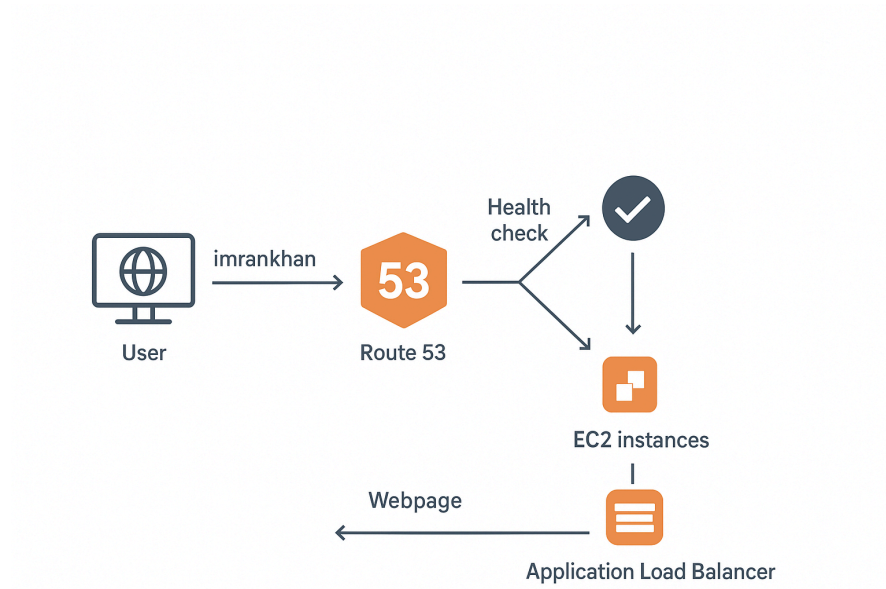# Route 53

Amazon Route 53 is AWS's **managed DNS (Domain Name System) service** — it translates human-readable domain names (like `imrankhan.online`) into IP addresses so that browsers and apps can find your servers.

Here's the breakdown:

Main Functions of Route 53

1. **Domain Registration**

   ○ You can buy and register domain names directly from AWS (like GoDaddy or Namecheap).

   ○ Example: Register `mycompany.com`.

2. **DNS Routing**

   ○ Stores DNS records for your domain and routes traffic to AWS or external servers.

   ○ Works globally, highly available, and integrates with AWS resources like **EC2**, **S3**, and **Load Balancers**.

3. **Health Checks & Failover**

    ○ Continuously monitors your endpoints (web servers, APIs) and redirects traffic if one fails.

Key DNS Record Types in Route 53

- **A record** → Maps a domain to an IPv4 address.

- **AAAA record** → Maps to an IPv6 address.

- **CNAME** → Maps a name to another domain name.

- **Alias** → AWS-specific feature to route to AWS resources without extra cost (like ALB, CloudFront, S3).

- **MX** → Mail exchange (email routing).

- **TXT** → Text information (often used for domain verification).

Routing Policies

- **Simple Routing** → Directs to a single resource.

- **Weighted Routing** → Splits traffic based on percentage.

- **Latency Routing** → Sends users to the fastest AWS region.

- **Failover Routing** → Switches to backup if the main endpoint is down.

- **Geolocation Routing** → Routes based on user's location.

Real-Time Example

You have a website running on **two EC2 instances behind an Application Load Balancer**.

- You register `imrankhan.online` in Route 53.

- Create an **A record (Alias)** that points to your ALB.

- Enable a **health check** so that if one region goes down, Route 53 automatically routes traffic to another healthy region.