Project Title : Hosting Rent4u Website Using AWS EC2 Services

- **Hosting a Rent4u Website Using AWS EC2 Services:**
  - The **Rent4u Website** is a **car rental service platform** that allows users to browse, select, and book cars online.
  - Hosting this website on **AWS EC2** ensures **scalability**, **availability**, and **cost-effective deployment** in the cloud environment.

- **Key Features of Web Hosting Using EC2 Service:**

1. **Simple Deployment:**
- Easy deployment process using GitHub Actions, SCP, or AWS CodeDeploy.
- CI/CD pipelines to auto-update the site when new content is pushed.

2. **High Availability:**
- EC2 instances deployed across multiple **Availability Zones** (AZs).
- Health checks and auto-recovery options.

3. **Performance Optimization:**
- Serve static files (HTML, CSS, JS) using **NGINX** or **Apache**.
- Enable compression (gzip, Brotli) to speed up delivery.

4. **Security:**
- Configure **Security Groups** (firewalls) to allow only HTTP (80) and HTTPS (443) traffic.
- Use **AWS Certificate Manager** (ACM) + **Nginx/Apache** to serve HTTPS.

5. **Backup & Recovery:**
- Schedule **EBS volume snapshots** for quick recovery.
- Create **AMI** (Amazon Machine Image) backups periodically.

- **Technology Used:-**
  The Rent4u static website hosted on AWS EC2 primarily uses the following technologies:

1. Frontend Technologies:

- HTML – For structuring the content
- CSS – For styling (can include frameworks like Bootstrap or Tailwind)
- JavaScript – For client-side interactivity (can include jQuery or vanilla JS)
- Images & Assets – Product images, logos, etc.

2. Hosting & Cloud Infrastructure:

- **Amazon EC2 (Elastic Compute Cloud)** – Main hosting service where the web server (like NGINX or Apache) runs to serve static content.
- **Elastic IP** –Static IP address attached to your EC2 instance to ensure a consistent, publicly reachable IP (even if the instance stops/restarts).
- **Security Groups** – Acts as a virtual firewall, controlling inbound/outbound traffic to allow only HTTP (80), HTTPS (443), and SSH (22) access.
- **Key Pairs (SSH Access)** – Secure method to access your EC2 instance for server management using SSH private/public key pairs.
- **User Data (Cloud-Init Scripts)** – Automate server setup at launch (install NGINX, deploy website files automatically during instance boot-up).
- **EBS (Elastic Block Store)** – Storage attached to the EC2 instance to store static website files (HTML, CSS, JS, images, etc.).
- **Amazon Route 53 (DNS Service)** – (Optional) Used to manage the domain name and point it to the EC2 Elastic IP, enabling access via your custom domain (e.g., www.ren4u.com).

- **Outcome:**

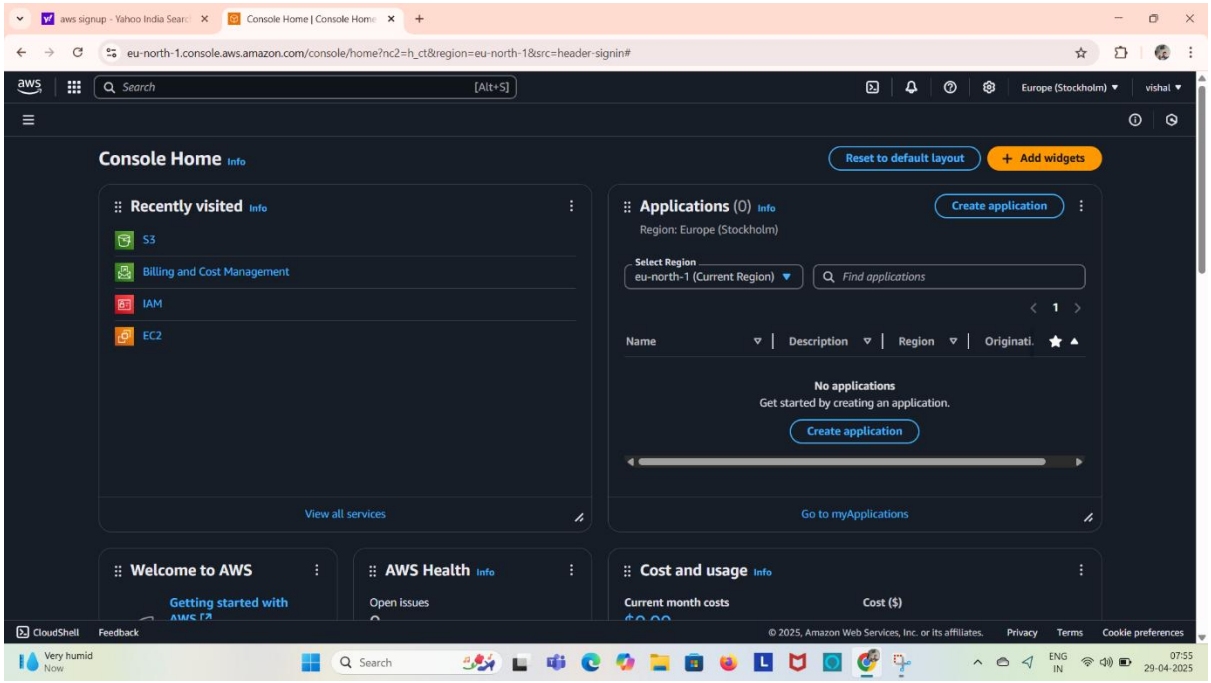
1. **Reliable Hosting Platform:**
   Deployment of the static website on Amazon EC2 ensures high availability, reliability, and full control over the hosting environment, enabling Ren4u to serve content efficiently to users.
2. **Scalable Infrastructure:**
   The architecture supports future scalability using Auto Scaling Groups and Load Balancers, ensuring the website can handle increasing user traffic without downtime.
3. **Secure and Encrypted Communications:**
   HTTPS is enforced through the installation of SSL/TLS certificates (via Let's Encrypt), protecting user data and enhancing trust with secure communications.

- **Impact:**

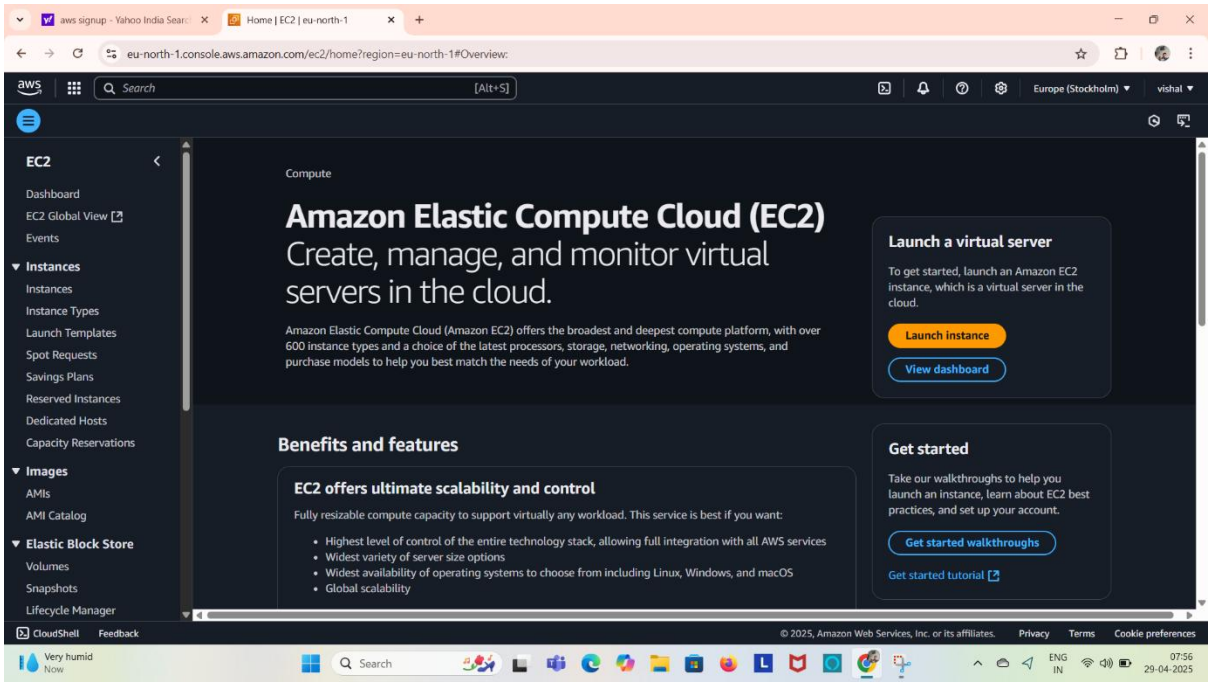
1. **Enhanced Website Reliability:**
   Hosting on EC2 ensures that the Ren4u website is always available to users with minimal downtime, backed by AWS's globally reliable cloud infrastructure.
2. **Improved Performance and Speed:**
   By using optimized web servers (NGINX/Apache) and optional CloudFront CDN integration, website load times are reduced significantly, offering a fast and smooth user experience.
3. **Stronger Security Posture:**
   Security Groups, SSH key-based access, HTTPS encryption, and regular monitoring together provide a hardened security environment, safeguarding user interactions and company assets.

- **Step-by-Step Guide:**

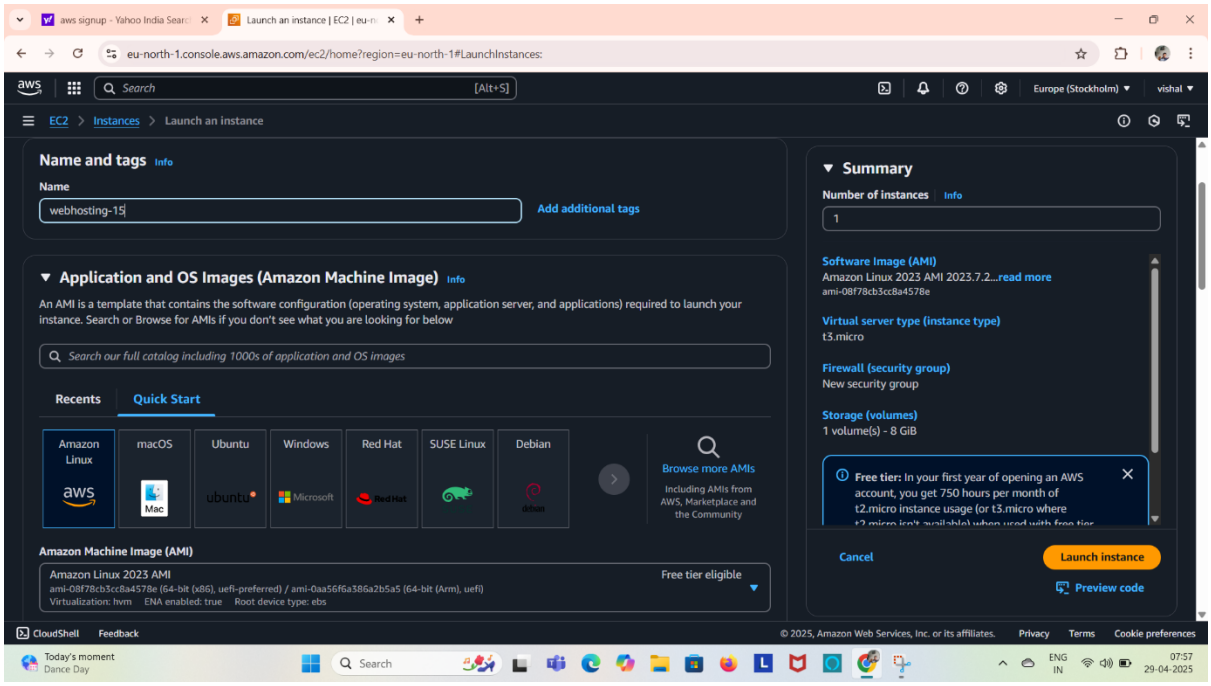
1. Open the AWS Management Console



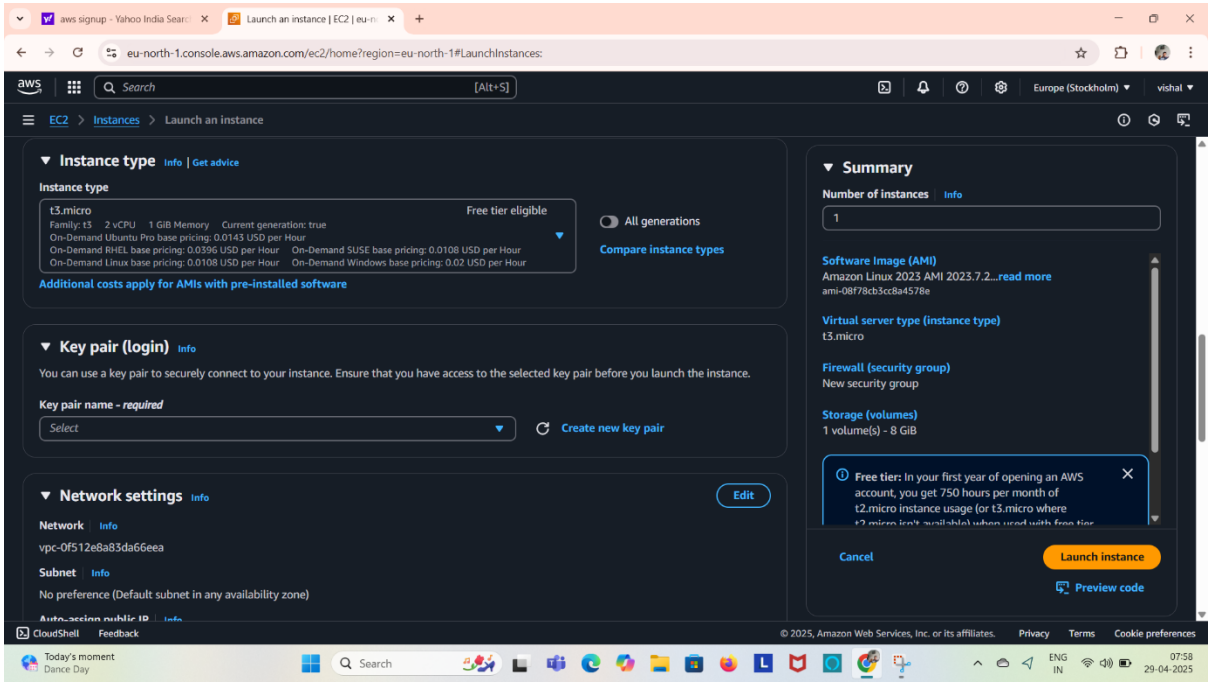
2. Navigate to EC2 under the Services section



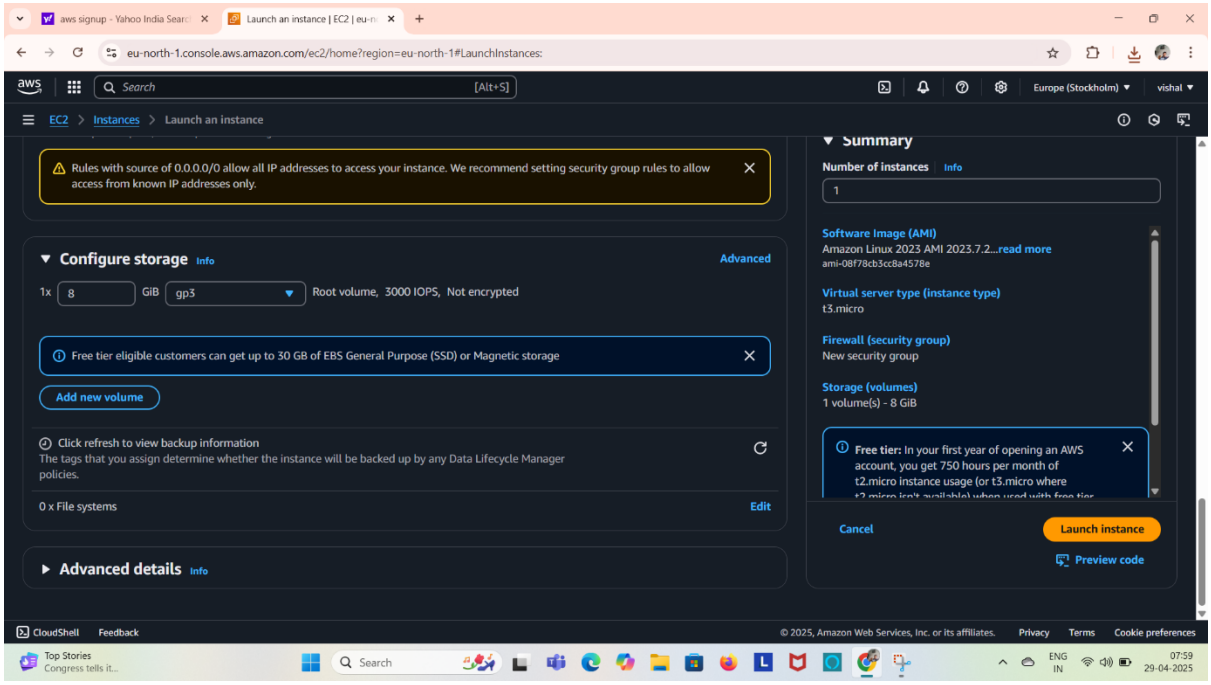
3. Choose an Amazon Machine Image (AMI), like Amazon Linux



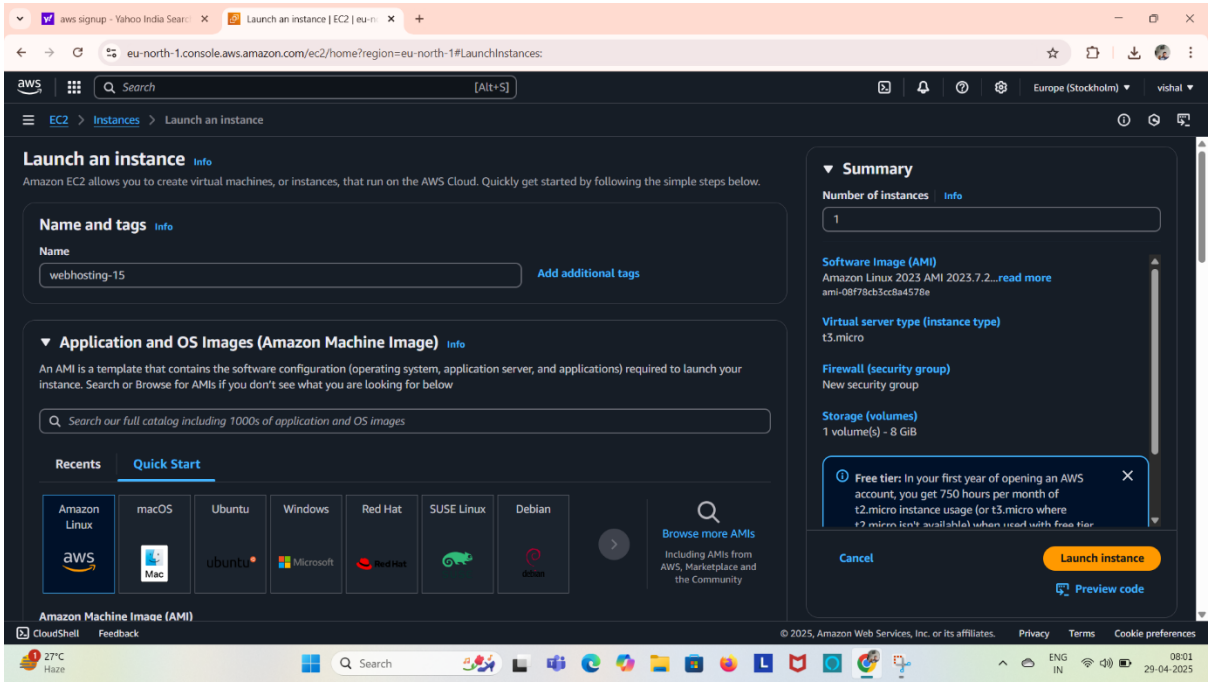
4. Choose an instance type



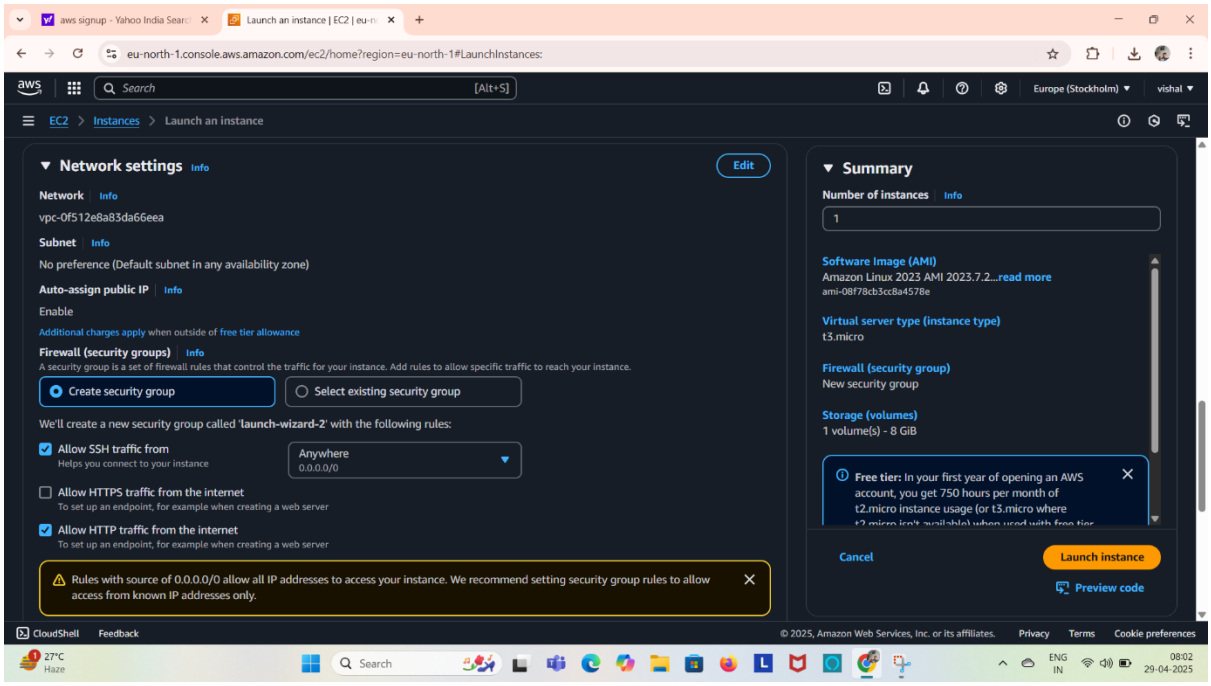
5. After creating Add storage



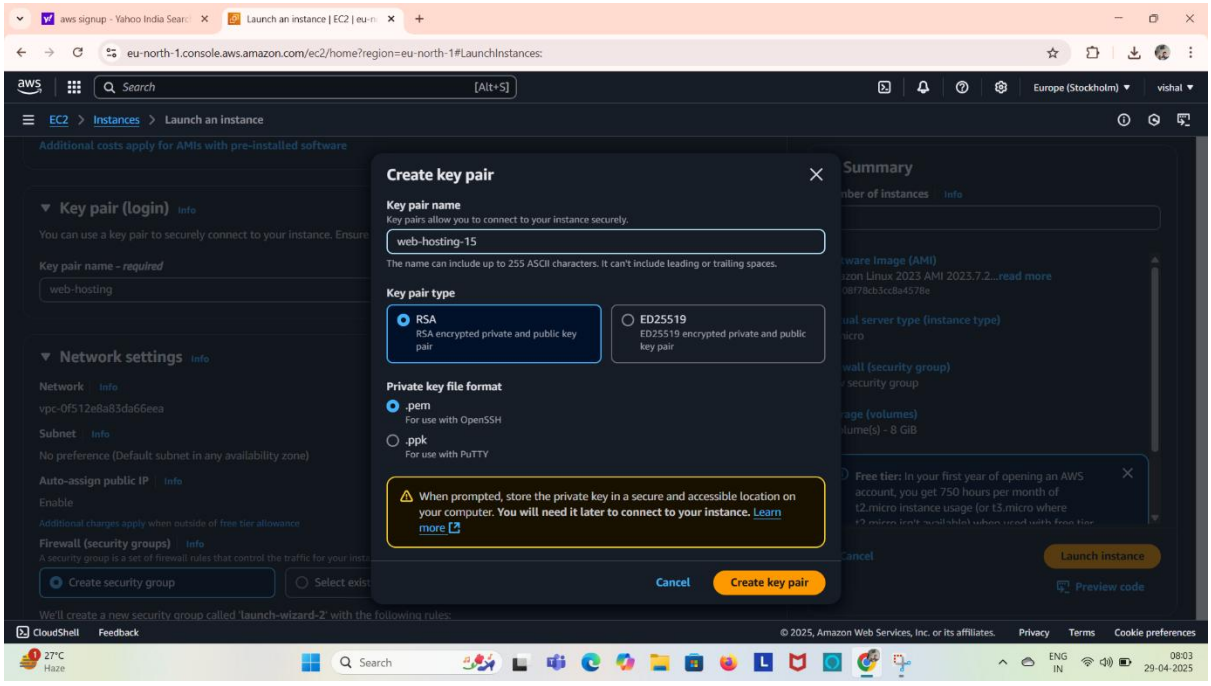
6. Add Tag and Name



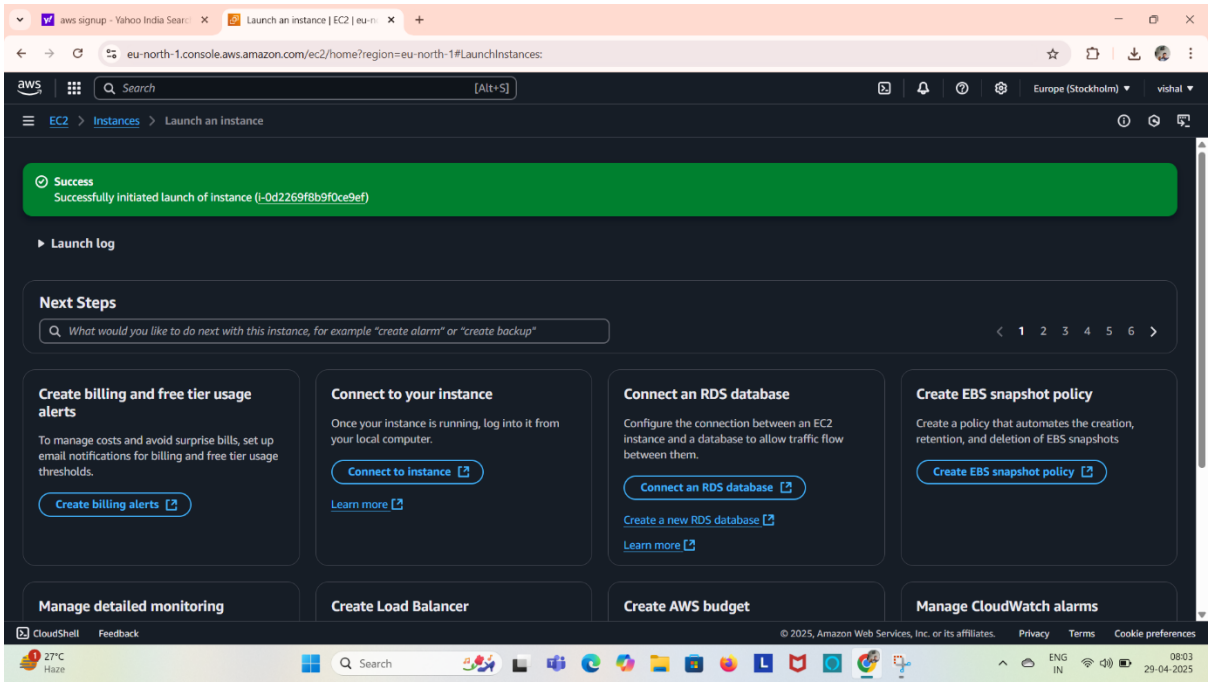
7. Security Group: Allow HTTP (port 80) and SSH (port 22)



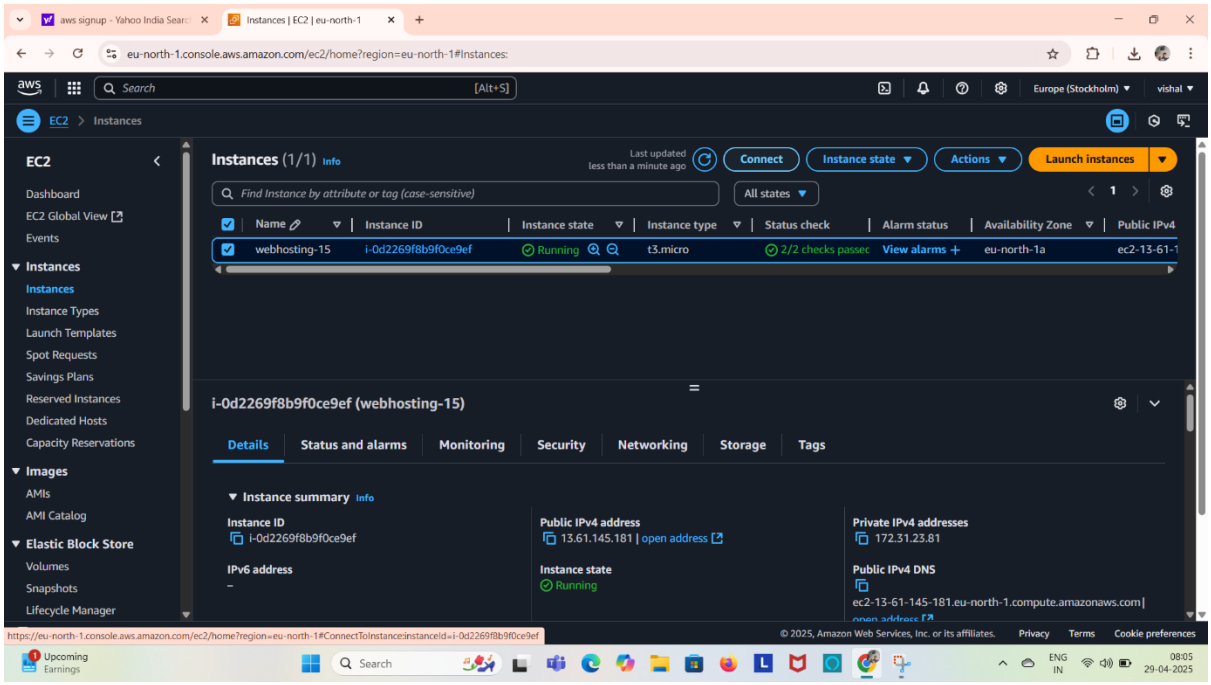
8. Download Key Pair (.pem) file



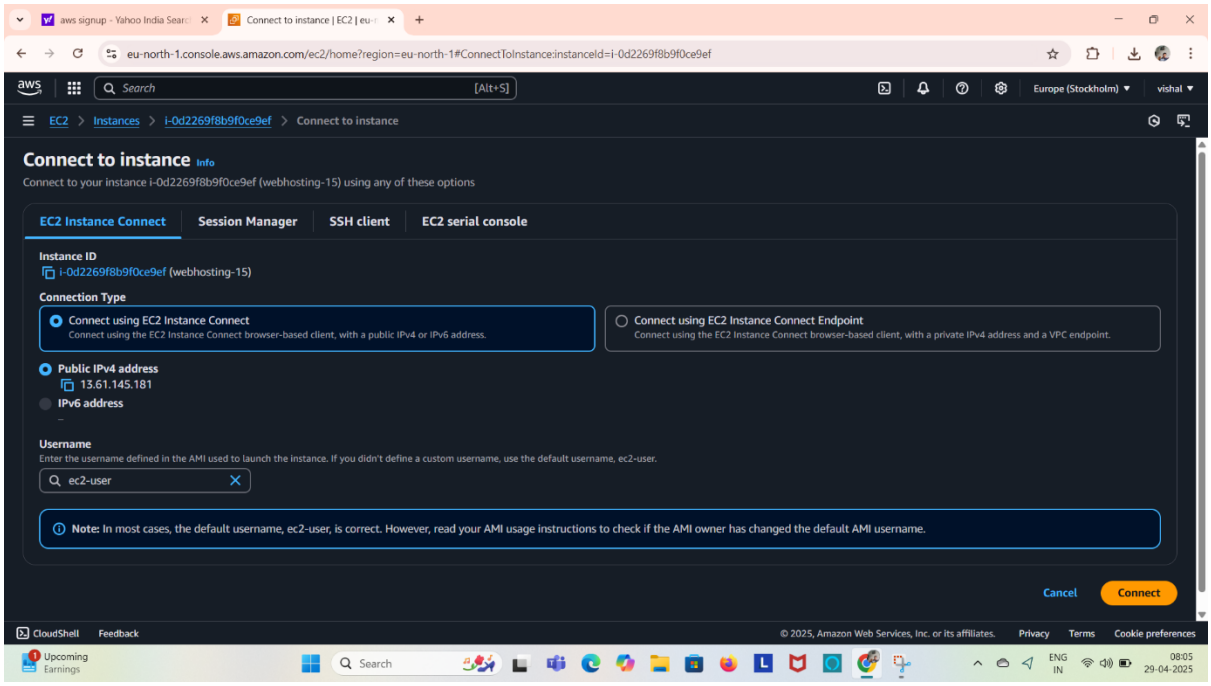
9. Successfully Created to EC2 Instance.



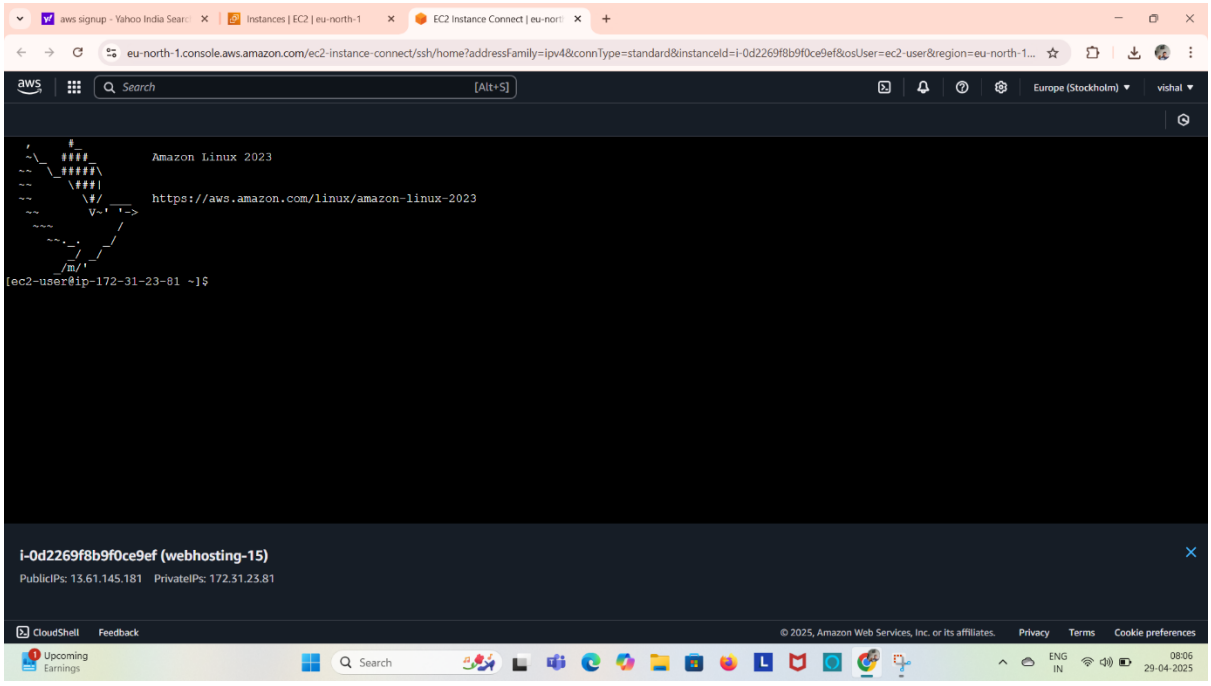
10. Connect to EC2 Instance.



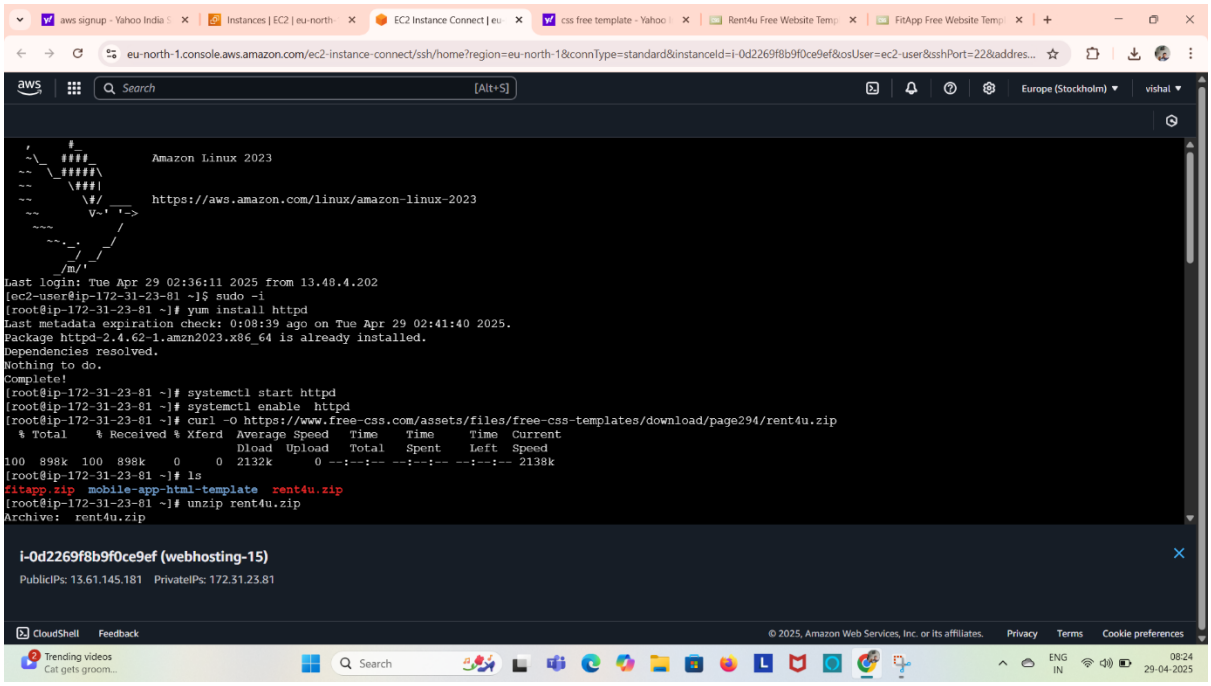
11.Click on Connect Option



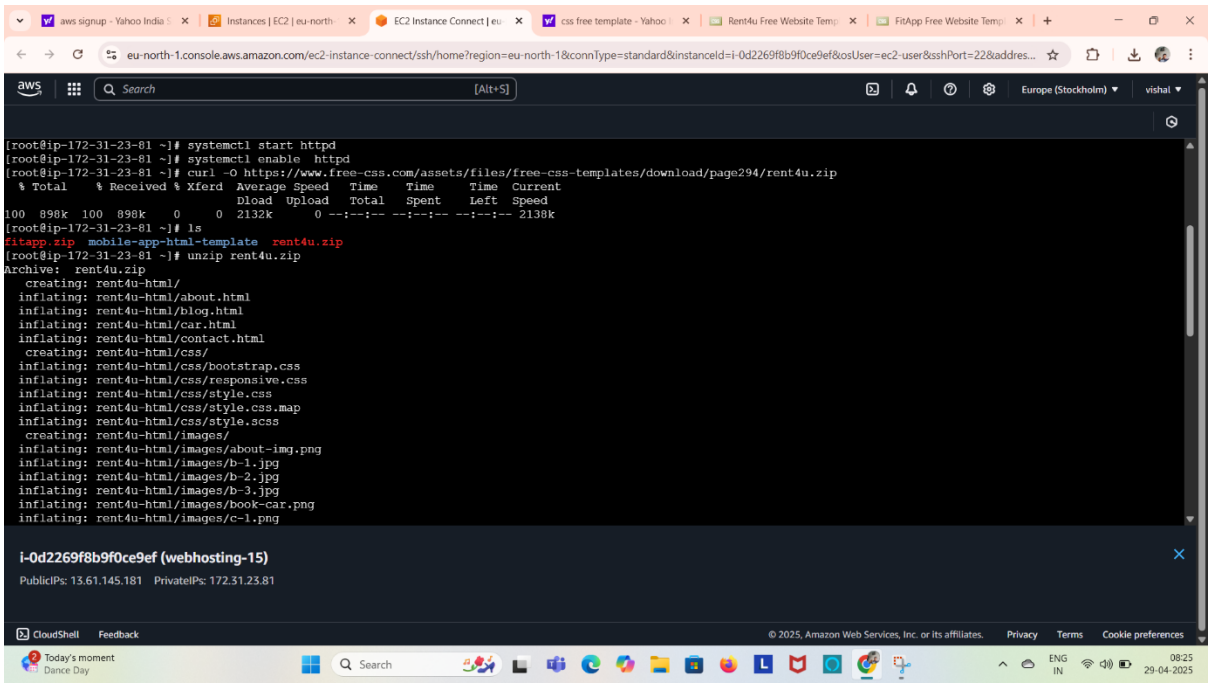
12.Connect Successfully



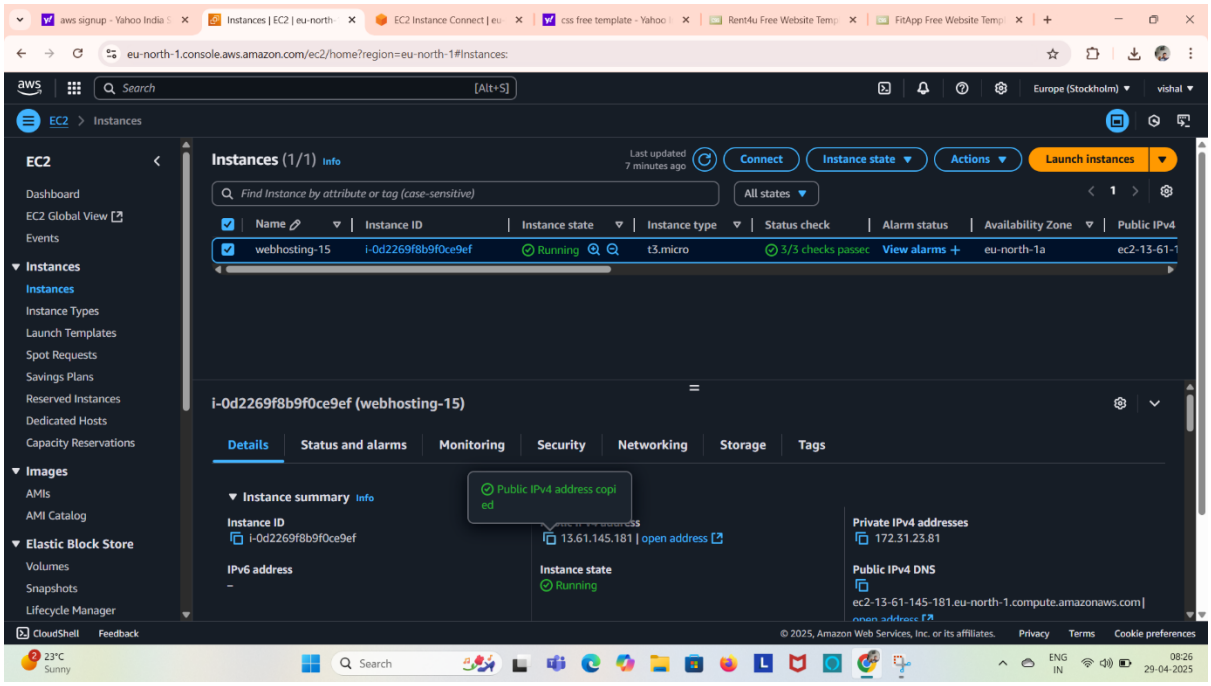
13. Go from local user to root user & Install httpd service.



14.Download project file using Curl -O & Unzip the Downloaded File

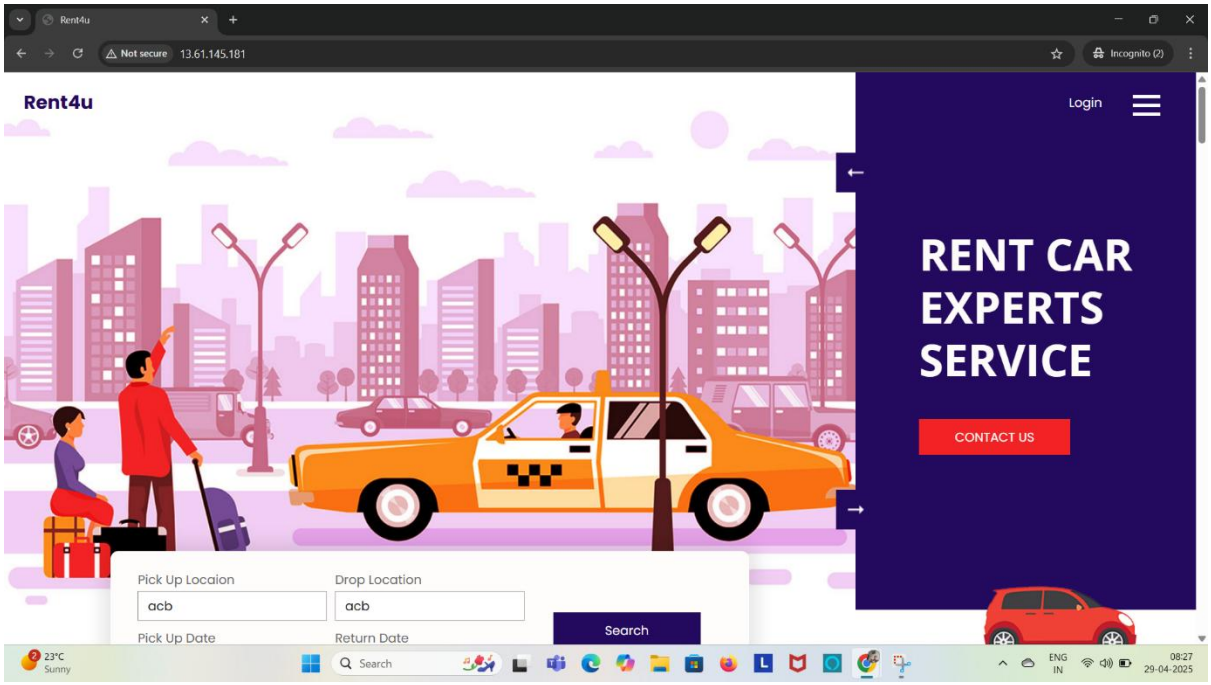


15. Test your Website Open Your browser

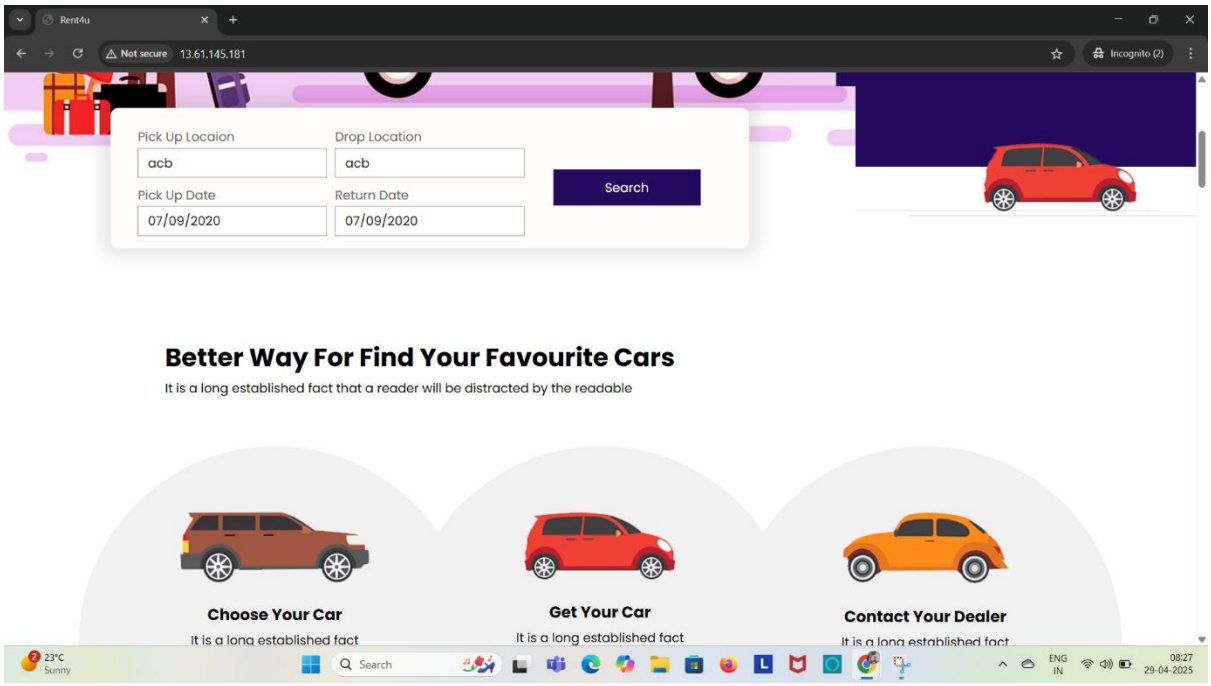


- **Web Pages:**

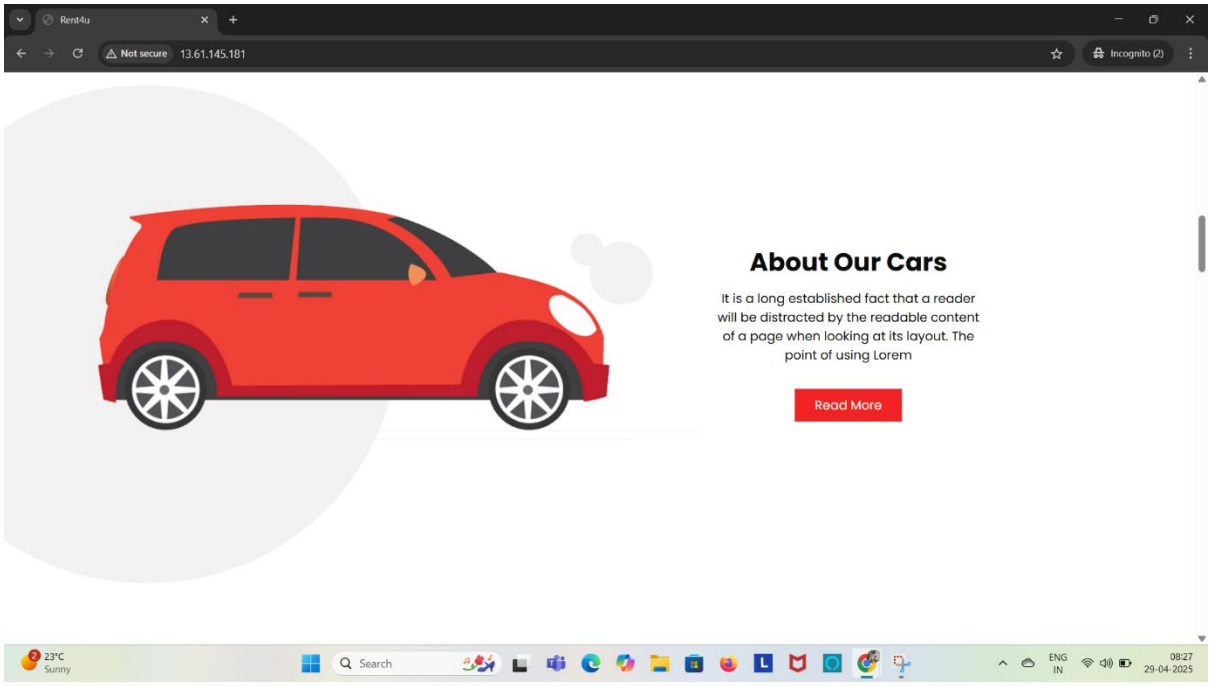
1. Home Page :



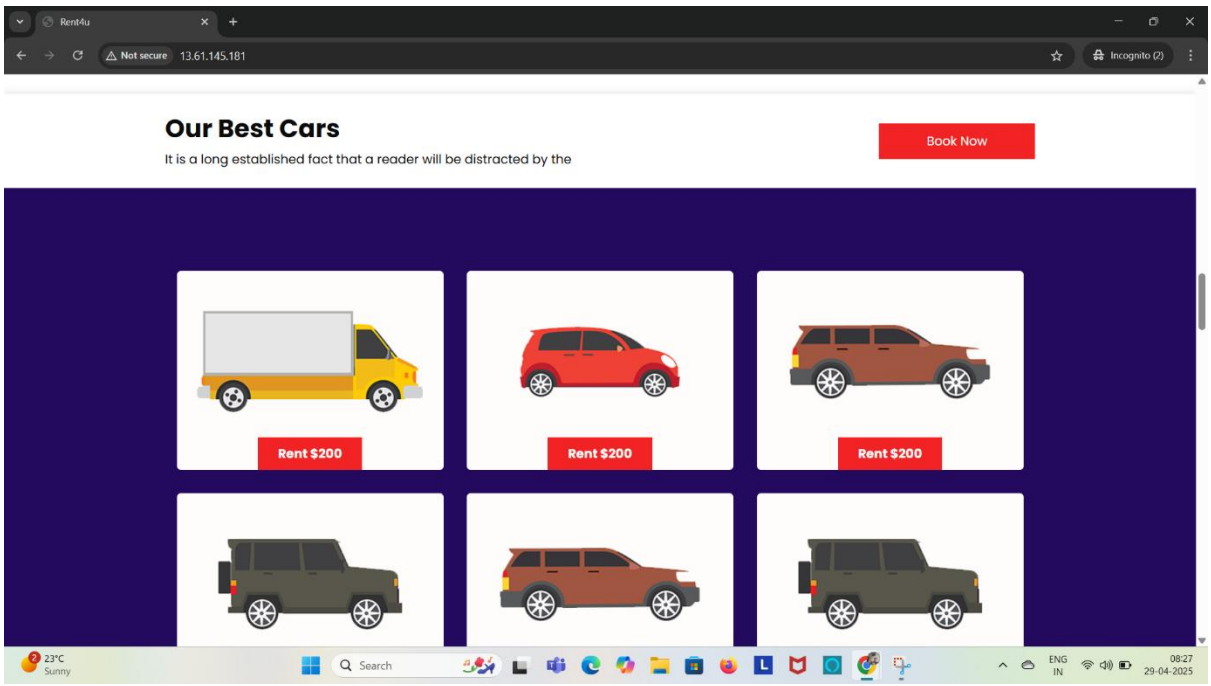
2. Search Page :



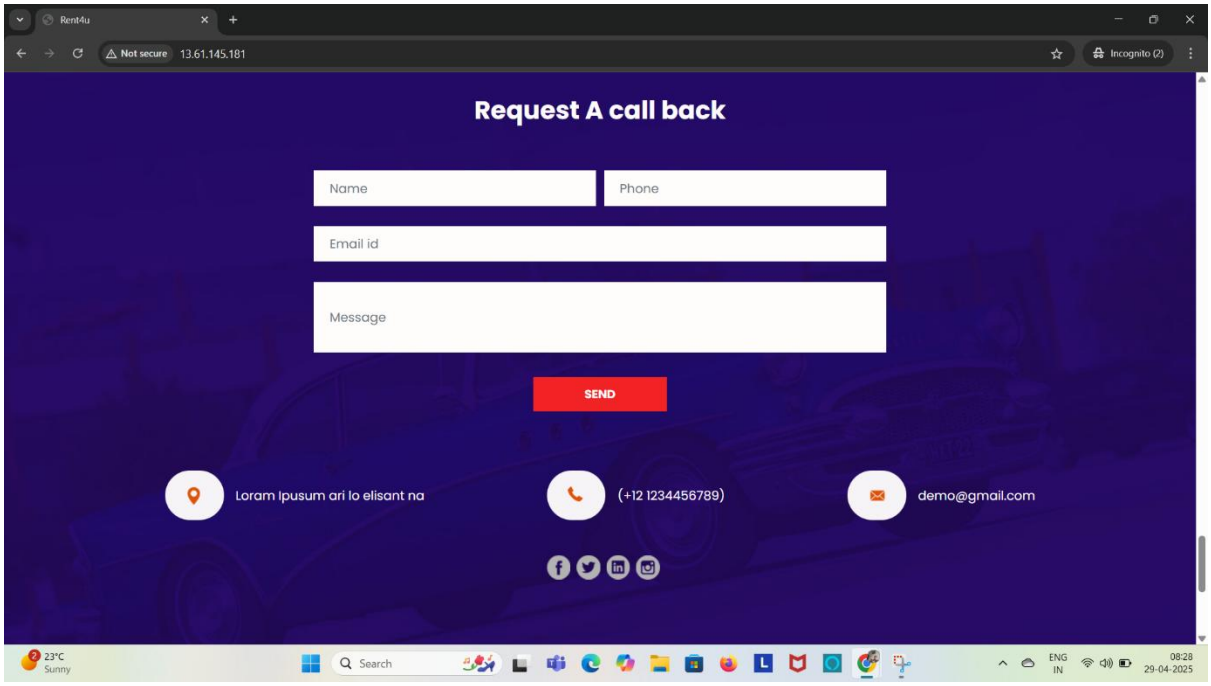
3. About Page:



4. Our Best Cars Page:



5. Conatct Page:



- **Summary:**
- Ren4u’s static website is hosted using Amazon EC2, leveraging AWS’s secure and scalable cloud infrastructure to deliver reliable and high-performance service.The EC2 instance, combined with Elastic IP, EBS storage, and Route 53 DNS management, ensures that the website remains consistently accessible and fast-loading for users worldwide.
- Security best practices, including Security Groups, SSH key authentication, and SSL/TLS encryption, safeguard the website against external threats. Backup strategies through EBS snapshots and AMI creation provide strong disaster recovery options, ensuring business continuity.