① Users and groups:

① <u>Users</u>: 1) Individuals who can log in to a cloud service with unique credentials

<u>Auess control</u>: Users are assigned specific permissions to determine what resources and actions they can auess.

<u>Authentication and authorization</u>: Verifying user identity and granting appropriate permissions.

② <u>Groups</u>: 1) A collection of users with similar auess rights and permissions
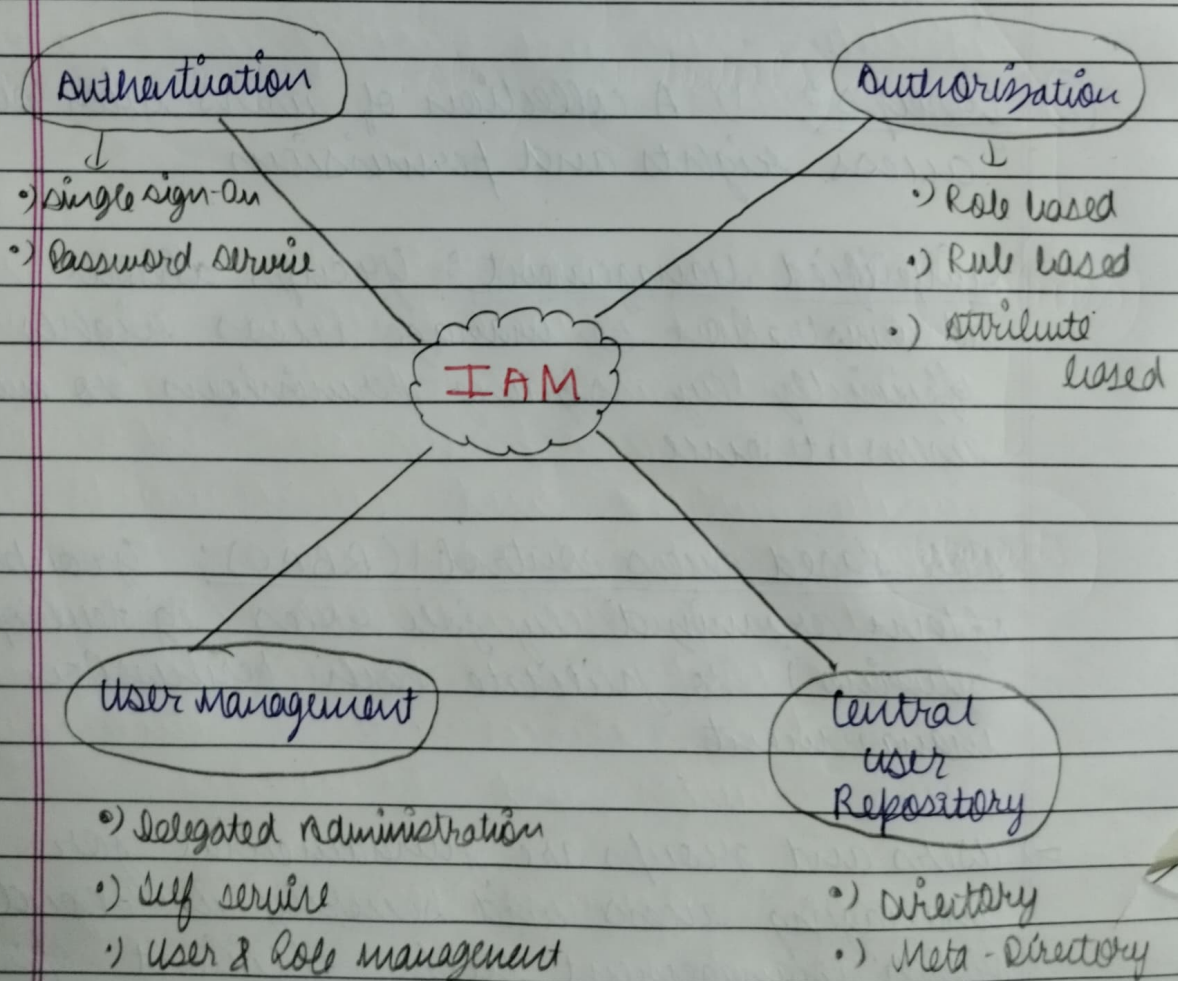
<u>Simplified management</u>: Groups allow administration to manage auess rights efficiently by assigning permissions to multiple users at once.

<u>Role Based auess control (RBAC)</u>: Groups are often organized by job roles (eg developers, admins) to facilitate each permission management.
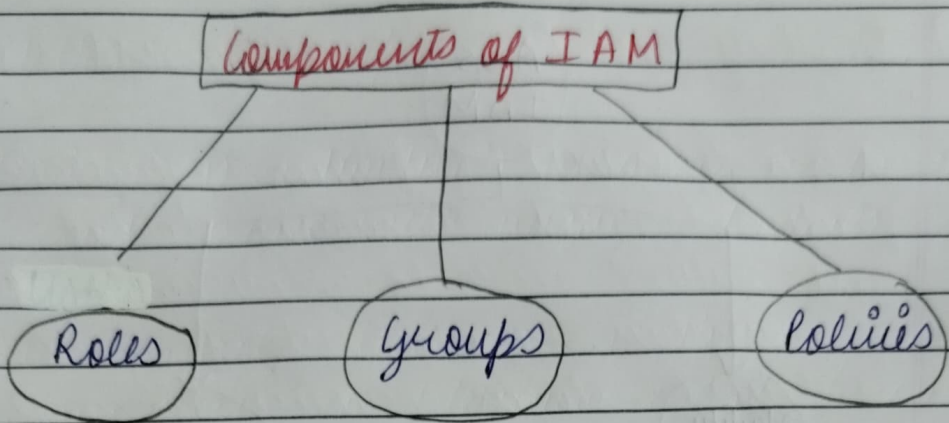
⇒ Users and groups are fundamental for managing auess and security in cloud env. Proper management helps efficient operations, enhanced security, and compliance with regulatory requirements.

② Identity and Quess Management (IAM):

It is a framework of policies, technologies, and practices designed to manage digital identities and control auess to resouries within an organization. In the context of CC, It plays a crucial role in securing auess to cloud services and ensuring that only authorized users and services have the necessary permissions to perform actions on cloud resouries.

Authentication
↓
•) single sign-on
•) Password service

Authorization
↓
•) Role based
•) Rule based
•) attribute based

IAM

User Management
•) delegated Administration
•) self service
•) User & Role management

Central user Repository
•) Directory
•) Meta-Directory

Components of IAM

```
Roles        Groups        Policies
```

With these new appliations being created over the cloud, mobile and on-premise can hold sensitive and regulated info. It is no longer aceptable and feasible to just create an identity server and provide ausers based on the requests.

③ **IAM Roles** : IAM roles are critial feature within cloud servire platforms like AWS, Azure and google cloud. They are designed to manage auess permissions and ensure security within cloud environments. Unlike traditional IAM users, which are linked to specifie individuals, IAM roles provide temprory credentials that can be used by various entities, inluding users, servies, and appliations.

Use cases :- 1) Servies Auess : Allowing AWS servies like EC2 etc.

2) Temporary Usage Auess : granting short term auess.

```
                    ┌─────────┐
                    │  AWS    │
                    │  IAM    │
                    └────┬────┘
              ┌──────────┴──────────┐
              ▼                     ▼
        ┌─────────┐           ┌──────────┐
        │ Identity│           │ Permsion │──→ what is
        └────┬────┘           └────┬─────┘    requested by
             │                     │           the identity
      who requests?                │
             │                     │
   ┌────┬────┼────┬────┐           │
   ▼    ▼    ▼    ▼                │
┌─────┐┌──────┐┌─────┐┌────────────┐
│Users││Groups││Roles││ Credentials│  │
└─────┘└──────┘└─────┘└────────────┘  │
                                      ▼
                              ┌────────────┐
                              │  Policies  │
                              └─────┬──────┘
                                    ▼
                              ┌────────────┐
                              │ statements │
                              └────────────┘
```