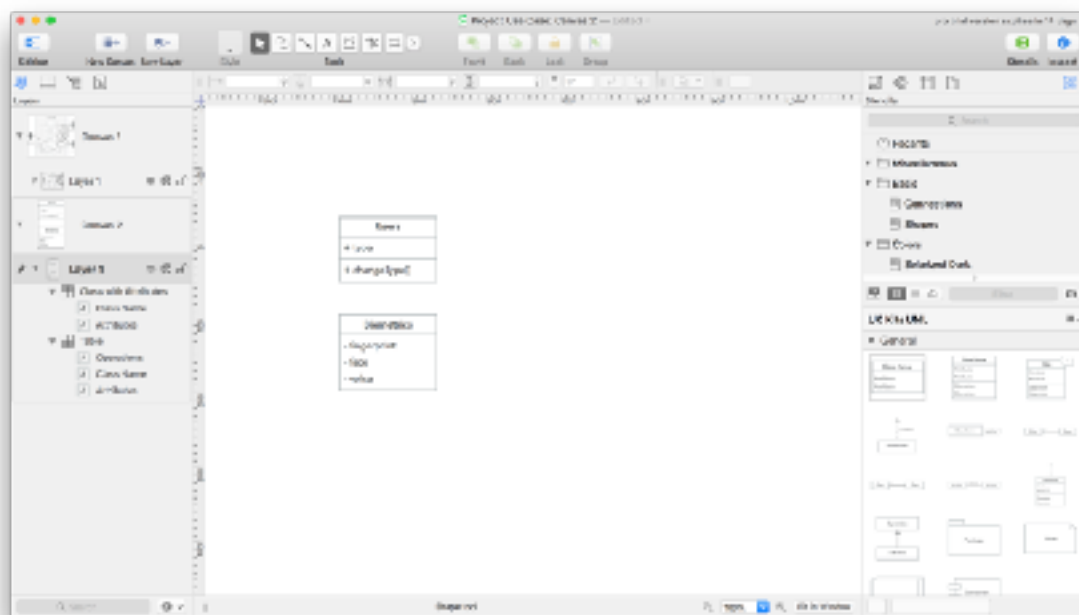
Although it has many limitations like incompatibility with other OSes, cost, etc. it is a very nice tool to have in your MacBook. The choices in shapes, templates, stencils, and other features is what makes OmniGraffle stand out.
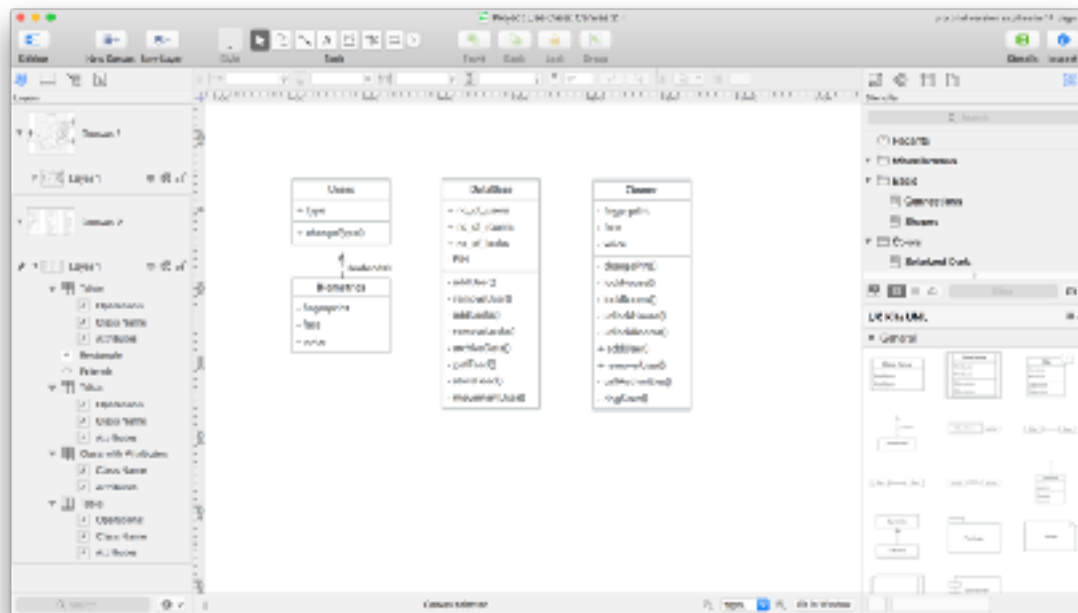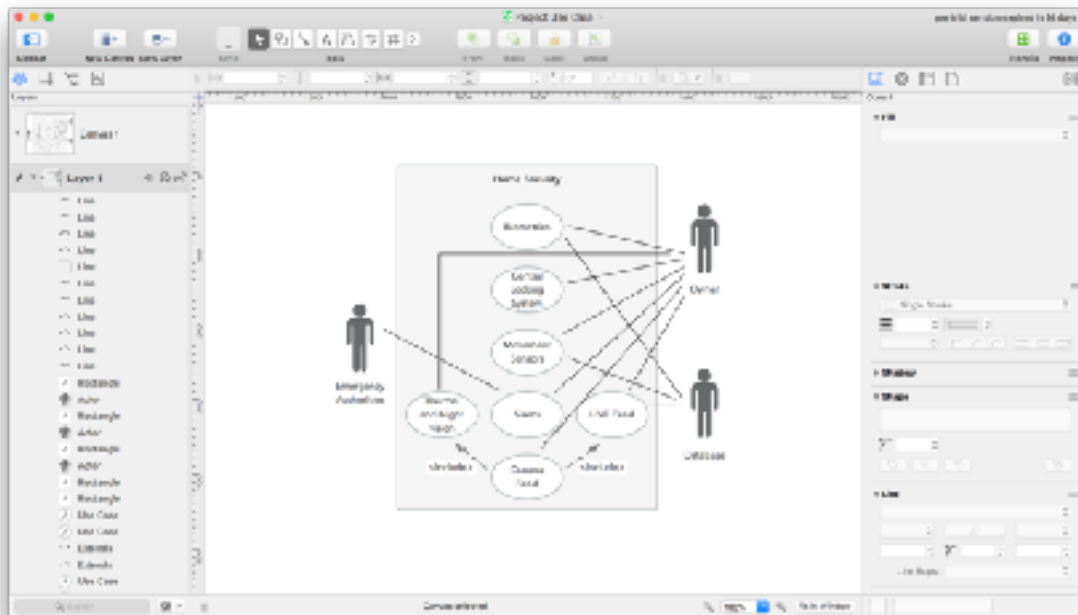
I designed to UML diagrams on OmniGraffle for my project of Home Security. One is a Use-Case diagram and the other is a Class diagram. Here are some screenshots of the software:
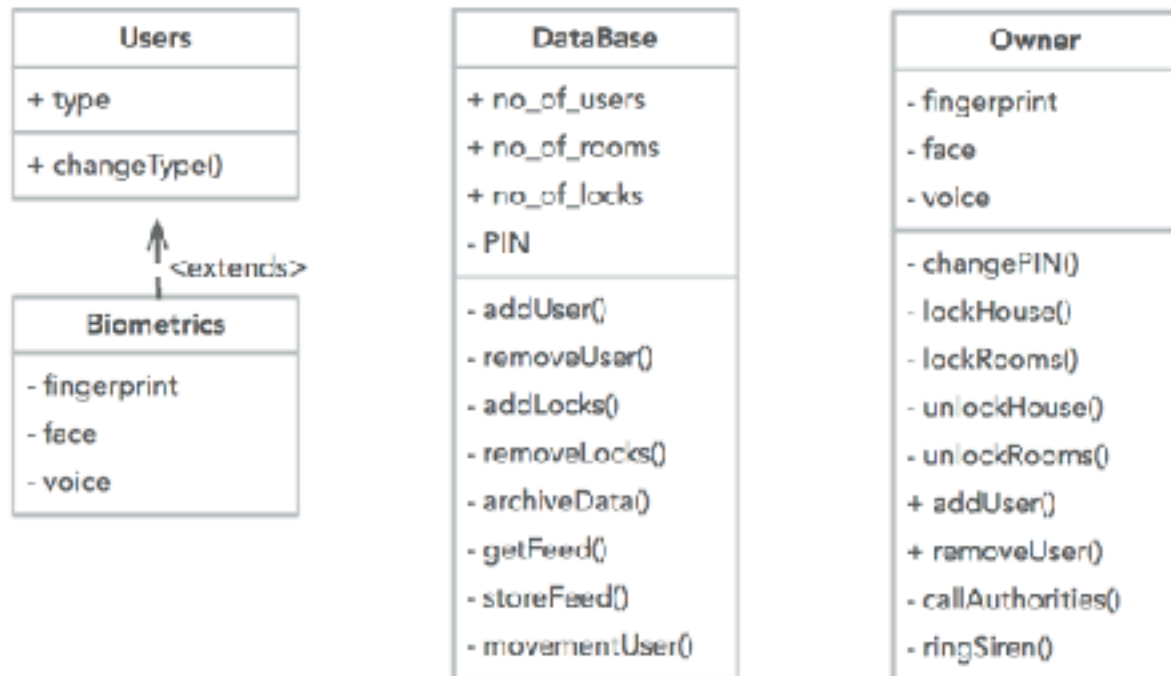
Use-Case Diagram for Home Security

Users

+ type

+ changeType()

↑ <extends>

Biometrics

- fingerprint

- face

- voice

DataBase

+ no_of_users

+ no_of_rooms

+ no_of_locks

- PIN

- addUser()

- removeUser()

- addLocks()

- removeLocks()

- archiveData()

- getFeed()

- storeFeed()

- movementUser()

Owner

- fingerprint

- face

- voice

- changePIN()

- lockHouse()

- lockRooms()

- unlockHouse()

- unlockRooms()

+ addUser()

+ removeUser()

- callAuthorities()

- ringSiren()

Class Diagram for Home Security