Aim :

Develop class diagram for selected project

Theory :

Class Diagram :

The class diagram is a static diagram. It represents the static view of an application. A class is a group of objects with similar properties (attributes), common behaviors (operations), common relationships to other objects, and common semantics. The purpose of a class diagram is to depict the classes within a model. In an object oriented application, classes have attributes (member variables), operations (member functions) and relationships with other classes. The UML class diagram can depict all these things quite easily. The fundamental element of the class diagram is an icon the represents a class.

The class diagram desribes the autoributes and operations of a class and also the constraints imposed on the system. The class diagrams are widely used in the modeling of object oriented systems because they are the only UML diagrams which can be mapped directly with object oriented languages.

The class diagram shows a collection of classes, interfaces, associations, collaborations and constraints. It is also known as a structural diagram.

So the purpose of the class diagram can be summarized as:

- Analysis and design of the static view of an application.
- Describe responsibilities of a system.
- Base for component and deployment diagrams.

The following points should be remembered while drawing a class diagram:

- The name of the class diagram should be meaningful to describe the aspect of the system.
- Each element and their relationships should be identified in advance.
- Responsibility of each class should be clearly identified.
- For each class minimum number of properties should be specified. Because unnecessary properties will make the diagram complicated.
- Use notes when ever required to describe some aspect of the diagram. Because at the end of the drawing it should be understandable to the developer / coder.
- Finally, before making the final version, the diagram should be drawn on plain paper and rework as many times as possible to make it correct.

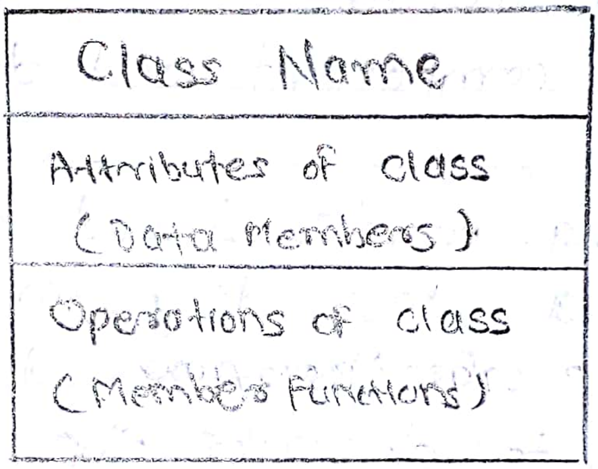

Fig. Class Symbol

Class diagrams are used for :

- Describing the static view of the system.
- Showing the collaboration among the elements of the static view.
- Describing the functionalities performed by the system.
- Construction of software applications using object oriented languages.

Class Diagram Notation :

Attributes :

Attributes describe an object's characteristics Use this syntax to specify data attributes in the middle text area of the class symbol. The attribute section is optional, but when used it contains each attribute of the class displayed in a list format.

Operations :

Operations are the actions that can be carried out on or by the objects. Like the attributes, the operations of a class are displayed in a list format, with each operation on its own line. To specify the visibility of a class member use the following befor the member's name:

public : +
protected : #
private : -
package : ~

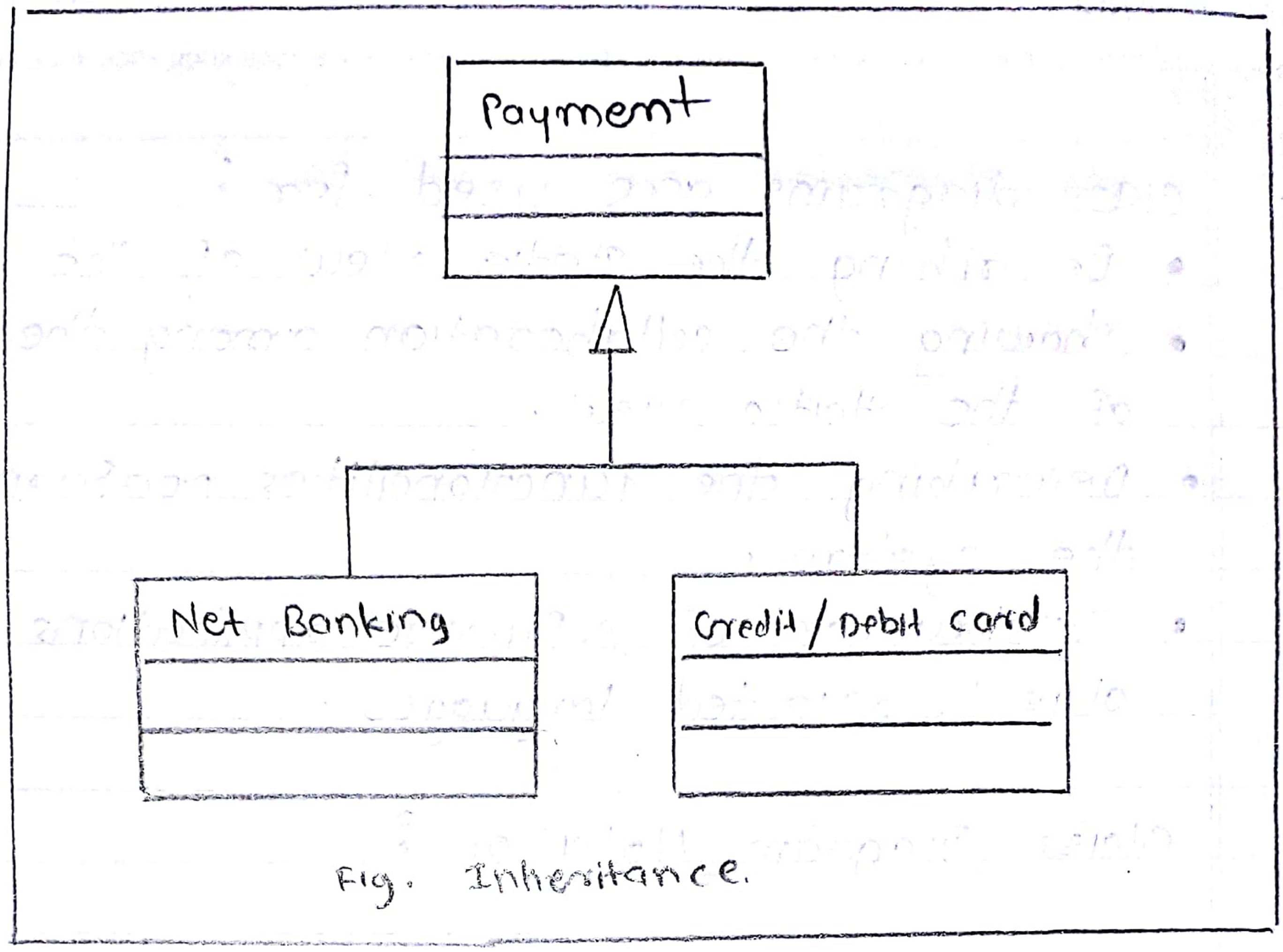

Fig. Inheritance.

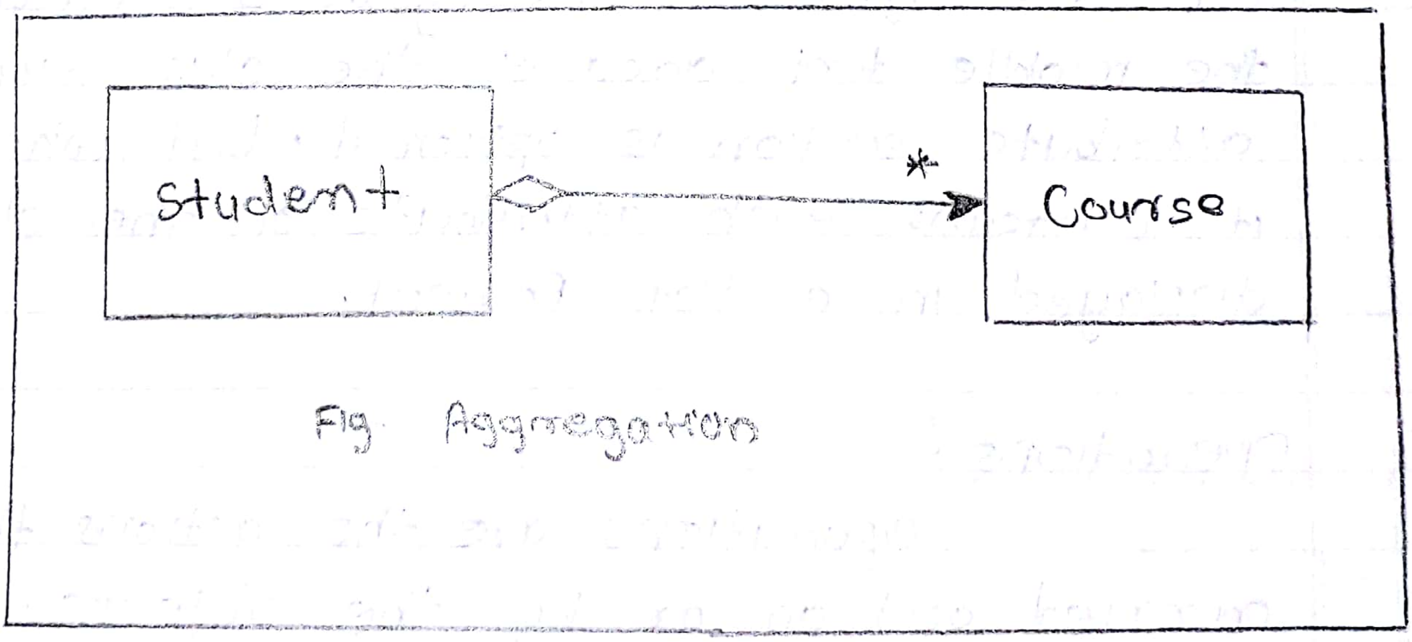

Fig Aggregation

Inheritance :

The inheritance relationships in UML is depicted by a peculiar triangular arrowhead. This arrow-head that looks rather like a slice of pizza, points to the base class. One or more lines proceed from the base of the arrow-head connecting it to the derived classes. Following figure shows the form of the inheritance relationship. In this diagram we see that Net banking and credit / debit card both derive from payment.

Aggregation / Association :

A class aggregates another if its objects contain objects of the other class. The weak form of aggregation is denoted with an open diamont. This relationship denotes that the aggregate class is in some way the "whole", and the other class in the relationship is somehow "pard" of that whole.

The following figure shows an aggregation relationship. In this case, the student class contains many course instances. In UML the ends of relationship are referred to as its "roles". Notice that the role of the course end of the aggregation is marked with a "*". This indicates that student contains many course instance.

Conclusion : Thus, we have studied and develop an class diagram for selected project.