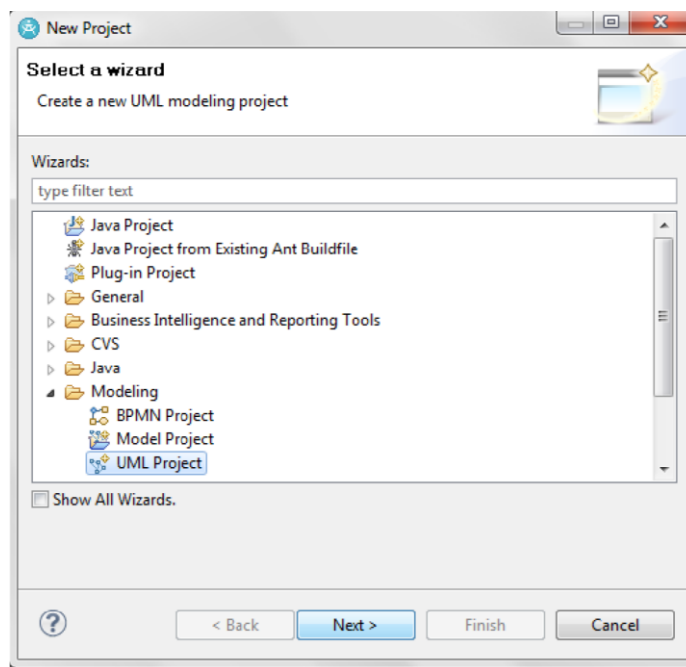


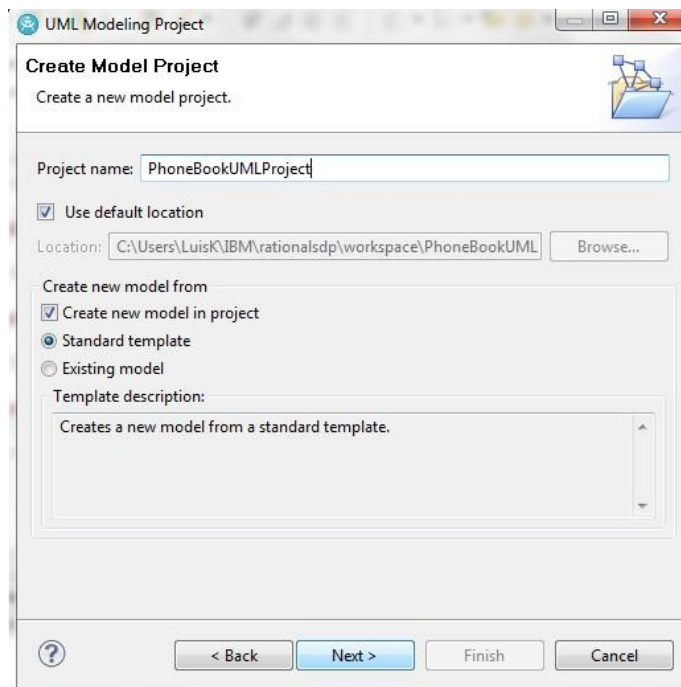
## Lab 06 –Domain Model

### Creating Domain Diagram in RSA

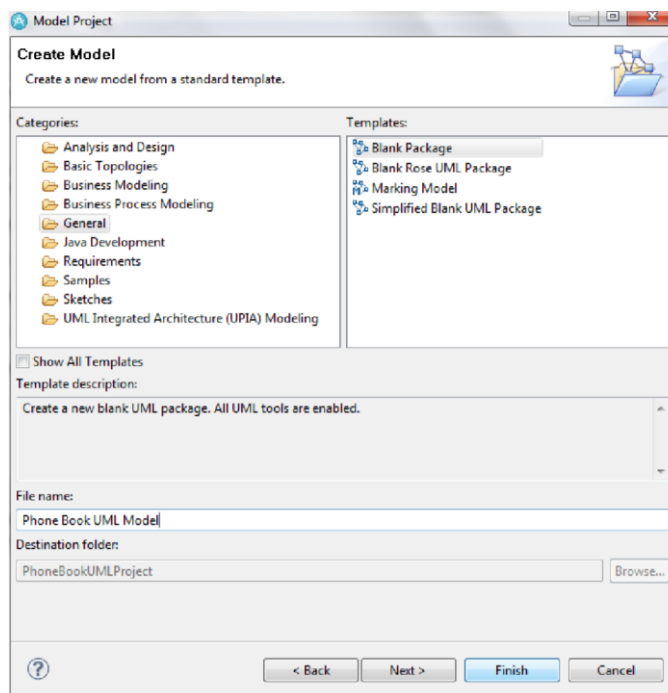
1. Go to **File > New > Project**.
2. Select the **UML Project** wizard. Click **Next**



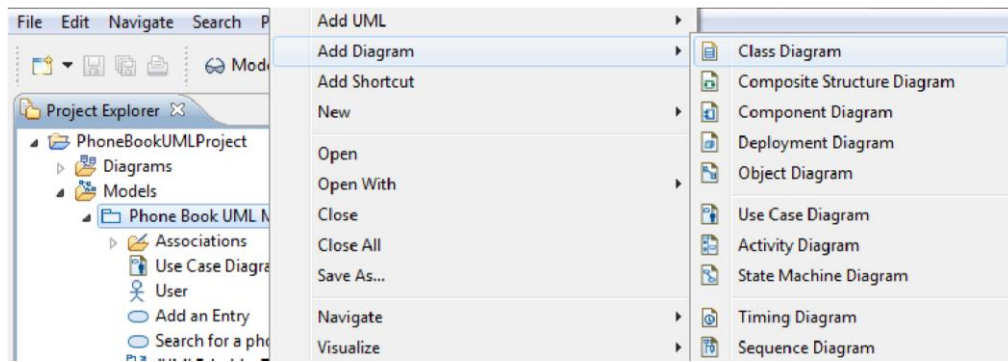
3. Enter a Project Name. Click **Next**.



4. On the Create Model Step, choose category **General** and template **Blank Package** and enter a model name. Click **Finish**.

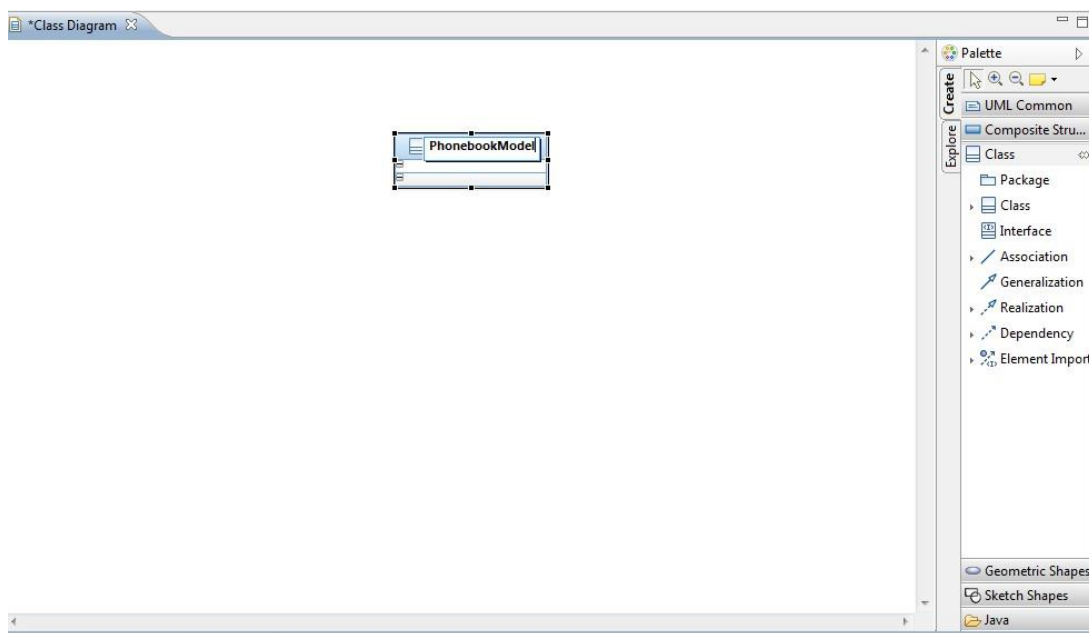


5. Now you can see your UML Project with two subdirectories. The first subdirectory is Diagrams, which will only show the UML diagrams you create organized by the type of diagram. The second subdirectory, Models, will show the diagrams and all the UML objects that you create within the model.
6. Right click the Phone Book UML Model and select Add Diagram > Class Diagram.



7. Enter a name for your diagram. Now you will see a pane where you will be able to add items from the palette to the diagram.

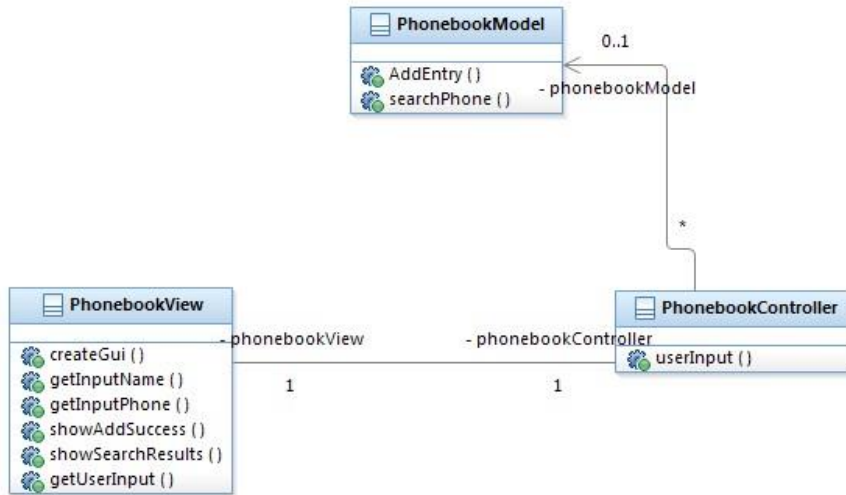
8. Click **Class** in the palette and then click in the pane in order to add it. Name it “PhonebookModel”.



9. Now go to the palette and click the arrow next to the Association item in order to see the Association types. Click **Directed association** then click and drag the association from “PhonebookController” to “PhonebookModel”

10. Repeat the process but this time adding a regular association between “PhonebookController” and “PhonebookView”.

11. Save the final diagram.



Design domain model for given case studies

## TASK # 01

### Potholes Tracking and Repair System

Citizens can log onto a website and report the location and severity of potholes. As potholes are reported they are logged within a “public works department repair system” and are assigned an identifying number, stored by street address, size (on a scale of 1 to 10), location (middle, curb, etc.), district (determined from street address), and repair priority (determined from the size of the pothole). Work order data are associated with each pothole and include pothole location and size, repair crew identifying number, number of people on crew, equipment assigned, hours applied to repair, hole status (work in progress, repaired, temporary repair, not repaired), amount of filler material used, and cost of repair (computed from hours applied, number of people, material and equipment used). Finally, a damage file is created to hold information about reported damage due to the pothole and includes citizen’s name, address, phone number, type of damage, and dollar amount of damage. PHTRS is an online system; all queries are to be made interactively.

## TASK # 02

### City Bicycle Rental System

Many cities have deployed a bicycle rental system. The system is composed of many deposits, distributed all over the city. A deposit contains some dozen bicycles in an open area, the deposit has a number of numbered places (one per bicycle) where bicycles are initially stored with a lock/unlock

system. The lock unlock system is connected to the system and works as follows. If a user is authorized by the system, the system opens a lock for a bicycle, the user can get it and becomes responsible for the bicycle until it returns it. When the user wants to return a bicycle, he selects an empty place in a deposit, and inserts the bicycle in it. The lock/unlock system senses the bicycle and automatically locks the bicycle. From this moment the user is not responsible anymore for the bicycle. To be able to use bicycles a person must first register with the system, providing his/her name and his credit card information, and obtaining an ID. Next, when a user wants to take a bicycle, he goes to a deposit, inserts in a dedicated interface (made of keyboard and screen) his ID. After the needed checks, the system selects a bicycle available in the deposit and opens the corresponding lock, so the user can take the bicycle. When the user wants to return the bicycle, he selects an empty place in a deposit, and returns the bicycle. No interaction with the keyboard/screen should be needed for return. The rental system must track the state of all bicycles and rentals. Notably, the user pays for the rental a fee that depends on the duration of the rental. Users are encouraged to take the bicycle in one deposit and return it to any other deposit. The system should also monitor the maintenance of bicycles (a bicycle never rented is probably broken), the distribution of bicycles in deposits (no deposit should be always empty, no deposit should be always full), the most common paths used (where bicycles are most frequently taken and most frequently returned)

## TASK # 03

### FAST Academic Office

FAST academic office plays a central role in managing academic processes including admission, course registration, exam conduction, result preparation etc. All of these processes are further divided into sub tasks such as exam conduction involves preparing schedules, assigning venues and invigilators, exam paper printing, issuing admit cards to students, scheduling show ups etc. Students, Teachers and other individuals are involved in the whole process. Design a domain model of the academic system in FAST in the light of above information and your own knowledge. You are required to identify conceptual classes their attributes and association between concepts.

Note: Please think about each main process above and identify the roles, organizational units, places, things, structures etc. associated with it.