

Date: 19/03/2022

UML Diagram

Health Consultancy Service

Aim

To design UML (Unified Modeling Language) diagrams for Health Consultancy Service.

Description

UML Diagrams

UML diagram is a diagram based on UML (Unified Modeling Language) with the purpose of visually representing a system along with its main actors, roles, actions, artifacts (or) classes in order to better understand, alter maintain (or) document information about the system. They are of 2 types,

* Structural UML diagram

* Behavioural UML diagram

1) Structural UML Diagram

UML structural diagrams depict the elements of a system that are independent of time and that convey the concepts of a system and how they relate to each other.

Structural diagrams are

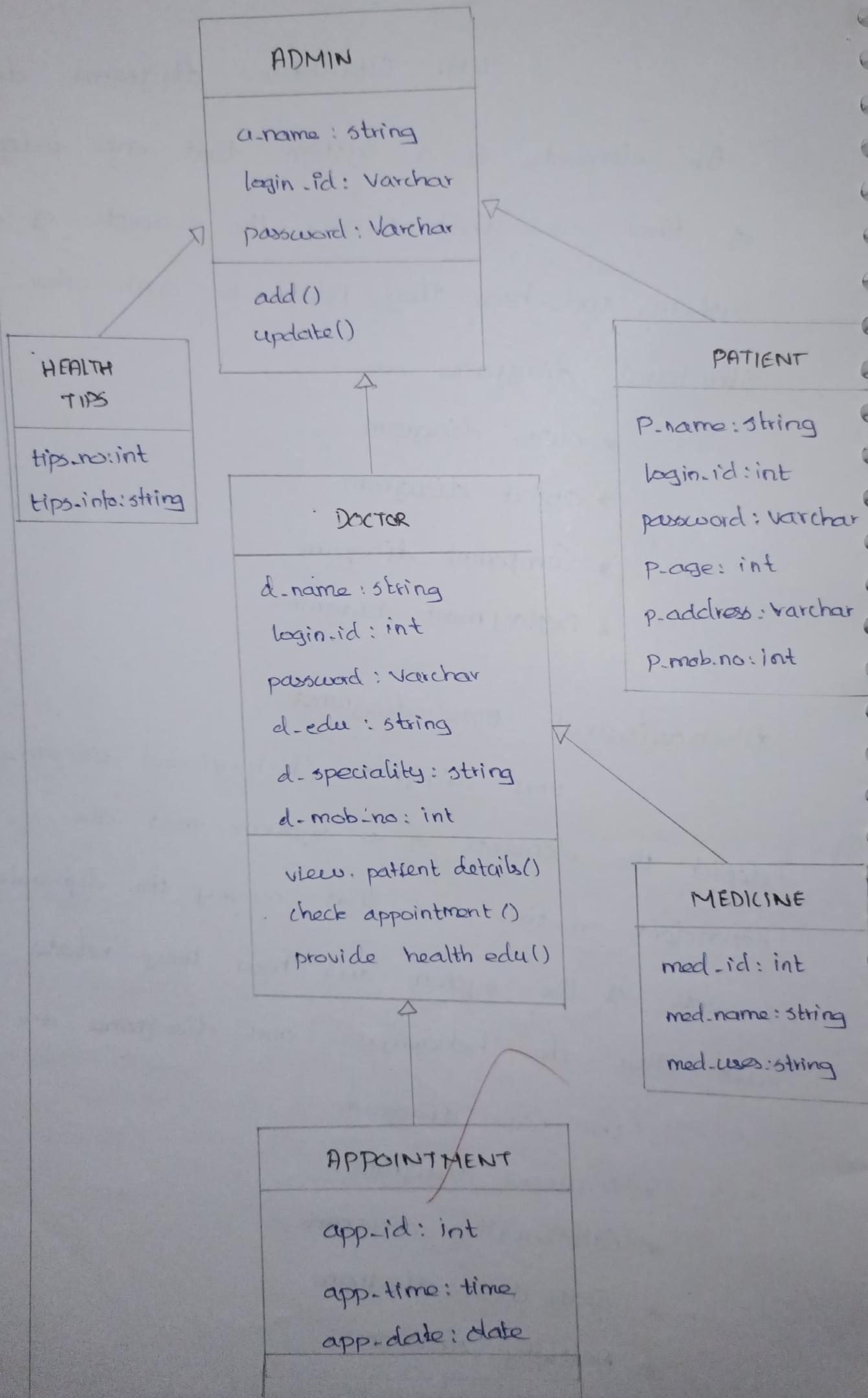
- * class diagram
- * object diagram
- * component diagram
- * deployment diagram

2) Behavioural UML diagrams

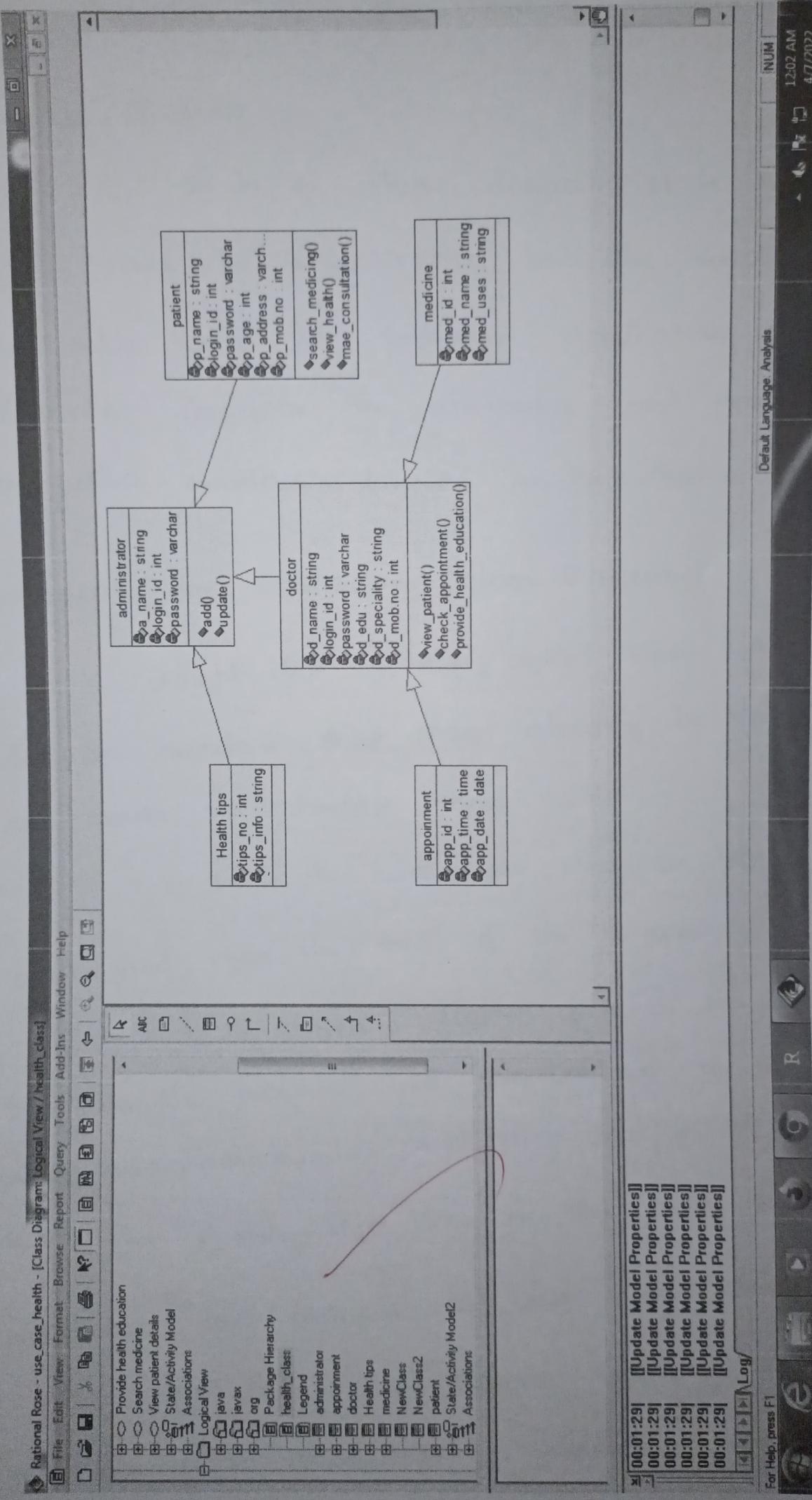
UML diagrams (behavioural diagrams) depict the elements of a system that are dependent on time and that convey the dynamic concepts of the system and how they relate to each other. The behavioural UML diagrams are

- * use case diagram
- * sequence diagram
- * collaborative diagram
- * state chart diagram
- * activity diagram

CLASS DIAGRAM



CLASS DIAGRAM



* Class Diagram

It is a static diagram. It is not only used for visualization but also constructing executable code for software application. Class diagram describes the attributes and operation and also constraints imposed on the system.

procedure for Constructing class Diagram

1) Right click on the logical view class diagram window that may already be open and makes the shortcut menu visible.

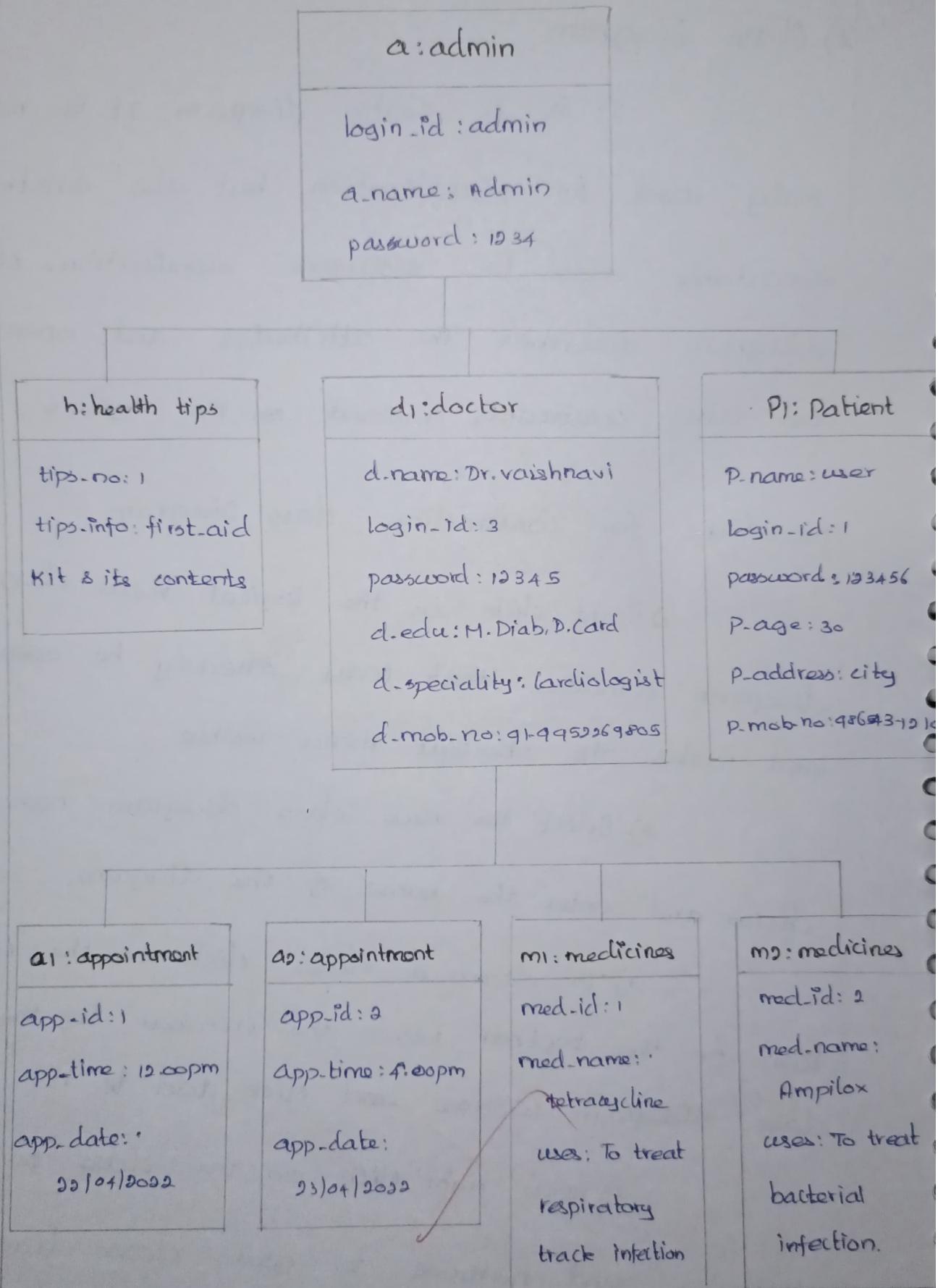
2) Select the new class diagram menu choice and enter the name of the diagram.

3) To draw a class click on the class icon on the toolbar. Move the crossbar to the class diagram window and click add to it.

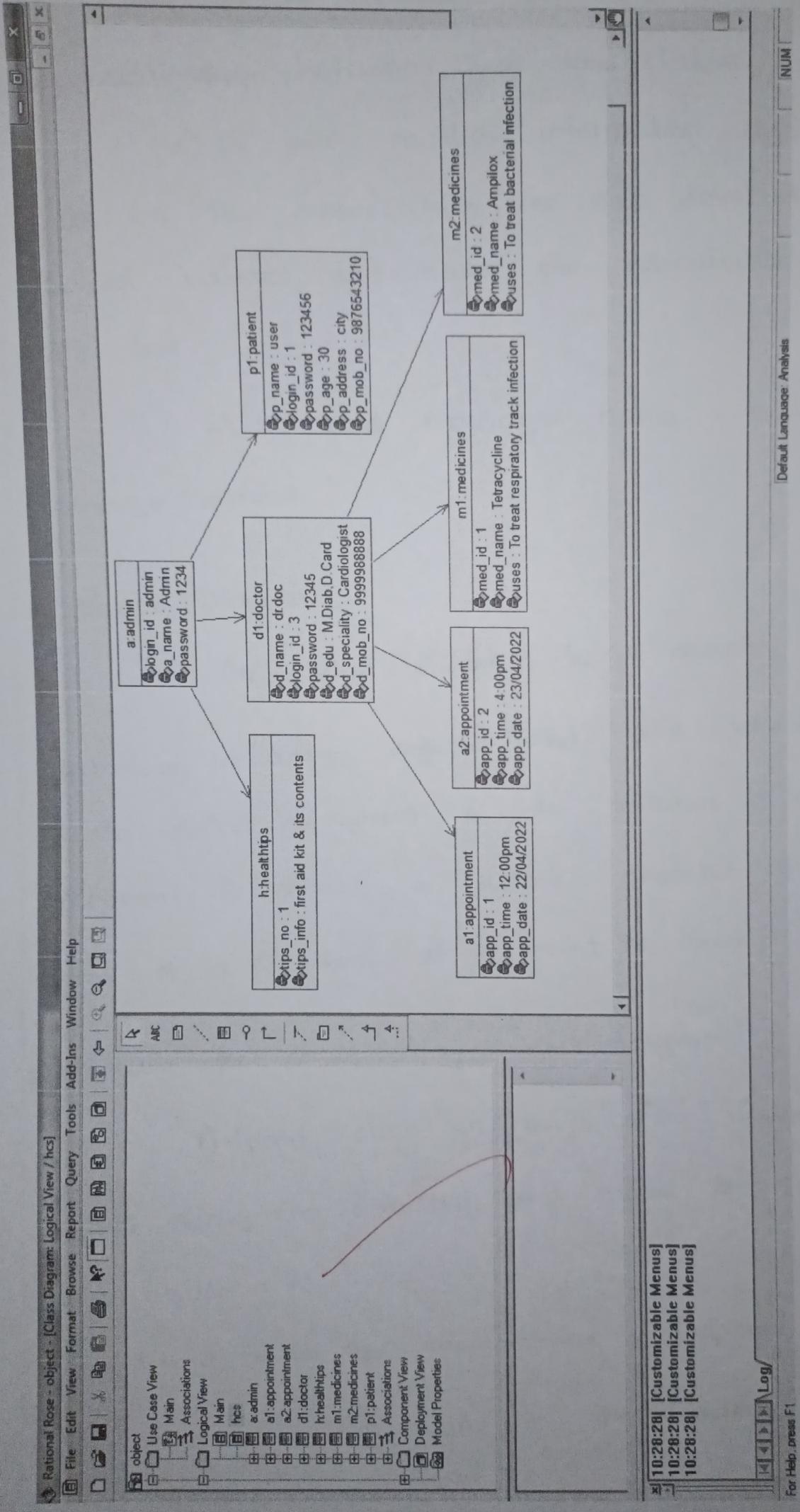
4) Now right click on the class to add attributes and methods to your class diagram.

5) Create all classes that we require for our class model using connection symbols

Object Diagram



OBJECT DIAGRAM



from the toolbar connect the classes to show the relationship between those two classes

6) To add multiple information, right click on the association line and select the desired values and name the association using text box.

7) To add message name, we use message arrow.

* Object Diagram

An object diagram is a graph of instances, including objects and data values. A static object diagram is an instance of class diagram; it shows a detailed snapshot of state of a system at a point in time.

procedure for constructing object diagram

1) Right click on the logical view of object diagram window and make the shortcut menu visible.

2) Select the new object diagram menu choice and enter the name of the diagram.

3) To draw a object, on the click on the object icon on the toolbar. Hence the cross-bar on the object diagram window and click and add it.

4) Now right click on the object to add attributes and methods to your object diagram
 5) Create all the objects you require for your model and to relate the two objects by association line.

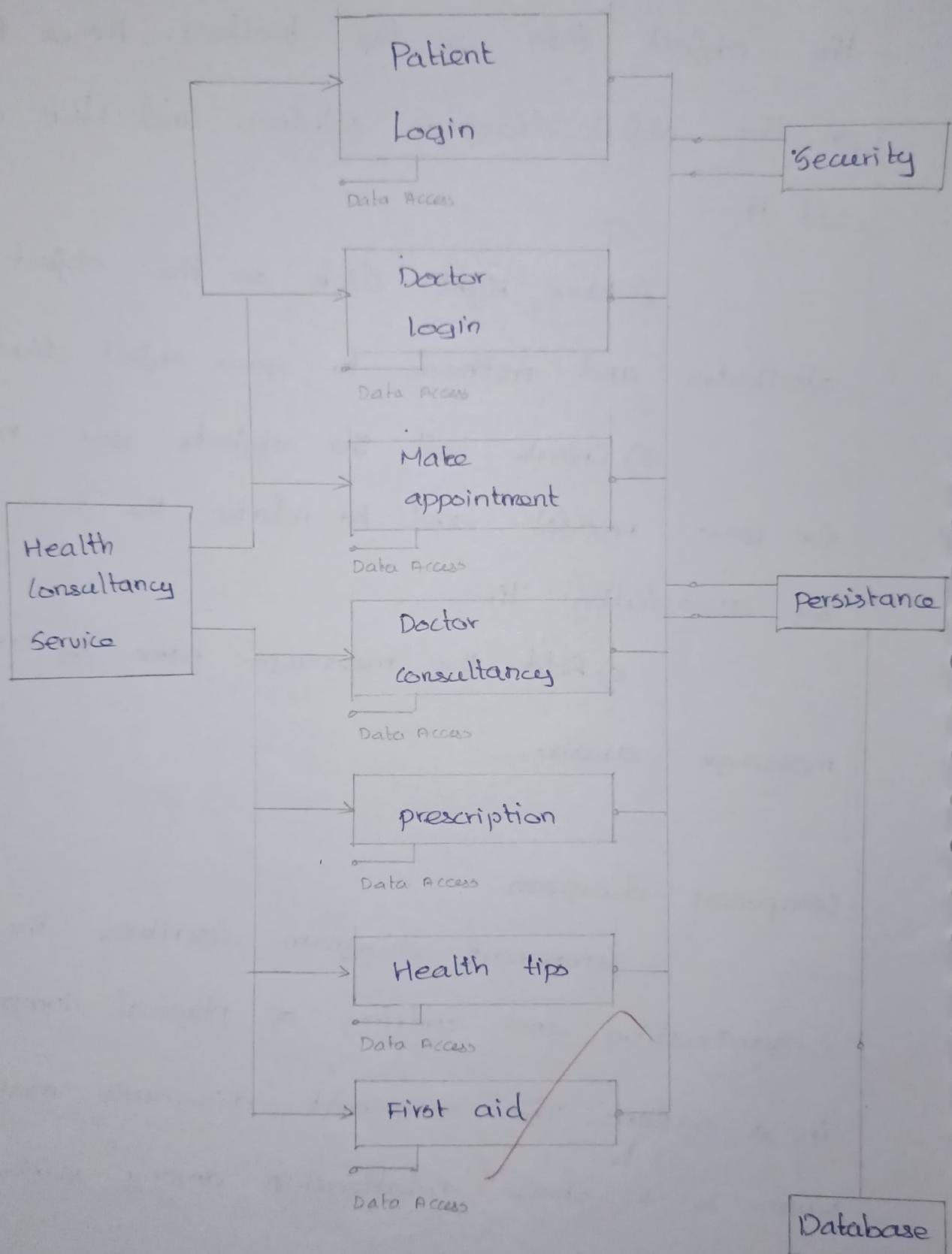
6) Add the message name by using message arrow

Component diagram

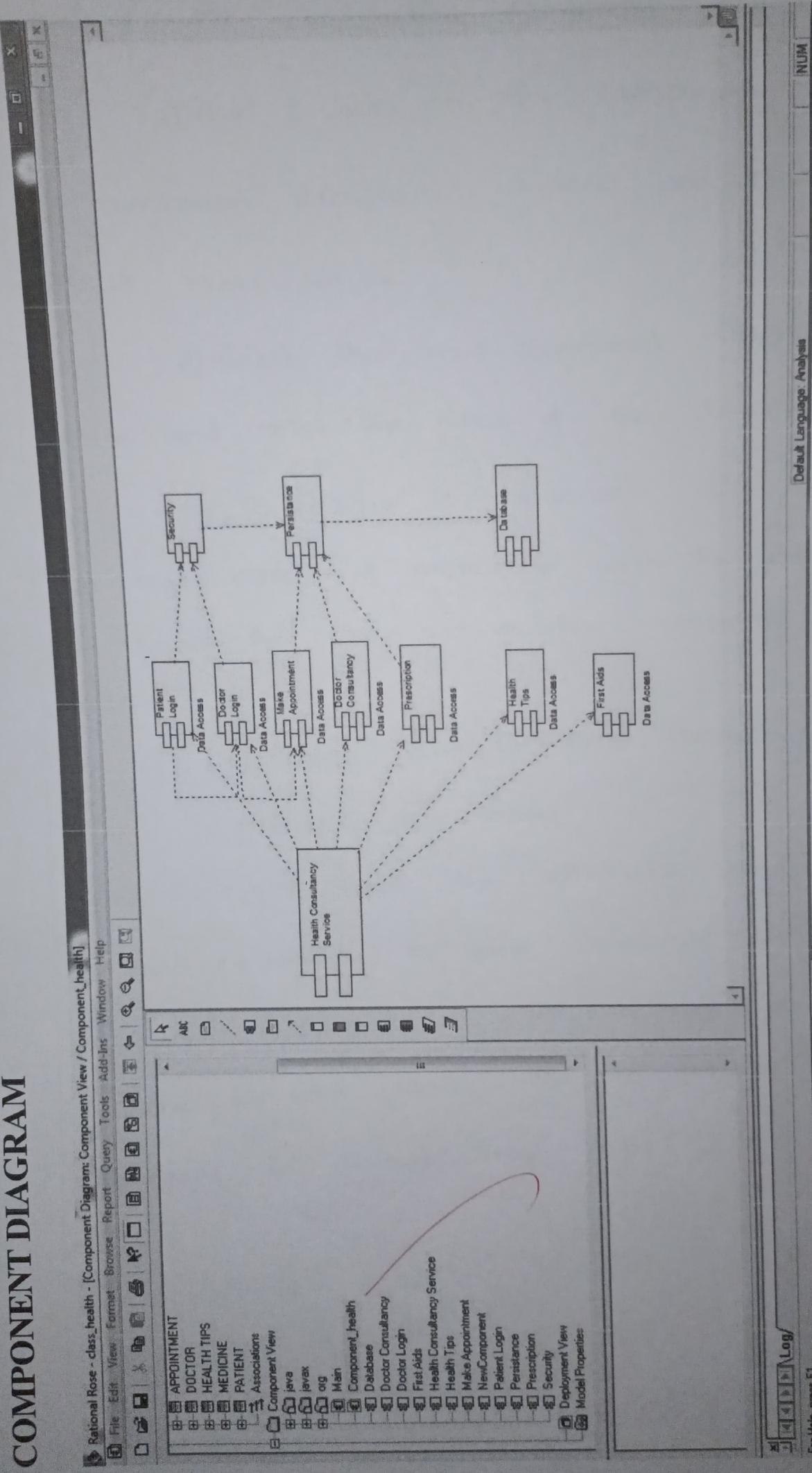
Component diagram describes the organization and wiring of physical components

in a system. The component diagrams main purpose is to show relationship among various components in the system.

Component Diagram



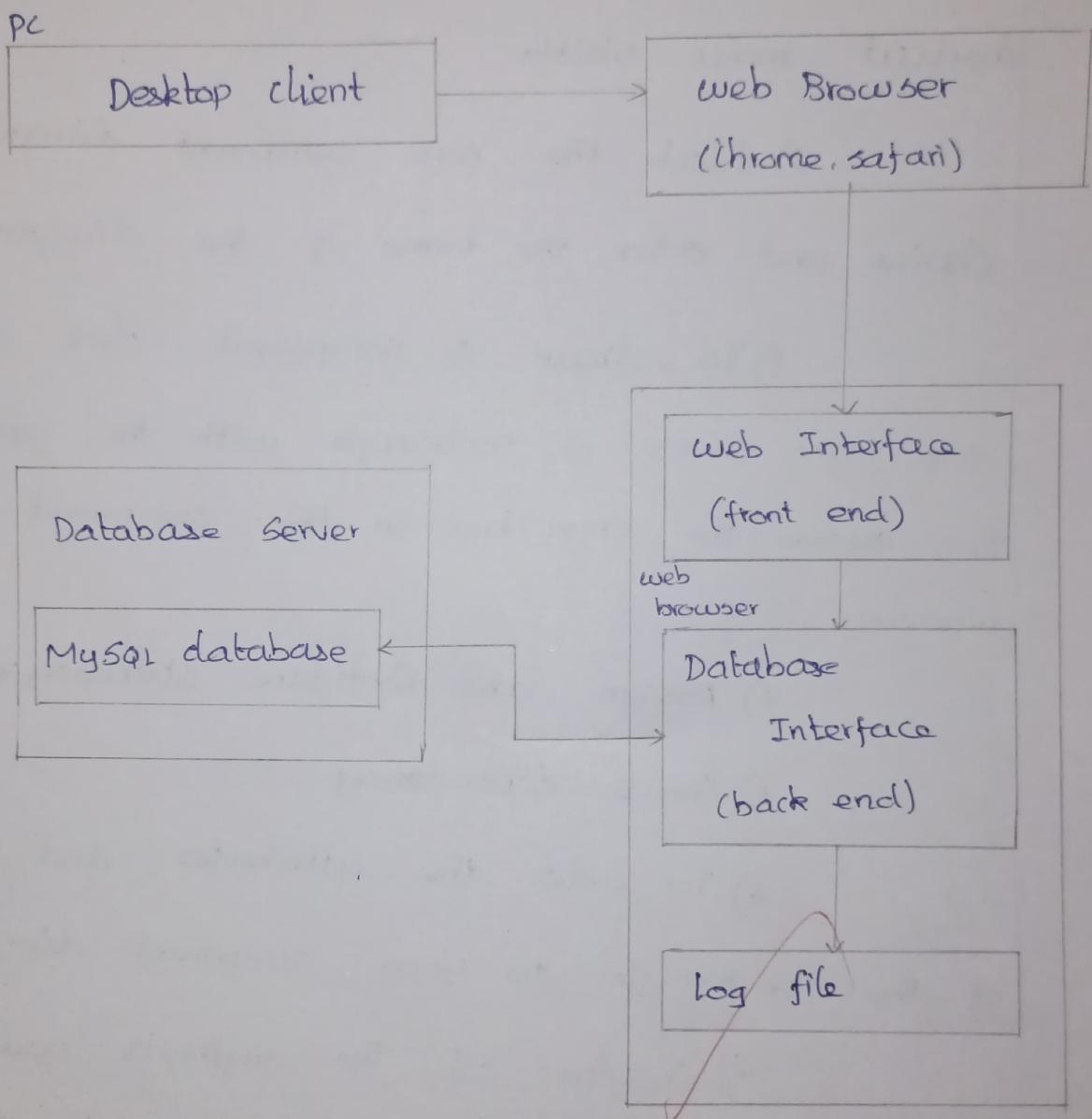
COMPONENT DIAGRAM



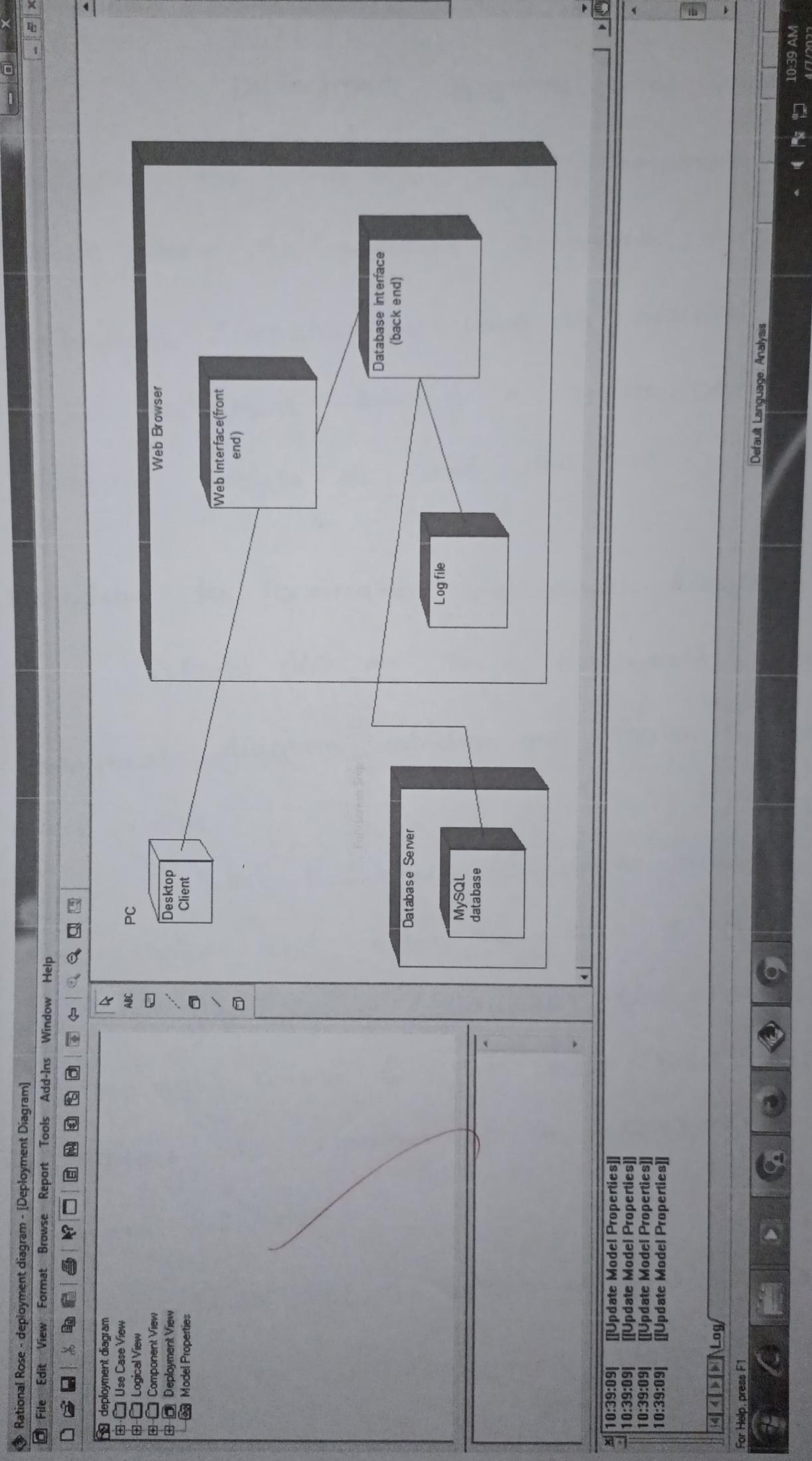
procedure for Constructing Component diagram

- 1) Right click on the component view of component diagram window and make the shortcut menu visible.
- 2) Select the new component diagram menu choice and enter the name of the diagram.
- 3) To draw a component click on the top right corner of rectangle with the component icon. Move the cross bar on the component diagram window.
- 4) Assign and Configure stereotype
- 5) Create dependancies
- 6) To add the attributes and methods of the rectangle to your component diagram.
- 7) Create all the methods you require for your model and to relate the component by dotted lines.

Deployment diagram



DEPLOYMENT DIAGRAM



Deployment diagram

Deployment Diagrams are used to visualize the topology of the components of a system, where the software components are deployed.

Deployment diagrams are used to describe the static deployment view of a system. Deployment diagrams consists of nodes and their relationship.

procedure for constructing deployment diagram

1) Right click on the deployment view of deployment diagram window and make the shortcut menu visible.

2) Select the new deployment diagram menu choice and enter the name of the diagram.

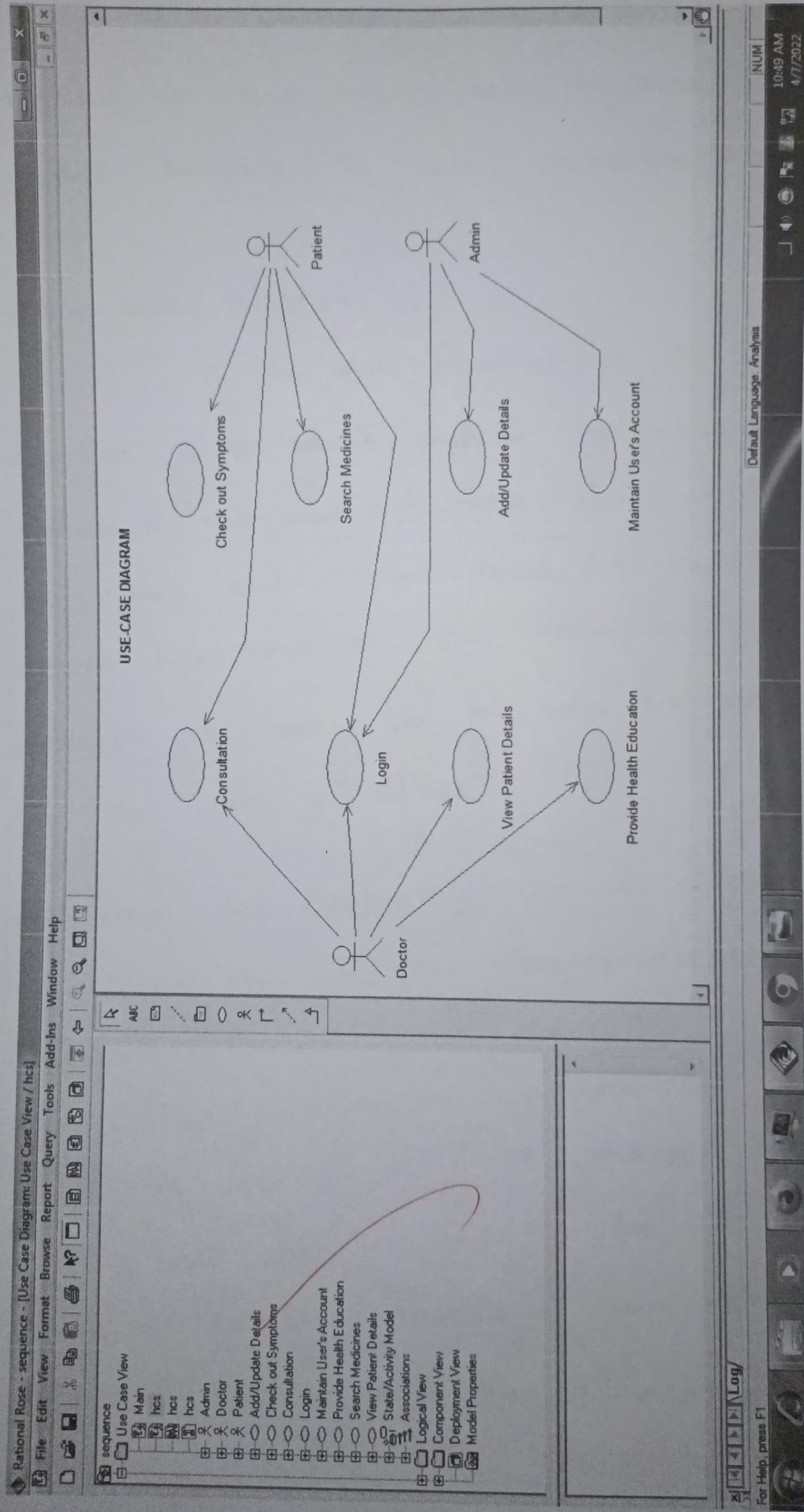
3) To draw deployment diagram, click on top right corner of cube with the deployment icon. Move the crossbar on the deployment diagram window.

4) To add the attributes and methods on the cube to your deployment diagram.

Use-case diagram



USE – CASE DIAGRAM



5) To create all the methods you require for your model and to connect the related methods by using association lines.

i) Use-Case Diagram

A use-case diagram is a graphical depiction of a user's possible interaction with a system. A use-case diagram shows various use cases and different types of users the system has and will often be accompanied by other diagram as well; the use-cases are represented by other circles or ellipses.

procedure for Constructing Use-case diagram

1) Open the use-case view of use-case diagram window.

2) Right click on the use-case view and select the use-case diagram and give name.

3) Now click on the icon for actor and draw an actor on use-case view diagram.

Actor will interact with the system.

Sequence diagram

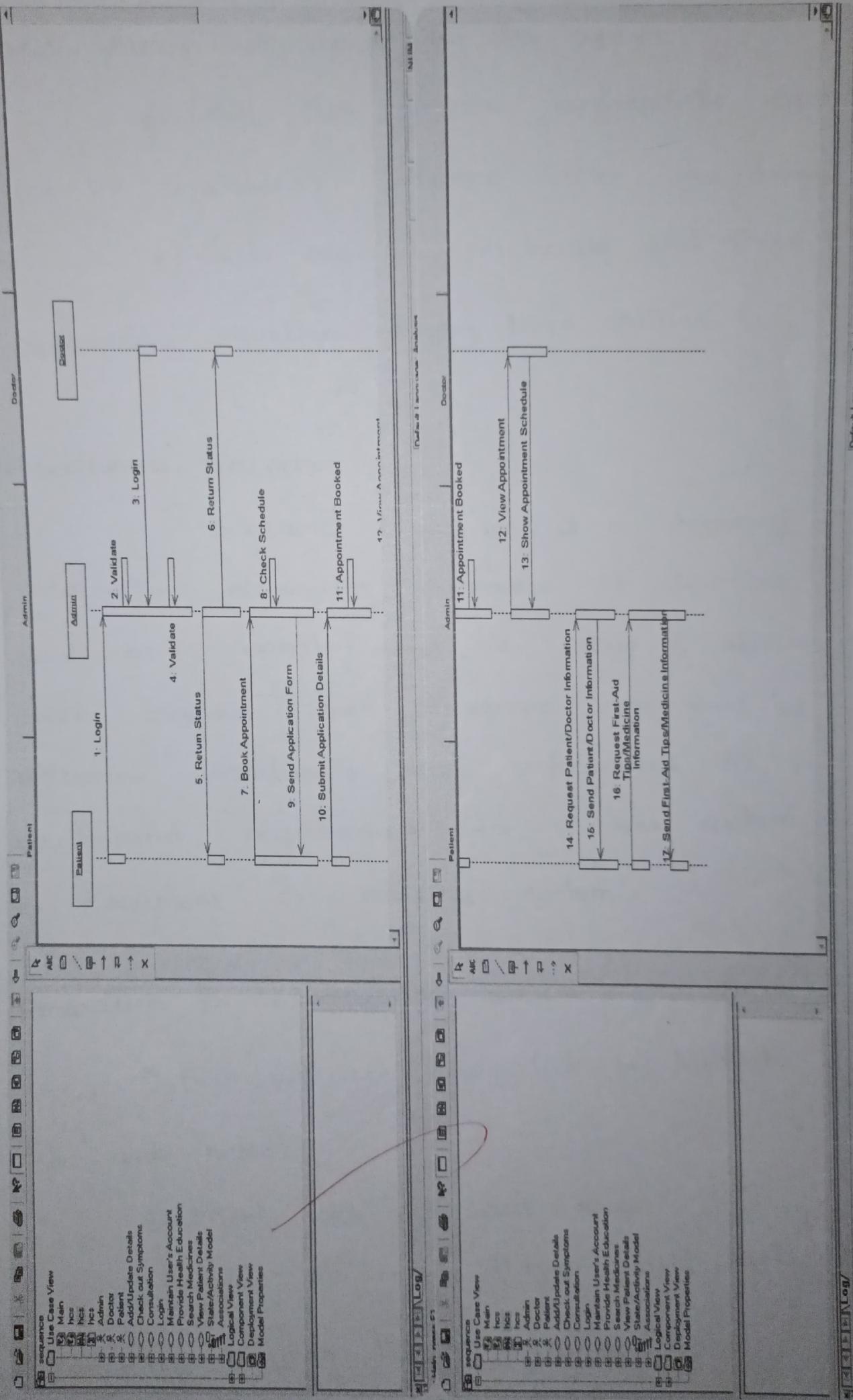
Patient

Admin

Doctor



SEQUENCE DIAGRAM



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- 4) Now click on the icon for use-case and draw use-cases for the system.
 - 5) Now click on the appropriate arrow for the relationship between actor use-case.
 - 6) click on the package and show appropriate relation among these entities.

* Sequence Diagram

Sequence Diagram is a type of interaction diagram because it describes how and what order a group of objects work together. These diagrams are used by software developers and professionals to understand requirement for a new system or to document an existing system.

Procedure for Constructing Sequence diagram

- 1) From use-case view, click to highlight use-case name.
- 2) Right click and select new
- 3) Select sequence diagram and type a name for diagram in browser

4) we can now double click on the icon ⁵³
next to the name to open sequence diagram window.

5) To put actors on Sequence diagrams
under the use-case view, click on desired actor
and drag it onto the sequence window.

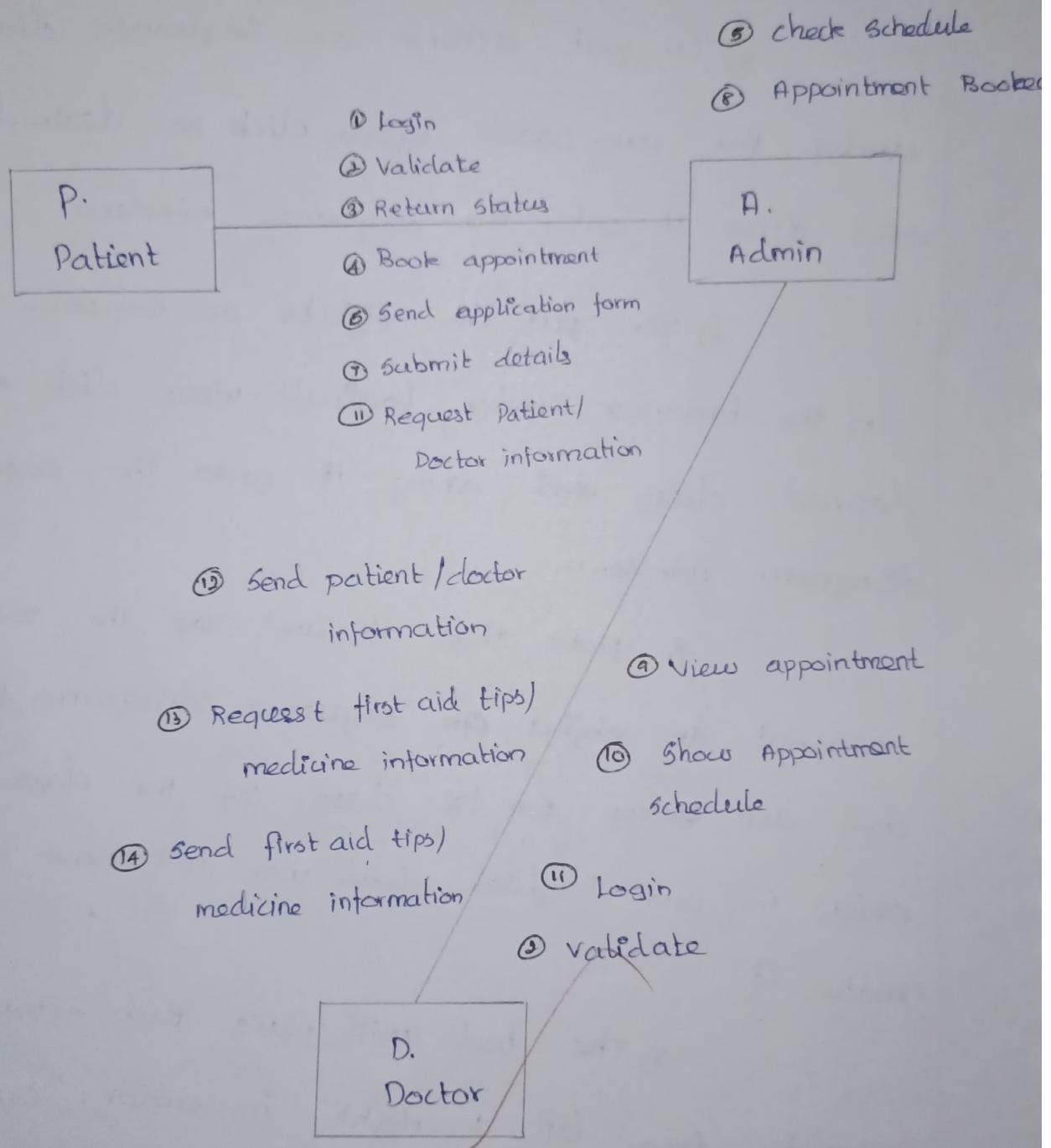
6) To put the objects on Sequence diagrams.
In the browser, under logical view click on the
desired class and drag it onto the sequence
diagram window.

7) Note that if we use the toolbar
to put an object on sequence diagram, the tool
will ask ~~you~~ for its class. If the class doesn't
exist in our logical view, we will have to
create it.

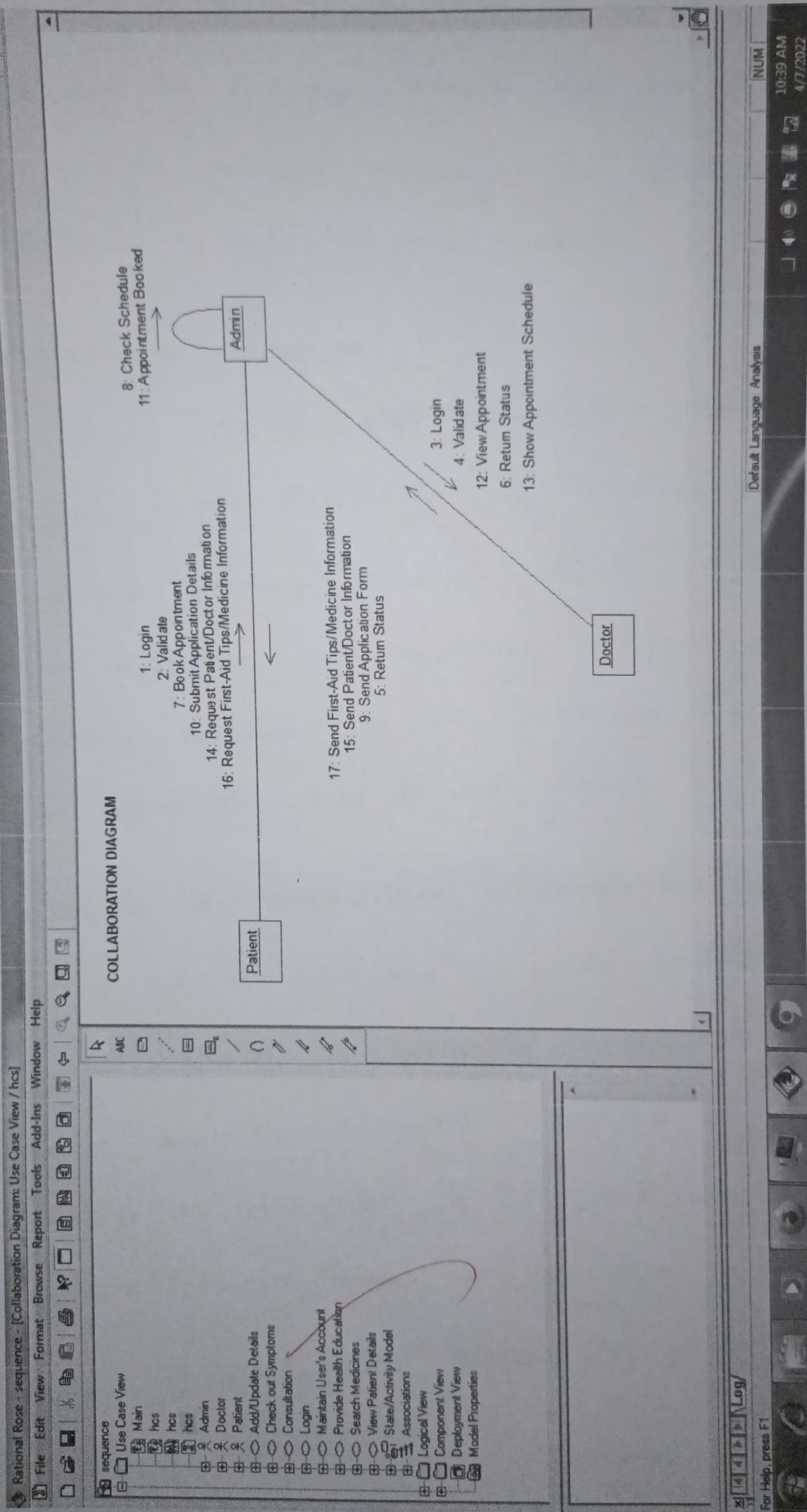
8) The tool will place our actors and
objects from left to right in order. Once they
are in window, we can rearrange.

9) To add a message, in the toolbar,
select the message arrow. Click on the lifeline of
the source of the message and drag to the
lifeline of the destination of message.

Collaborative Diagram



COLLABORATIVE DIAGRAM



10) To add a message name, right click on the message arrow. we can either select one of the existing messages or select new operation > to add a new message.

Collaborative Diagram

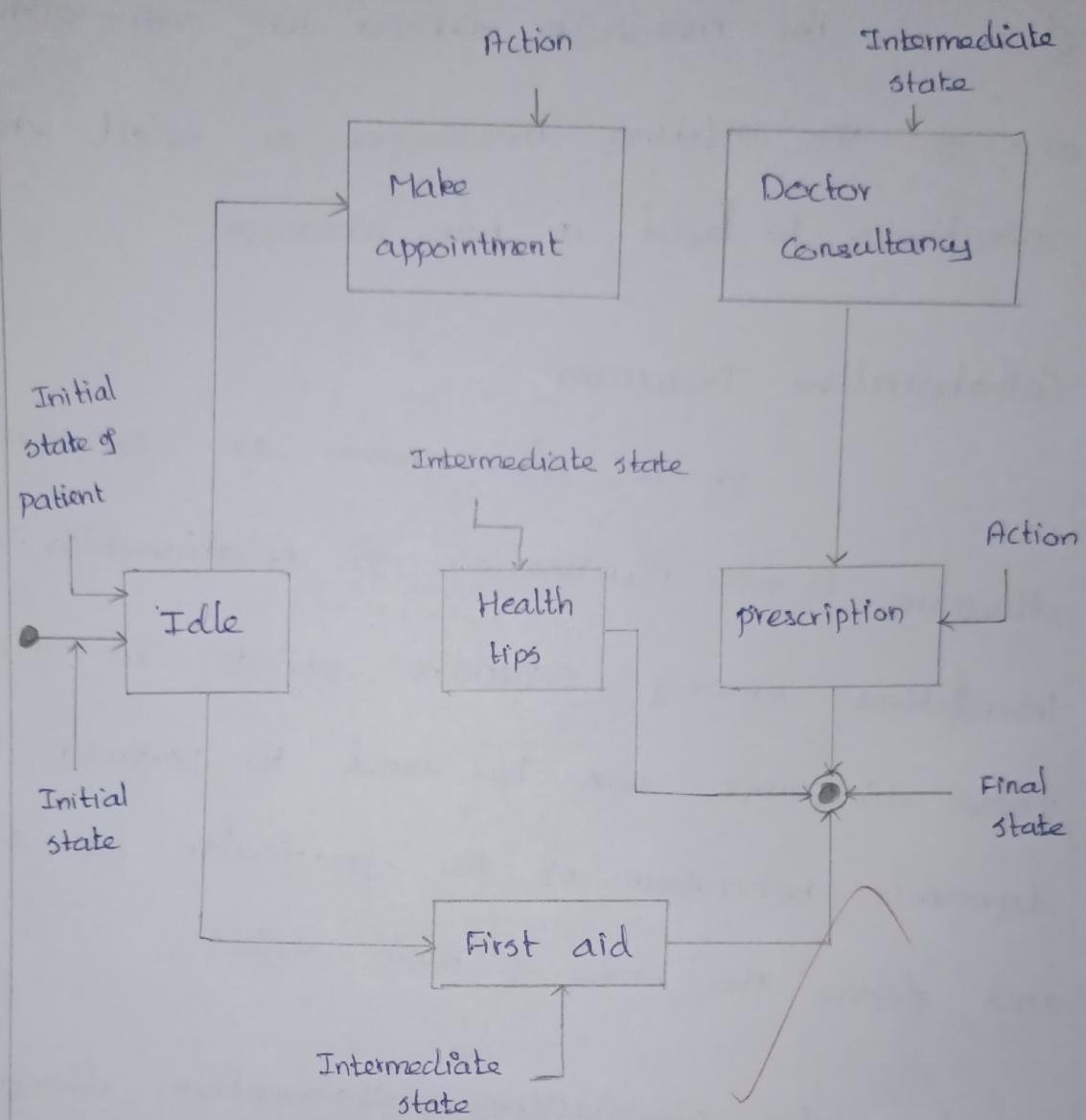
It is also known as communication diagram, is an illustration of relationships and interactions among software objects in UML. These diagrams can be used to portray the dynamic behaviour of the particular use-case and define the role of each object.

procedure for constructing collaborative diagram

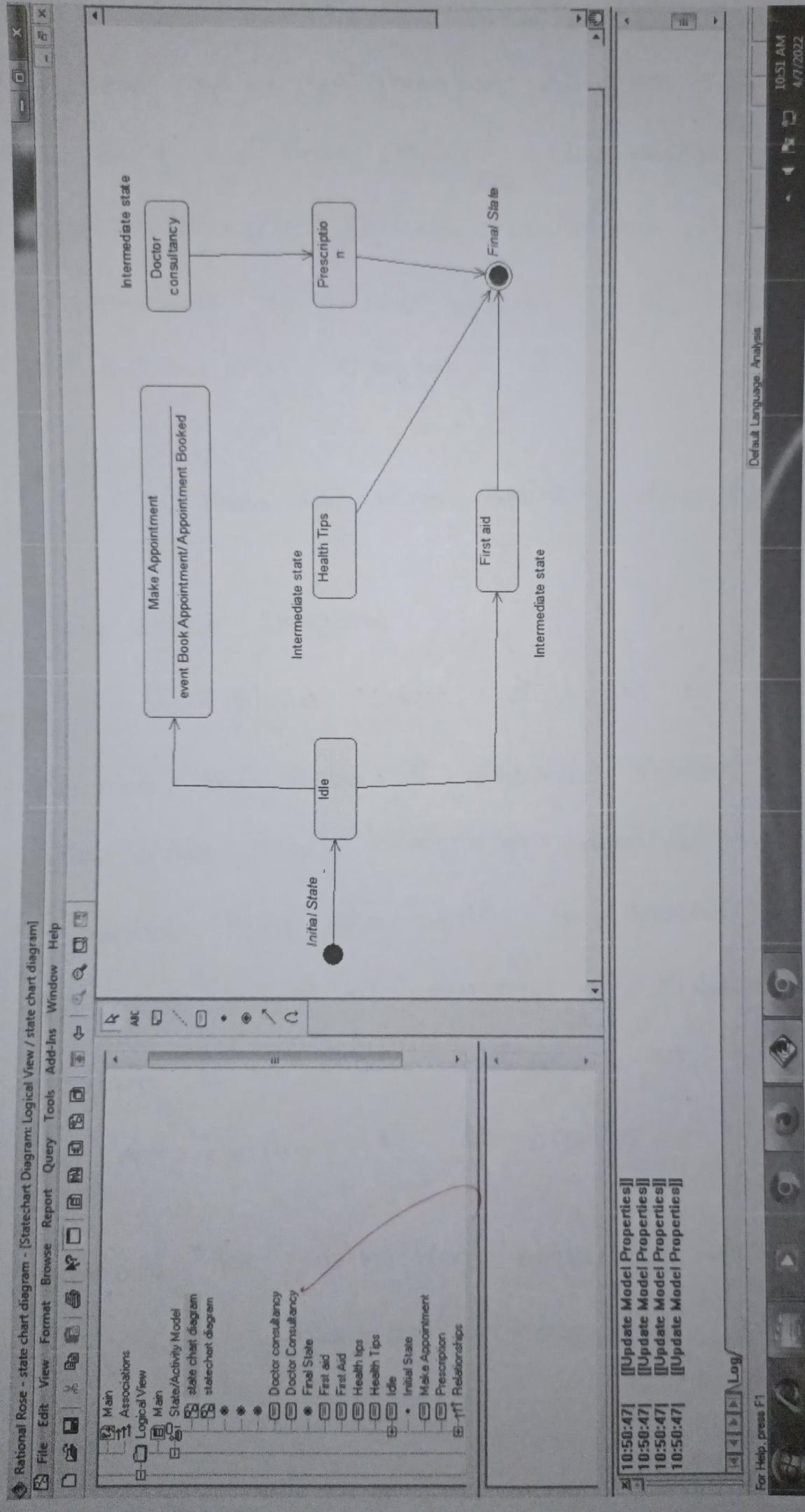
- 1) Right click the diagram background
- 2) If the diagram is a sequence diagram, choose show as collaboration on the context menu, if the diagram is a collaboration diagram, choose show as sequence.

- 3) Repeat this process to switch back and forth.

State chart Diagram



STATE CHART DIAGRAM



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f) After we convert the from a sequence diagram to a collaboration diagram for the 1st time or if we have added new objects to the sequence diagram between conversions , it is recommended that we perform a full layout on collaboration diagram

(or)

- 1) Press F5 from Sequence diagram.

State chart Diagram

State chart diagram is used to describe the states of different objects in the cycle state chart diagrams describe the flow of control from one static to another state . The most important purpose of statechart diagram is to model lifetime of an object from ~~serial~~ creation to termination.

Procedure for constructing statechart diagrams

- 1) Select diagram \Rightarrow now from application toolbar.

g) In the new diagram windows select statechart diagram

3) click Next

4) Enter the diagram name and description

The location field enables us to select the model to store diagram.

5) click ok.

6) Move the mouse pointer over the source state.

7) Press on the resource catalog button and drag it out

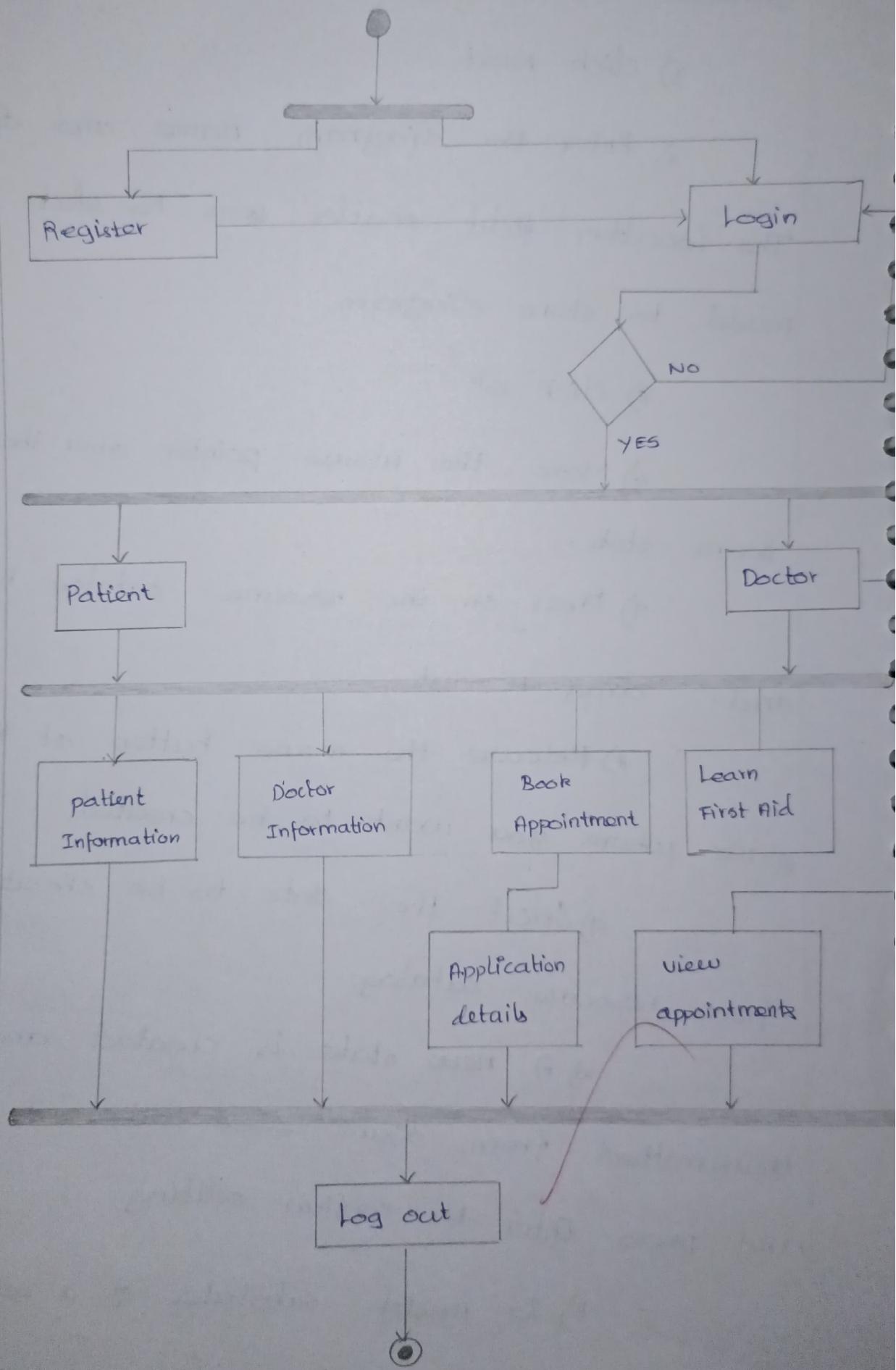
8) Release the mouse button at the place where you want to be created

9) Select the state to be created from resource catalog.

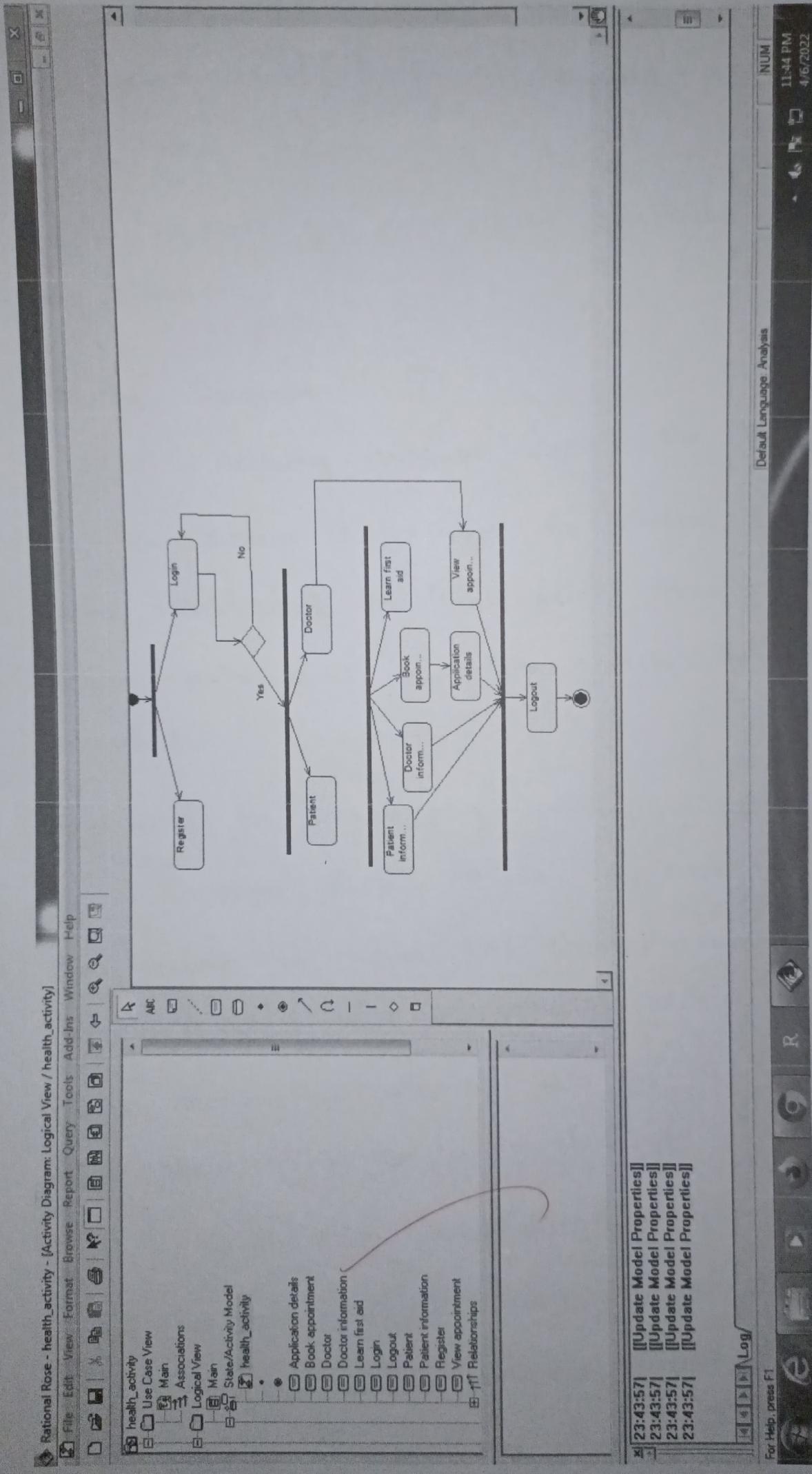
10) A new state is created and is transmitted from source state & its name and press enter to confirm editing.

11) To model substates of a composite state, you need to add one or more regions to it.

Activity Diagram



ACTIVITY DIAGRAM



To add a region, right click on the state
and select add horizontal region from the
pop-up menu.

12) Next we can draw substates inside
the diagram.

Activity Diagram

Activity diagram depicts the behaviour
of the system. It portrays the control flow path
from start point to finish point showing various
decision paths exist while the activity is being
executed.

procedure for constructing Activity diagram

1) Right click on the use-case view in
the browser to make the shortcut menu visible.

2) Select the new activity diagram
menu choice. This will add an activity diagram
called new diagram to the browser.

3) While the new diagram is still selected
enter the name of the diagram

4) Double click on the activity diagram
in the browser to open the diagram

5) Create decision points and guarded
transitions in rational rose

5) Create swimlanes and starting and
ending activity in rational rose

	Total marks	obtained marks
Preparation and viva	10	08
observation	10	09
Design and Implementation	10	09
output	10	08
Record	10	08
Total	50	(44)

Result

Thus the UML diagram that describes the Health consultancy services has been documented and successfully verified.