Name :- Aman kumar Singh
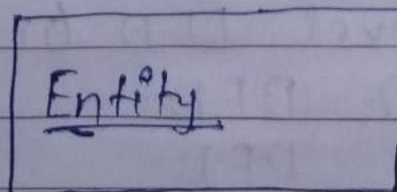Enrollment No :- 20051010101159
Batch :- C

1) What is DFD ?

Ans A Data Flow Diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data inputs, outputs, storage points and the routes between each destination.
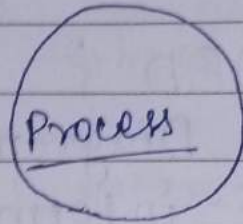
2) Draw and explain DFD notation?

Ans

**External Entity** : Also known as actors, sources or sinks, and terminators, @external entities produce and consume data that flows b/w the entity and the system being diagramed.
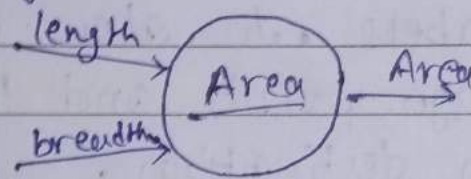
| Entity |
|--------|

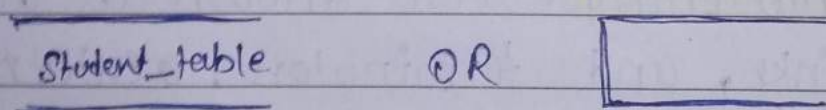**Process** :- A data transformer (changes input to output).

* Activities and action taken on the data are represented by circle or Round-edged rectangles.

( Process )

**Data Flow** :- Data flows trough a system. beginning as input & transformed into output.

length
breadth → ( Area ) → Area

**Data Store** :- It can either be represented as a rectangle with only one side missing.

Student_table        OR

3.> Name of all the Levels of DFD?

Ans    Content level DFD are :-
    * Level 0  DFD
    * Level 1  DFD
    * Level 2  DFD
    * Level 3  DFD
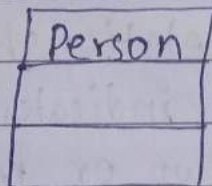
4.) UML Stands for ?

Ans   Unified Modeling Language


5.) Draw and Explain class diagram notation
     used in UML. ?
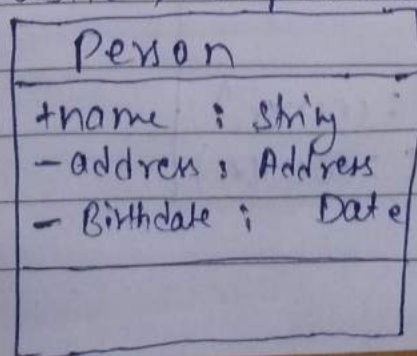
Ans   <mark>Class Name</mark> :
      The Name of the class is the only
      required tag in the graphical represen-
      tation of a class. It always appears
      in the top-most compartment.

```
┌─────────────┐
│   Person    │
├─────────────┤
│             │
├─────────────┤
│             │
└─────────────┘
```
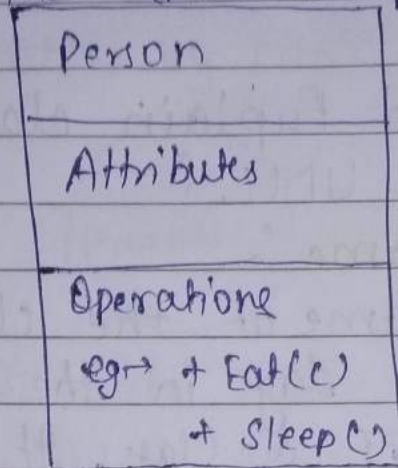
<mark>Class Attributes</mark> :

An Attributes is a named property of a
class that address the objects being modeled.
Attributes appear in the second compartment
just below the name - compartment. It
can be - +public , #protected , -private and
derived .

```
┌──────────────────────┐
│   Person             │
├──────────────────────┤
│ +name : string       │
│ -address : Address    │
│ - Birthdate : Date   │
├──────────────────────┤
│                      │
└──────────────────────┘
```
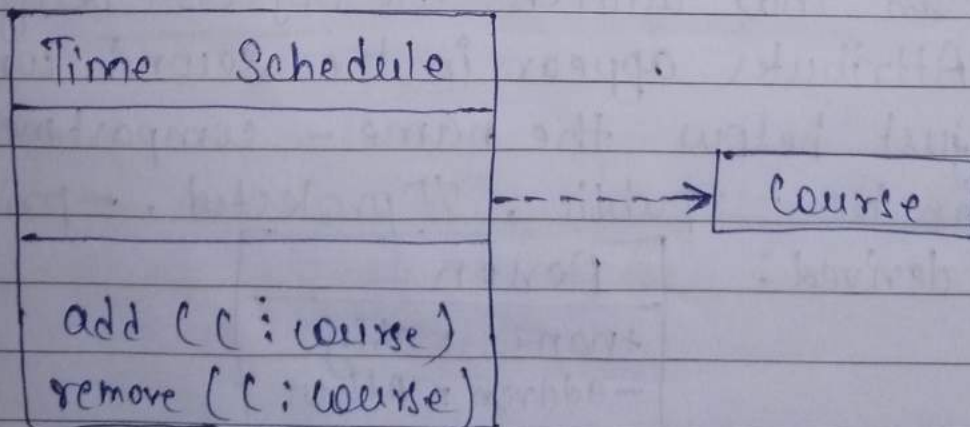
## Class Operations :-

Operations describe the class behaviour and appear in the third compartment.

```
┌─────────────────────┐
│ Person              │
├─────────────────────┤
│ Attributes          │
├─────────────────────┤
│ Operatione          │
│   eg→ + Eat(e)      │
│       + Sleep()     │
└─────────────────────┘
```
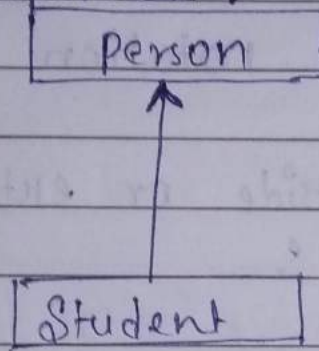
## Dependencies Relationship :-

A dependency indicates a semantic relationship between two or more elements.
The dependency from TimeShedule to lecture exists because lecture is used in both the add and remove operation of Time Schedule.

```
┌─────────────────────┐
│ Time  Schedule      │
├─────────────────────┤
│                     │        ┌──────────┐
│                     │ ─ ─ ─→ │ Course   │
├─────────────────────┤        └──────────┘
│ add (C : course)    │
│ remove (C : course) │
└─────────────────────┘
```
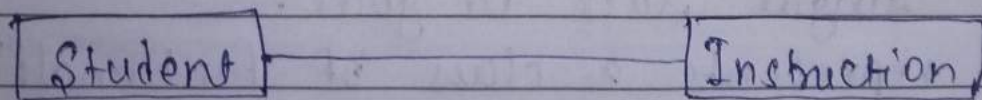
## Generalization Relationship :-

A Generalization connects a subclass to its superclass. It denotes an inheritance of attributes and behaviour from the superclass to the subclass and indicates a specialization in the subclass of the more general superclass.

```
        ┌──────────┐
        │  Person  │
        └──────────┘
              ▲
              │
        ┌──────────┐
        │ Student  │
        └──────────┘
```

## Association Relationship

If two classes in a model need to communicate with each other, there must be a link between them.

```
┌──────────┐                    ┌─────────────┐
│ Student  │────────────────────│ Instruction │
└──────────┘                    └─────────────┘
```

one and only one

We can indicate the multiplicity of an association by adding multiplicity adomments to the line denoting the association.

[ Student ] ——————————— ₁* [ Instructor ]

The example indicates that a student has one or more instructors.

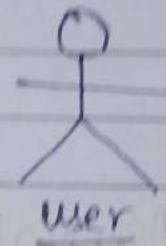6.) Draw and explain usecase diagram notation used in UML ?

Ans These are the notation of use case diagram

Actor :

* An Actor is outside or external the system. It can be a :
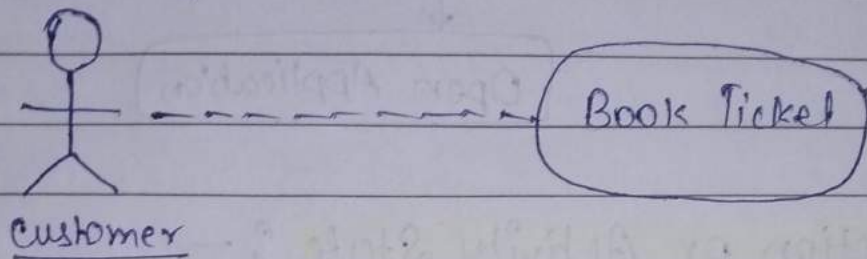    → Human
    → Peripheral device

user

Use case :

A use case is a summary of scenarios for a singal task or goal.

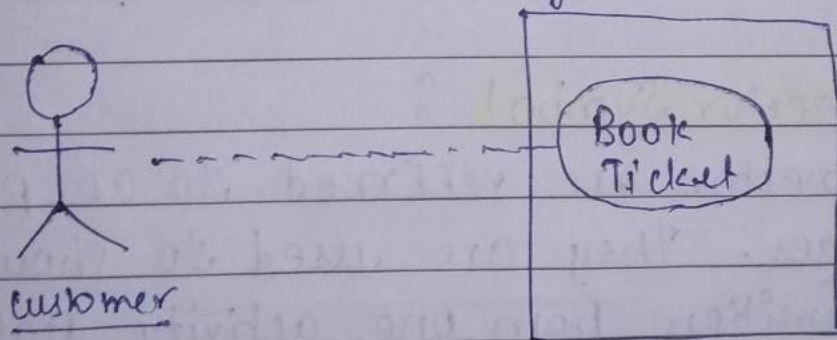* It represents a class of funtionality provided by the system as an event flow.

( Book Ticket )

## Relationships :

Represents communication between actor and use case. Represented by line or double-headed arrow line. It also called association Relationship.



Customer

## Boundary :

A Boundary Rectangle is place around the perimeter of the system show how the actors communicate with the systems.
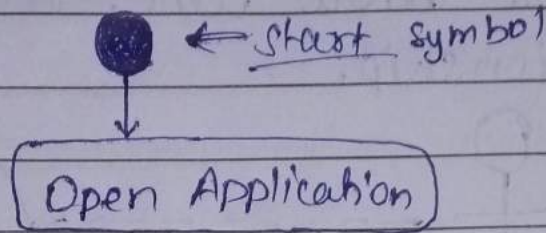


customer

7.) Draw and Explain an Activity diagram notation used in UML?

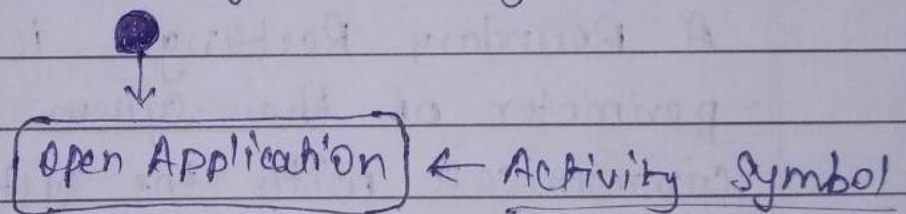Ans These are the notation of Activity diagram

## Intial State :-

The starting State before an activity takes place is depicted using the intial state.
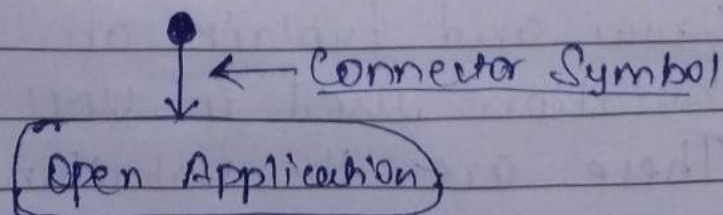
← Start symbol

Open Application

## Action or Activity State : -

An Activity Represents ~~exeut~~ eneaition of an action on objects or by objects.
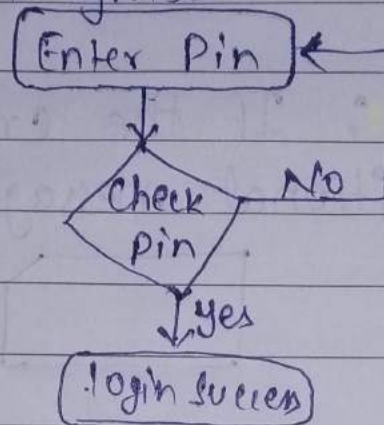
Open Application ← Activity Symbol

## Connector Symbol :

Connector are referred to as paths and edges. They are used to show the transition from one activity state to another.

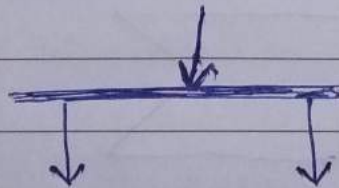← Connector Symbol

Open Application

## Decision Symbol :

When we need to make a decision before deciding the flow of control, we use the decision symbol.
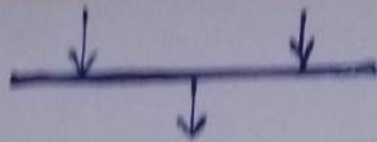


## Fork Symbol :

We use a rounded solid rectangular bar to represent a fork notation with incoming arrow from the parent activity state and outgoing arrows towards the newly created activities.
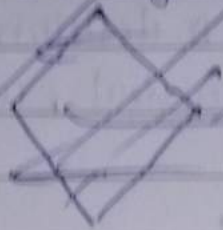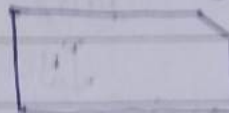


## Joint Symbol :

It is use to combines two different concurrent activities and reintroduces in a flow - where only one activity occure at a time.

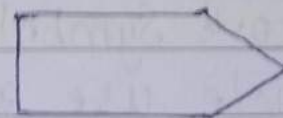Decision Symbol :- It is used when an activity requires a decisi

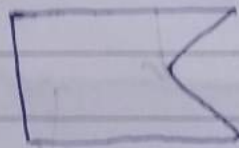Note Symbol : If the creator want to specify additional message than this symbol is used.

signal
Send Symbol : It is use to indicate that a signal is sent.

Receive Signal Symbol :- It demonstrates that the message is received.

Flow control symbol :- It represent the end of a specific process not represents end of all flow in activity.
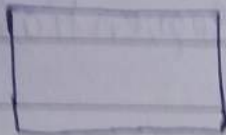
**End Symbol** :- It is used to represent of completion of all flow of process.



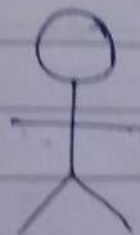8. Q.> Draw and Explain Sequence diagram notation used in UML. ?

Ans

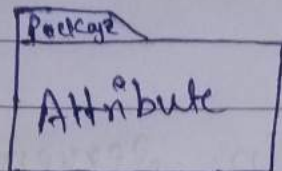**Object Symbol** : It represents a class or object in UML.



**Activation Boy** :- It represents the time needed for an object to complete a task Activation Boy increase according to time of task.
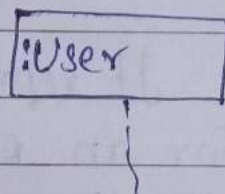


**Actor Symbol** : It shows the entities that interact with the system.

**Package Symbol** :- It contain interachive element of the diagram. It is also known as frame.

```
┌─────────┐
│ Package │
├─────────┴───┐
│ Attribute   │
└─────────────┘
```

**Lifeline Symbol** : Represents the passage of time as it extends downward. Clashed line show the sequential events that occur to an object.

```
┌──────────┐
│ :User    │
└────┬─────┘
     ┊
```

**Alternative Symbol** : Symbolizes a choice needs to be made between two or more message sequences.

```
┌─────────────┐
│ Alternative │
├─────────────┴──────┐
│   [condition]      │
├ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─┤
│   [Else]           │
│                    │
└────────────────────┘
```