

# TeamForge: An AI-Powered Platform for Hackathon Discovery and Team Collaboration

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## 1. Introduction

In today's fast-paced tech ecosystem, hackathons have emerged as critical platforms for innovation, collaboration, and skill development. However, discovering the right hackathon and forming a competent, like-minded team can be a significant challenge for developers and enthusiasts. To address this, **TeamForge** was conceptualized as a comprehensive platform that streamlines the hackathon experience from start to finish. TeamForge is a web-based application that leverages modern web technologies and artificial intelligence to connect developers with relevant hackathons and potential teammates. Whether you're a seasoned coder or a first-time participant, TeamForge simplifies your hackathon journey with features like real-time hackathon listings, AI-powered team matching, developer profile showcasing, and integrated collaboration tools. By integrating multiple AWS services and a robust tech stack, the platform aims to be a one-stop destination for hackathon discovery, preparation, and team formation.

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## 2. Objective

The objective of the TeamForge project is to build a feature-rich, AI-powered web application that enhances hackathon participation by streamlining team formation, event discovery, and collaboration. The key goals of the platform include:

- **Hackathon Discovery:**  
Enable users to find and filter upcoming hackathons based on criteria such as tech stack, location, and personal interests.
- **AI-Based Team Matching:**  
Use NLP and custom algorithms to match users with compatible teammates based on skills, experience level, and preferences.
- **Developer Profile Showcasing:**  
Allow users to create detailed profiles highlighting GitHub repositories, technical skills, past projects, and hackathon experience.
- **Live Hackathon Tracking:**  
Provide real-time updates on registration deadlines, event schedules, and submission timelines to keep

users well-informed.

- **Collaboration Tools Integration:**  
Offer built-in chat and planning features for smooth team communication and task coordination.
  - These features work together to help developers and innovators participate in hackathons more effectively, find ideal teammates, and bring their ideas to life.
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## 2. Features

The application includes the following major features:

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### **Hackathon Finder**

Users can explore and filter upcoming hackathons based on multiple parameters like tech stack, region, domain, and interests to discover events that suit their goals.

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### **AI Team Matcher**

A custom-built AI engine analyzes user profiles and preferences using NLP and algorithmic matching to suggest ideal teammates for upcoming hackathons.

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### **Developer Profiles**

Users can create personalized profiles showcasing:

- GitHub repositories
- Technical skills
- Hackathon experience
- Project history

This helps others understand their strengths and potential for collaboration.

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### **Live Hackathon Tracker**

Provides real-time tracking and reminders for:

- Registration deadlines
- Event timelines
- Submission dates

This ensures users stay updated and never miss a hackathon milestone.

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### **Collaboration Tools**

Includes built-in tools for seamless team coordination:

- Real-time chat

- Task planning features

These tools help teams manage communication and workflows efficiently during hackathons.

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## 4. Technologies Used

### Frontend:

- **React.js** – For building dynamic and responsive user interfaces
  - **Chakra UI** – For clean, accessible, and customizable UI components
  - **Axios** – For making HTTP requests to interact with backend APIs
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### State Management:

- **React Context / Redux (TBD)** – For managing application state across components
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### Backend:

- **Node.js & Express.js** – RESTful API server to handle authentication, matching logic, and data processing
  - **Firebase** – NoSQL database used to store user profiles, preferences, and hackathon data
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### Authentication & Access Control:

- **AWS Cognito** – Handles user authentication and secure login
  - **AWS IAM** – Manages access control and permissions for various AWS services
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### Cloud Services (AWS):

- **Amazon S3** – Stores user-uploaded profile pictures and related assets
  - **AWS SES (Simple Email Service)** – Sends signup confirmation and notification emails
  - **AWS Amplify** – Hosts the frontend application for fast and reliable deployment
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## 5. Application Workflow

The following section outlines the end-to-end workflow of the TeamForge platform, with a focus on how AWS services are integrated to power its core functionalities.

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### 1. AWS Services Integration

#### Authentication and User Management

- **AWS Cognito handles secure user sign-up, login, and session management.**
- **Once authenticated, users gain access to TeamForge's personalized dashboard and features.**

**Users (4) Info**

View, edit, and create users in your user pool. Users that are enabled and confirmed can sign in to your user pool.

User name	Email address	Email verified	Confirmation status	Status
3498b4b8-40f1-70fb-50...	arshulamin@gmail.com	No	Confirmed	Enabled
74083488-c0f1-7096-c44...	shubhammalhotra95728@...	No	Confirmed	Enabled
84e834c8-d001-70f9-232...	arsulamin00@gmail.com	No	Confirmed	Enabled
d4289458-0031-708f-2d...	arsulamin0@gmail.com	No	Confirmed	Enabled

**Import users (0) Info**

View and create user CSV import jobs. Amazon Cognito can import users into this user pool from a specially-formatted CSV file. You can't import user passwords.

Job name	Status	Imported users	Skipped users	Failed users	CloudWatch logs	Created time
No user import jobs found						

## Storage and File Handling

- **AWS S3 stores user profile images and static assets.**
- **Profile pictures uploaded by users are securely stored and fetched via S3 links.**

**General purpose buckets (3) Info**

All AWS Regions

Buckets are containers for data stored in S3.

Name	AWS Region	IAM Access Analyzer	Creation date
amplify-teamforge-dev-4391d-deployment	US East (N. Virginia) us-east-1	View analyzer for us-east-1	May 1, 2025, 10:31:46 (UTC+05:30)
teamforgedata	US East (N. Virginia) us-east-1	View analyzer for us-east-1	April 24, 2025, 16:05:48 (UTC+05:30)
user-profile-pics-arsulamin0014391d-dev	US East (N. Virginia) us-east-1	View analyzer for us-east-1	May 1, 2025, 16:23:31 (UTC+05:30)

## Email Confirmation

- AWS SES (Simple Email Service) is used to send verification and notification emails during signup and other interactions.

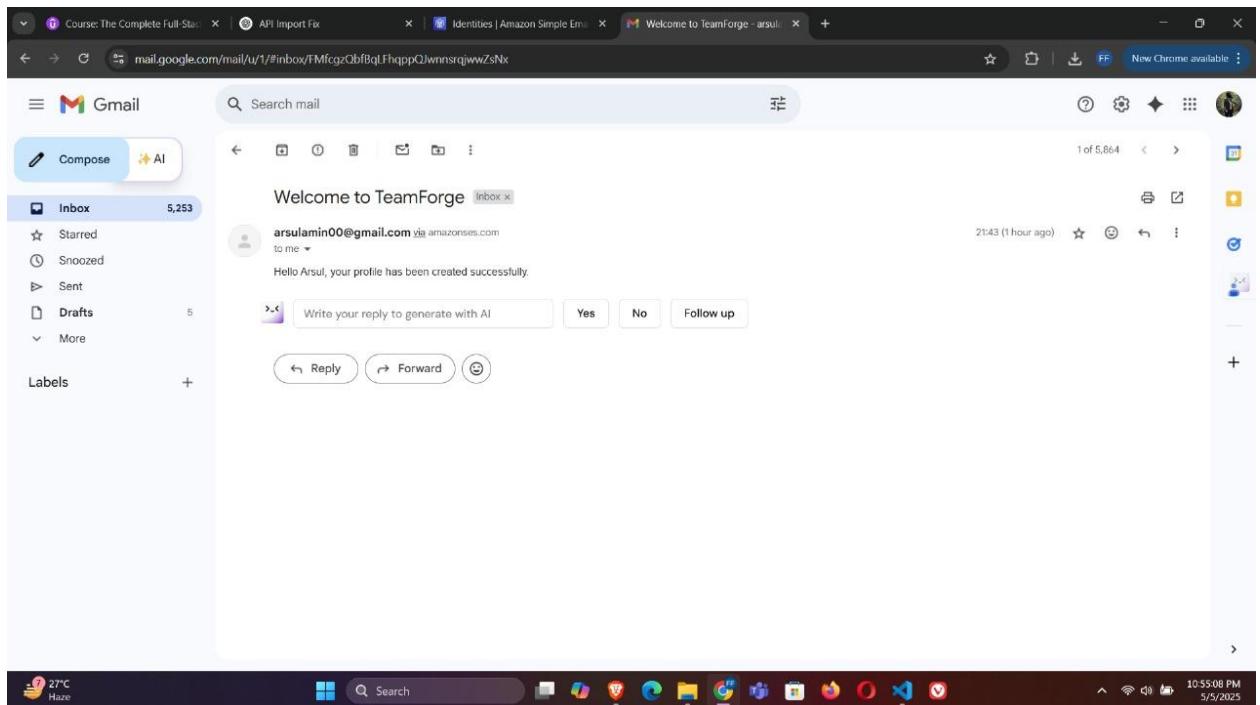
### Chatbot and AI Services

- A custom AI-based team matching system is integrated within the platform.
- Backend logic for matching and chat services runs on AWS Lambda for scalability and low latency.
- AWS Bedrock could be optionally used to power natural language processing (NLP) functionalities for smarter team recommendations.

The screenshot shows the AWS Simple Email Service (SES) Identity Management interface. On the left, a sidebar navigation includes 'Get set up', 'Amazon SES Configuration' (with 'Identities' selected), 'WorkMail', and 'Virtual Deliverability Manager'. The main content area displays the 'Identities' section with a table:

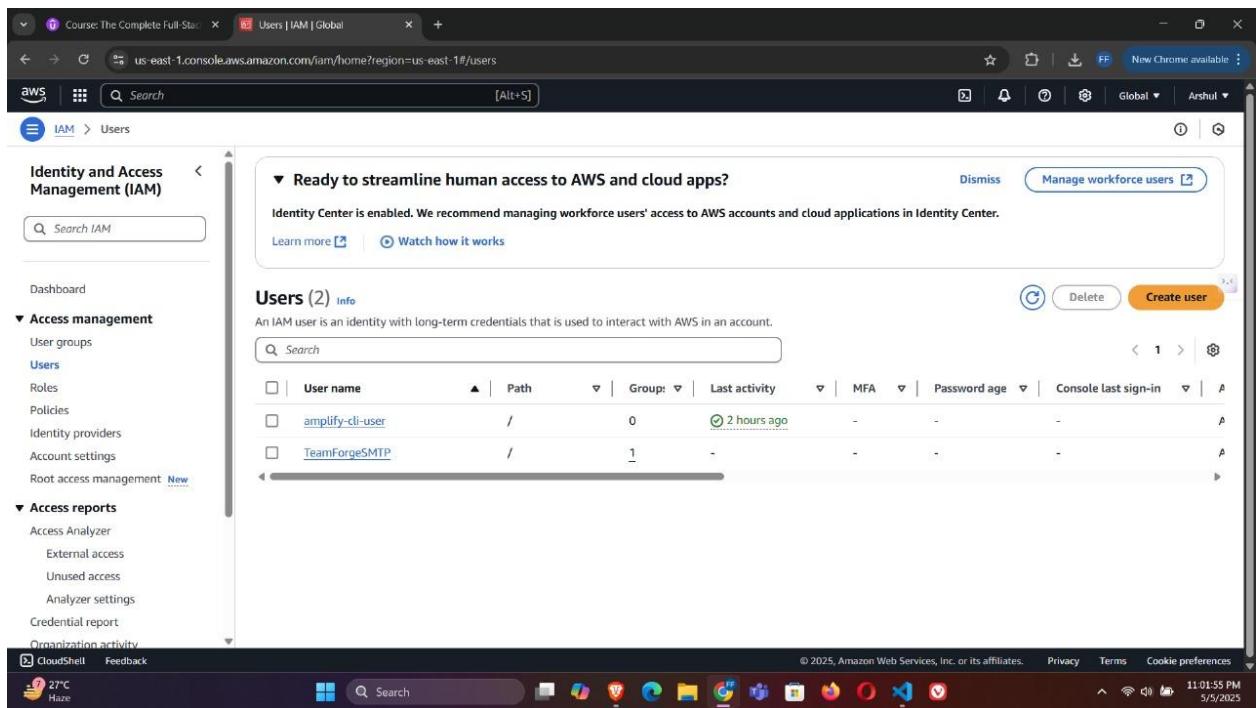
Identity	Identity type	Identity status
arslamin0@gmail.com	Email address	Verified
arslamin00@gmail.com	Email address	Verified

Below this, a 'Recommendations' section is shown with the message: 'No recommendations found. Select up to 10 verified domain identities and select Check for recommendations on the Identities table above.' At the bottom right of the page, there are links for 'Privacy', 'Terms', and 'Cookie preferences'.



## Access Control and Roles

- AWS IAM (Identity and Access Management) ensures secure and role-based access to AWS resources across the application.**



## Hosting

- The entire frontend and backend system is deployed and managed via AWS Amplify for seamless CI/CD and scalable hosting.**

The screenshot shows the AWS Amplify App Overview page for the 'TeamForge' app. The main header includes the AWS logo, 'All Apps', 'Services', a search bar, and navigation links for 'Support' and 'Docs'. Below the header, the app name 'TeamForge' is displayed with its App ID: d27l0964lhmnk5. A sidebar on the left provides navigation links for 'Overview', 'Hosting', and 'App settings'. The central content area is titled 'Get to production' with three numbered steps: 1. Add a custom domain, 2. Enable firewall protections, and 3. Connect new branches. Step 1 has a button to 'Add custom domain'. Step 2 has a button to 'Enable firewall'. Step 3 has a button to 'Connect a new branch'. Below these steps is a section for 'Branches' with one entry: 'main' (Deployed). To the right of the branches is a note about 'Production branch' and a link to 'Auto-build /TeamForge:main'. At the bottom of the page, there's a footer with links for 'CloudShell', 'Feedback', and weather information (28°C, Haze). The footer also includes standard browser controls like back, forward, search, and tabs.

## 5. Screenshots and UI

### Landing Page

The screenshot shows the 'TeamForge' landing page. The page has a dark header with the 'TeamForge' logo, 'Sign Up', and 'Login' buttons. The main content area features a large 'TeamForge' logo at the top. Below it is a mission statement: 'Find the perfect teammates and hackathons to bring your ideas to life. Collaborate, build, and win—together.' A prominent orange 'Get Started' button is located below the mission statement. To the right of the text is a large, high-angle photograph of several people working on laptops and tablets at a wooden desk, surrounded by various office supplies like notebooks, headphones, and cups. The footer of the page includes a Windows taskbar with icons for WhatsApp, File Explorer, and other apps, along with system status indicators like battery level, signal strength, and the date/time (11:35 PM, 5/9/2025).

## Create Profile Section

**Edit Your Profile**

**Profile Picture**  
 Choose File No file chosen  


**Username**  
Arshul

**Bio**  
I am an Hacker

**Hackathons (Past Participation)**  
SIH 2022

**Tech Stack (Skills)**  
Node.js

**Update Profile**



28°C Haze 11:04:00 PM 5/9/2025

## HomePage

**TeamForge** Dashboard Hackathons Profile Logout

Welcome, Arshul!

Glad to have you onboard! 🎉

Let's find the perfect hackathon for you! 🚀

**Explore Hackathons**

**Find My Team**

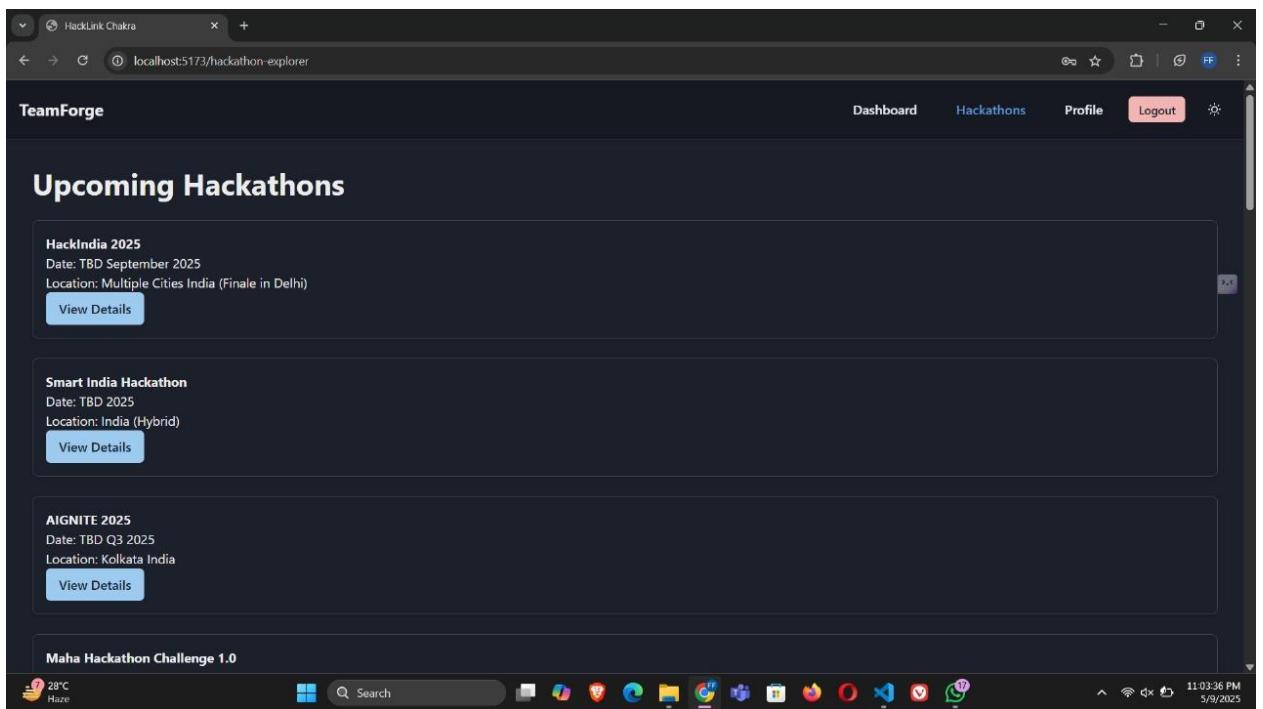
**Potential Team Matches** ⚡

 Shubham Malhotra	Skills: CSS, JavaScript, Node.js
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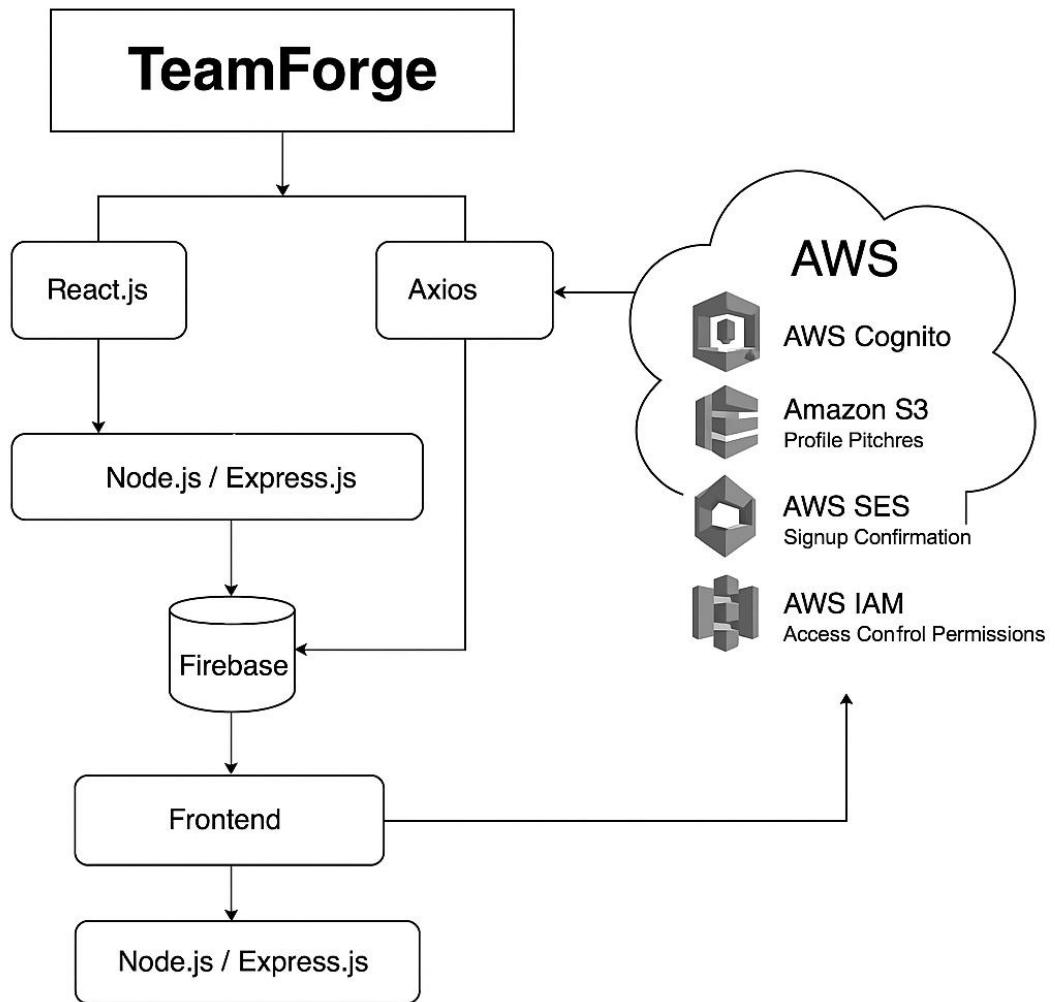


28°C Haze 11:03:21 PM 5/9/2025

## Hackathon Section



## 6. Architecture Diagram



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## 7. Conclusion

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The TeamForge project successfully delivers an AI-powered platform tailored for hackathon enthusiasts, streamlining the journey from hackathon discovery to real-time team collaboration. By integrating modern frontend technologies with a robust AWS-backed infrastructure, the platform offers secure authentication, real-time updates, and intelligent teammate recommendations.

With its intuitive interface, powerful AI team matcher, and integrated collaboration tools, TeamForge empowers developers to focus more on innovation and less on logistics. The strategic use of AWS services like Cognito, Lambda, S3, and Amplify ensures the platform is scalable, efficient, and reliable.

In conclusion, TeamForge stands as a comprehensive solution that enhances the hackathon experience, fosters innovation, and promotes effective teamwork within the developer community.

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