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Course : Cloud
Computing :

How these concepts apply in the cloud Privacy, integrity, authentication, non-repudiation, availability, Access control, defence in depth, least Privilege. Justify with suitable example & a Sample architecture diagram.

Privacy:

*) Privacy in cloud computing refers to the right to self-determination, that is the right of individuals to know what is known about them be aware of stored information about them, control how the information is communicated & Prevent its abuse.

*) A good reference for use in defining universal Principles for the protection of Personal data & Privacy is the Madrid Resolution which was approved by data Protection authories within the frame work of 31st international conference of Data Protection & Privacy,

*) It's Purpose is to define a set of Principles & rights guaranteing the effective & internationally uniform. Protection of Privacy with regard to the processing of Personal data.

Example:

*) One of the service model in cloud service is Saas to attain Prevacy first of all, he can avoid to give sensible data to a Saas.

*) Secondly he might be able to "secure" the sensible data before he inputs them into the Saas (e.g. their exists plugins for browsers supporting encrption of input from fields. This could be used to send only encrypted mail using Gmail.)
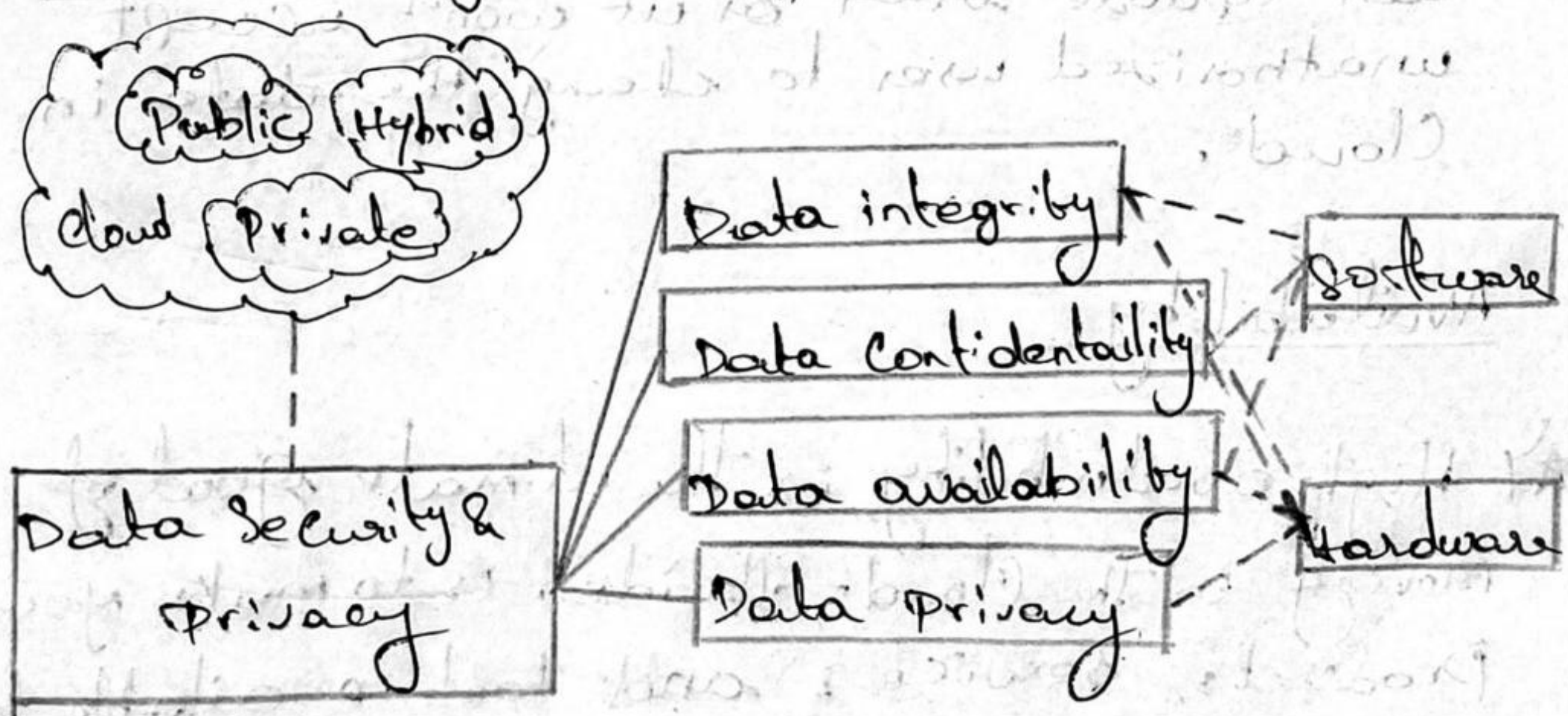
Integrity :-

*) Integrity in terms of dat security, is the guarantee that data can only be accessed or modified by those authorized to do so In Simple words is the process of verifying data.

*) Protect the data from the unauthorized insert, update or delete. The data owner's authorized users should be able to recognize if the data is corrupted or incomplete & receive the most recent updated version of data, which guarntees accuracy & consistency of data.

Example :

For eg. an facebook user can change or update his profile. Only by him no one else can update other or it won't accept unathorized user to change the data in Cloud.

Availability :-

*) High availability is the ulimate goal of moving to the Cloud. the idea is to make your products, service & and tool available to your customer & employees at any time from anywhere using any device with an internet connection.

(e.g) Amazon (E-commerce) provides 24×7 delivery service & Shopping service

non-repudiations-

*) Non-repudiation Proof of the orgin, authenticity & integrity of data. It Provides assurance to the Sender that its message was delivered, as well as proof of the sender's identity to the recipient.

*) This way, neither party can deny that a message was sent, received & Processed.

Authentication:-

*) Many people & Companies keep confidential information on their cloud Servers: with all this Personal information in a non-physical area. It is beneficial to have an authentication service to ensure this information stay Classified.

Example:-

Google Cloud APIs, Use the OAuth 2.0 Protocol for authenticating both user accounts & service accounts. The OAuth 2.0 authentication. Process determine both Principles and Application.

Access Control:-

*) Access Control in Cloud security is a system with a company can regulate and monitor Permissions or access to their business data by formulating various policies suited chosen by the company. It helps Compaires to gain macro-level visibility into their data & user data.

Defense in Depth:-

★ Defense in Depth (DID) is an approach to Cybersecurity in which a series of defensive mechanisms are layered in order to protect valuable data & information. If one mechanism fails another steps up immediate to thwart an attack.
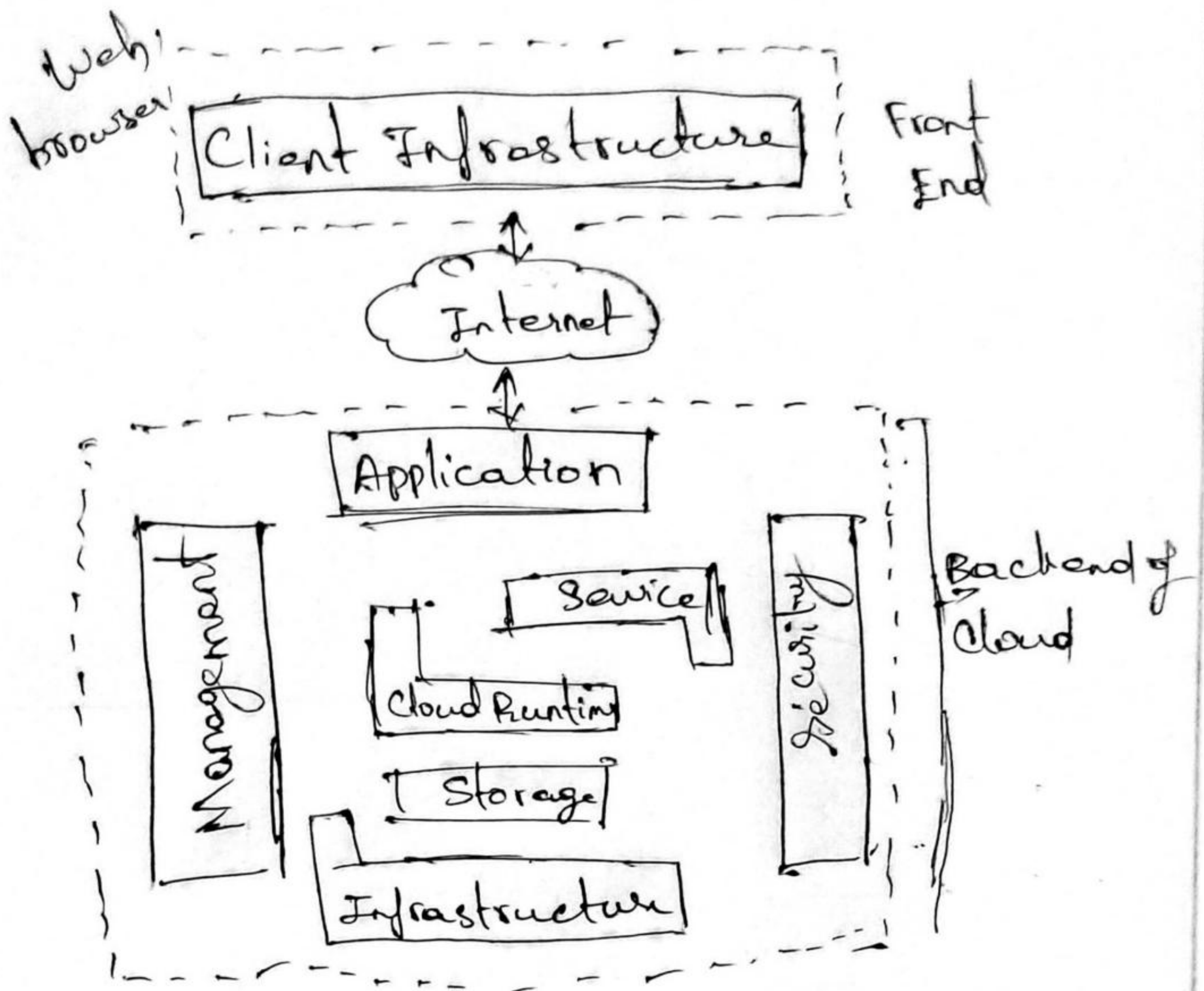
eg:-

Network security:-
1) Firewalls (hardware or software)
2) Virtual private Network.

Least Privilege :-

★ Least Privilege is the Concept & Practice of restricting access rights for users. Account & computing process to only those resource absolutely required to perform routine.

Example:-

a user account created for pulling records from a database doesn't need admin rights.

Web;
browser

Client Infrastructure

Front
End

Internet

Application

Management

Service

Cloud Runtime

Storage

Security

Backend of
Cloud

Infrastructure

Sample Cloud architecture.

Google Cloud Platform:-