OpenHack - Project Report

Team no. 12

Members

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App URL

http://54.69.212.178:3000/

GitHub URL

https://github.com/aditya-doshatti/CMPE275-Lab2/tree/master/FinalProject

Build instructions

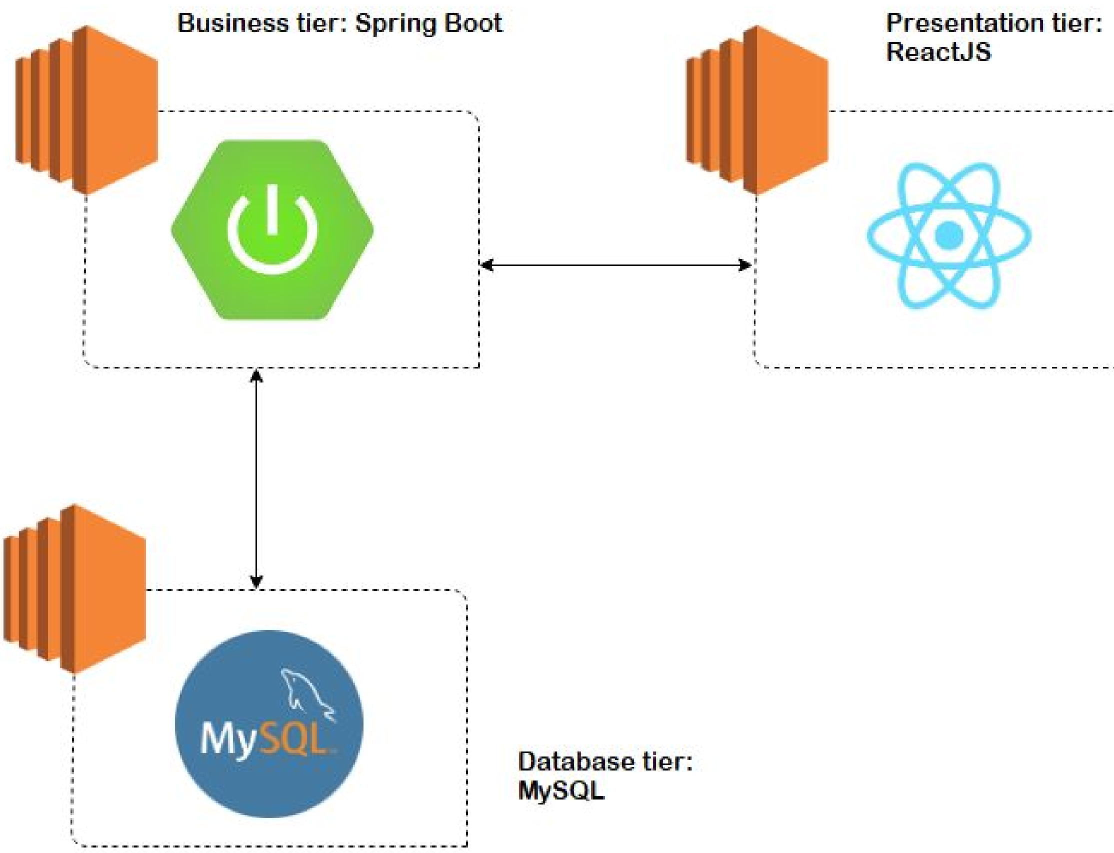
1. Clone above GitHub repo:
   git clone https://github.com/aditya-doshatti/CMPE275-Lab2.git
2. Go to *./CMPE275-Lab2/FinalProject/* directory where pom.xml is present execute : mvn clean install compile
3. This will generate .jar file *~/.m2/repository/edu/sjsu/cmpe275/openhack/0.0.1-SNAPSHOT/openhack-0.0.1-SNAPSHOT.jar*
4. To start the Spring application just execute *java -jar <complete file location>*
5. From the frontend folder, execute *npm install* followed by *npm run* to start the development frontend server.

Introduction

OpenHack is an online hackathon management service to create and organize hackathon events. The services is developed as a part of term-project for course CMPE 275 under the guidance of Prof Charles Zhang.

High level and component level design

Architecture diagram



The service is followed by MVC architecture divided into 3 tiers. All the three tiers are deployed as an EC2 instance in AWS cloud.

Presentation tier (Frontend)

1. Implemented using the **ReactJS**
2. Provides browser-based front-end to end-user to interact with the functionalities
3. Listens on **port 3000**

Business tier (Backend)

1. Implemented using the Spring Boot framework and Java version 8
2. Provide the business logic as a set of REST controllers - required to handle requests from the presentation tier
3. Communicates with the Database tier via JPA 2 API calls (uses Hibernate's MySQL5InnoDBDialect)

4. Uses Object Relational Mapping (ORM) provided by the Hibernate framework to persist user, hackathon and all relevant data
5. Business tier consists of a Spring Boot application divided into the following components:
    a. Controllers: REST controllers to receive requests from the frontend
    b. Data models: represent the entities (tables) to be stored in the database
    c. Data repositories: JPA repositories to communicate with the MySQL database
    d. Services: Mediator between the controllers and JPA repositories
6. Listens on **port 8080**

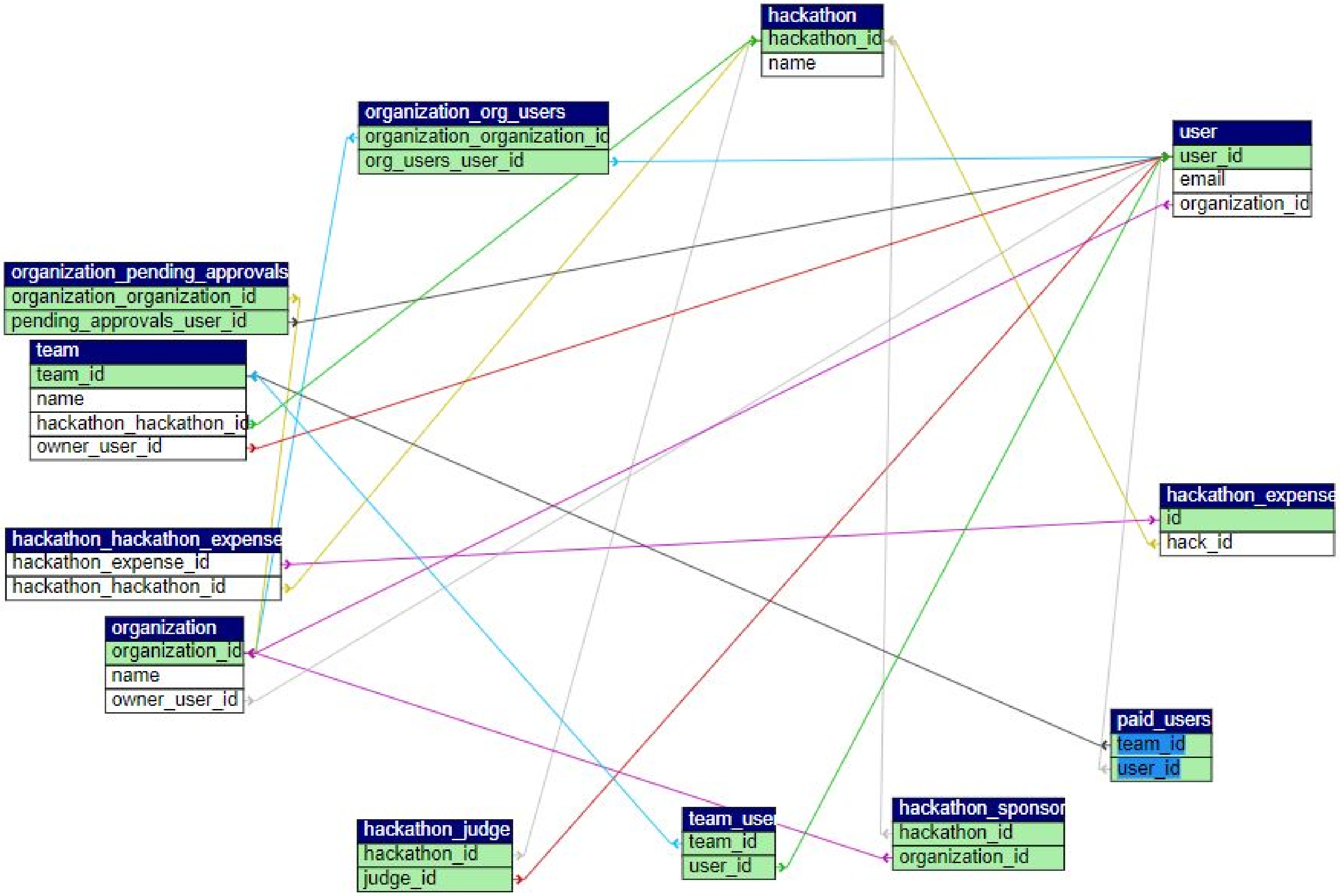
Database tier (Database)

1. Consists of MySQL server (running on **port 3306**) for the storage of data
2. Communicates with the Business tier through JPA 2 calls
3. Deployed as a process on AWS EC2 instance
4. Listens on **port 3306**

The presentation tier communicates with the business tier through a set of REST API calls over HTTP port 8080. Based on the user actions on the frontend, appropriate REST calls are invoked passing requested parameters to the Spring Boot application running in the business tier.

Database ER Diagram

Note: For Simplicity, we have only included the keys of respective tables.

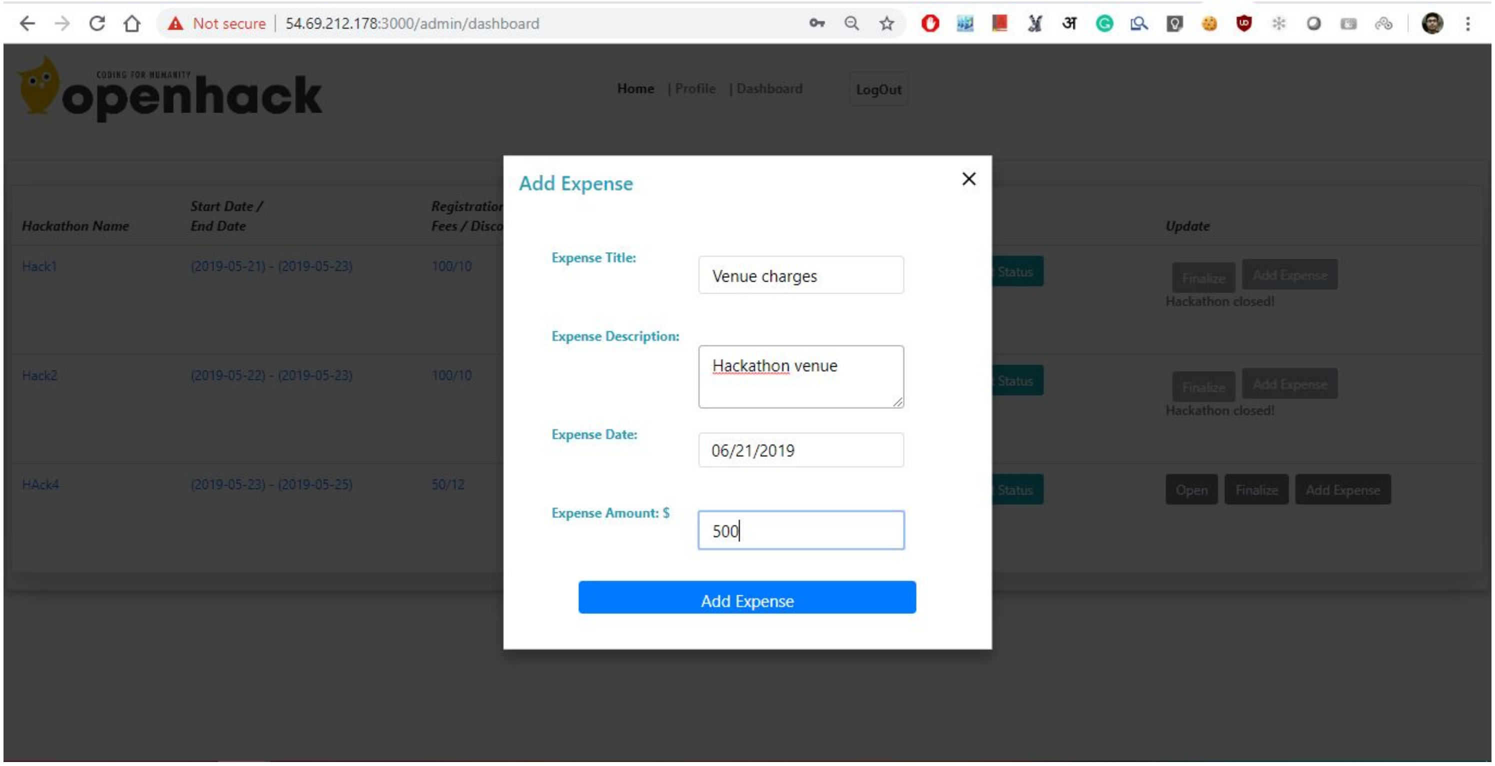


Technology choices

1. **FrontEnd:** ReactJS framework, NodeJS
2. **Frameworks:** Spring Boot framework, Spring MVC, Hibernate framework
3. **Persistence technology:** JPA 2.0
4. **Database technology:** MySQL Server 5.6

Description of features with final screenshots

1. **Bonus features:**
    a. An admin is able to add expenses for a hackathon created by him before it is finalized.
        i. Steps:
            1. Login as admin
            2. Click “View Hackathons” button - displays list of all hackathons
            3. Click “Add Expense” button in the Update column to display expense modal:


Not secure | 54.69.212.178:3000/admin/dashboard
openhack
Home | Profile | Dashboard
LogOut

Hackathon Name	Start Date / End Date	Registratio Fees / Disco		Update
Hack1	(2019-05-21) - (2019-05-23)	100/10	Status	Finalize Add Expense Hackathon closed!
Hack2	(2019-05-22) - (2019-05-23)	100/10	Status	Finalize Add Expense Hackathon closed!
HAck4	(2019-05-23) - (2019-05-25)	50/12	Status	Open Finalize Add Expense

Add Expense

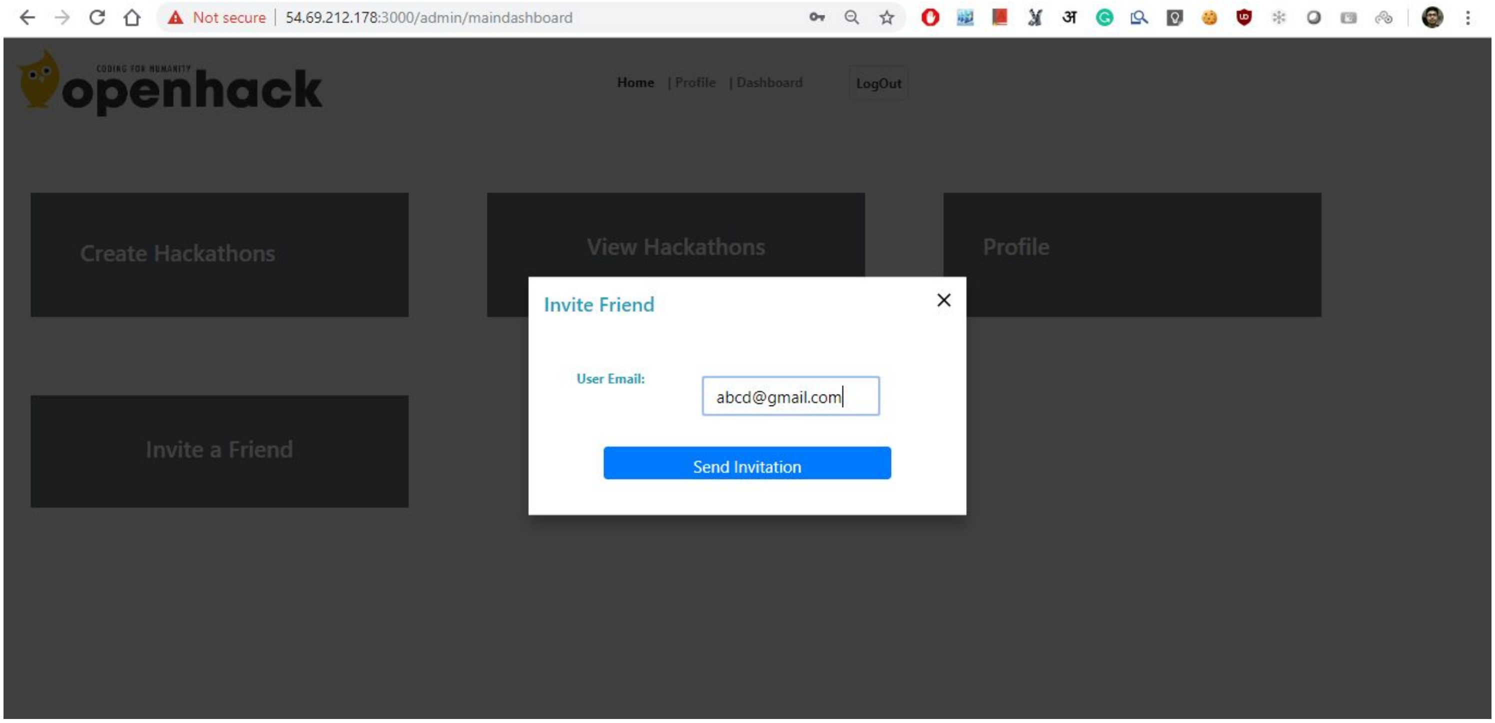
Expense Title: Venue charges

Expense Description: Hackathon venue

Expense Date: 06/21/2019

Expense Amount: $ 500

b. Invite non-members to participate in hackathons
   i. Steps:
      1. Log in to the app
      2. Click the “Invite a Friend” button on the dashboard to open the modal where you can provide the email address of a friend.


Not secure | 54.69.212.178:3000/admin/maindashboard
openhack
Home | Profile | Dashboard
LogOut
Create Hackathons
View Hackathons
Profile
Invite a Friend

Invite Friend

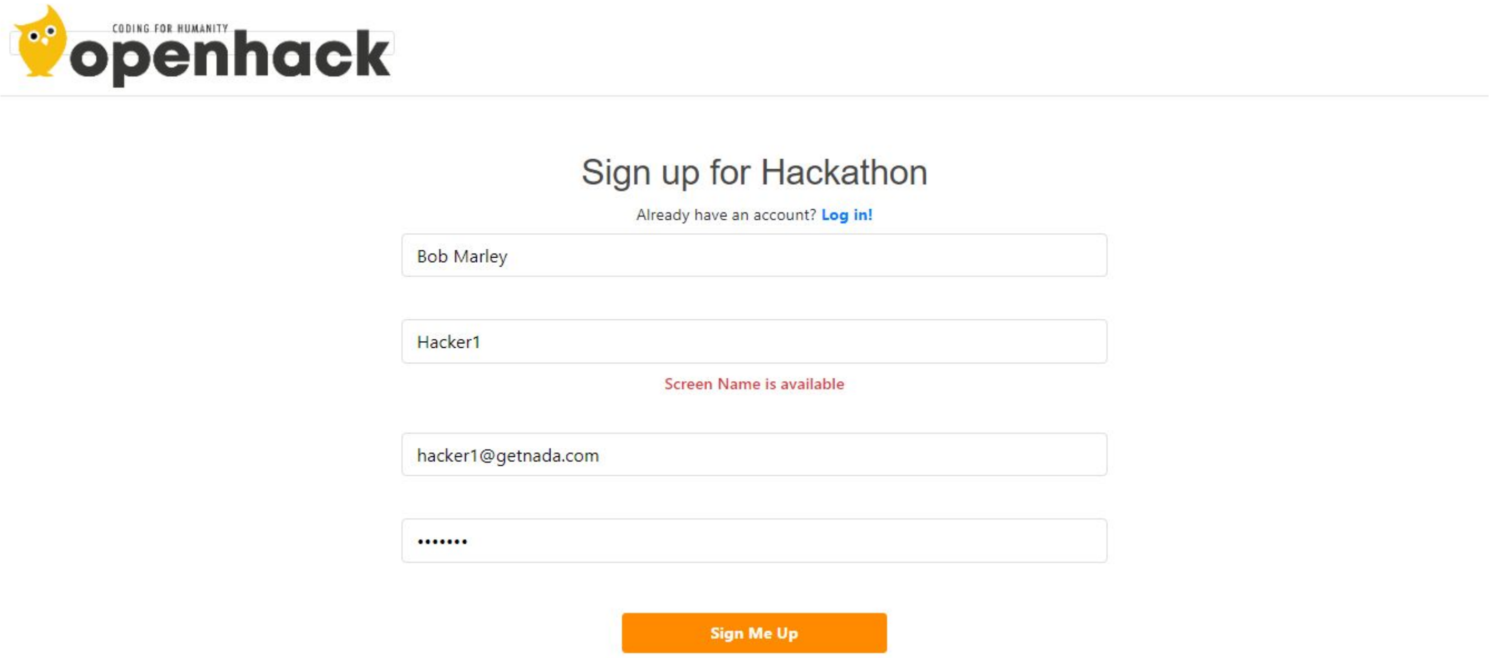
User Email: abcd@gmail.com

2. SignUp

a. A user can sign up using a valid email address. After registration, a verification link is sent to the user to verify the account. User cannot access any services until he/she verifies their email address.

b. A user with @sjsu.edu domain *automatically* assumes the role of an admin while other users become ‘Hackers’.

Signup screen:



CODING FOR HUMANITY openhack

Sign up for Hackathon

Already have an account? Log in!

Bob Marley

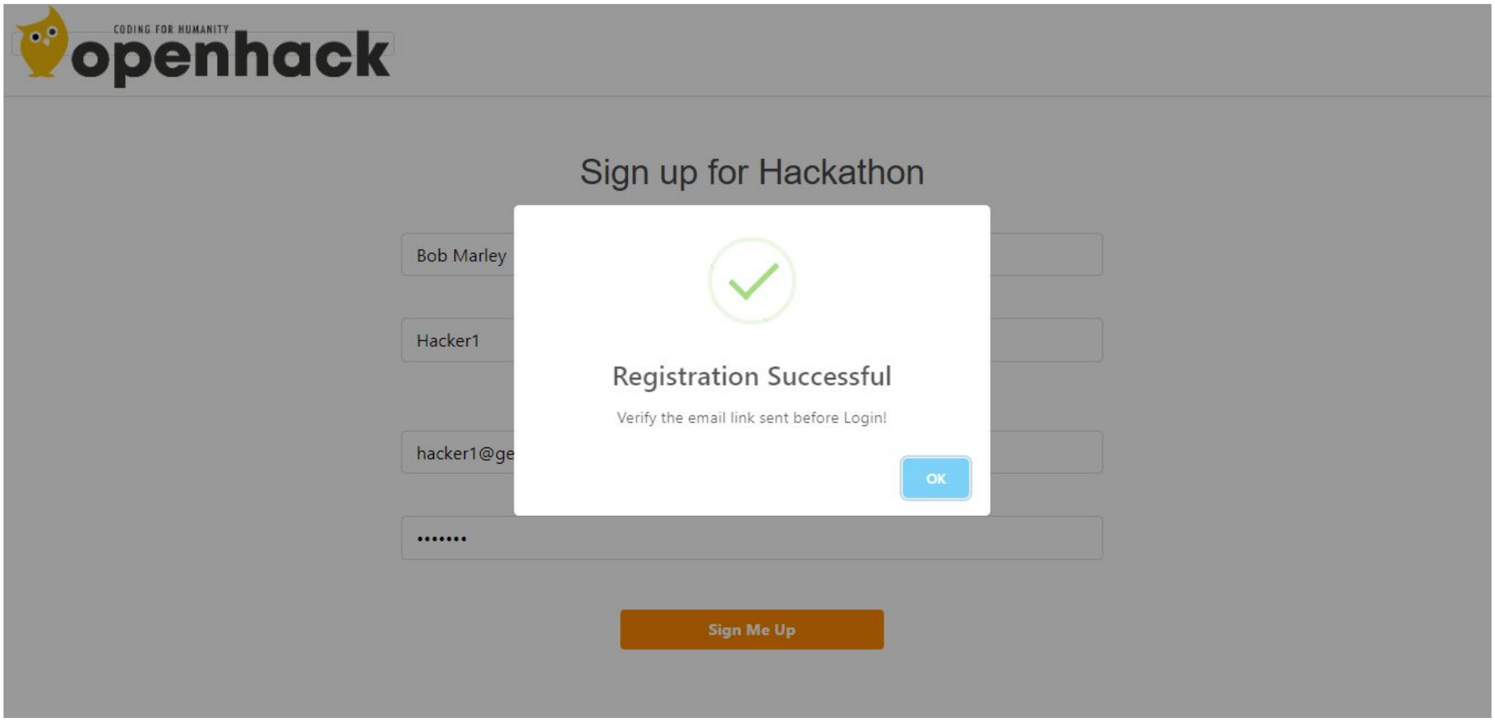
Hacker1

Screen Name is available

hacker1@getnada.com

•••••••

Pre-verification registration screen:



CODING FOR HUMANITY openhack

Sign up for Hackathon

Bob Marley

Hacker1

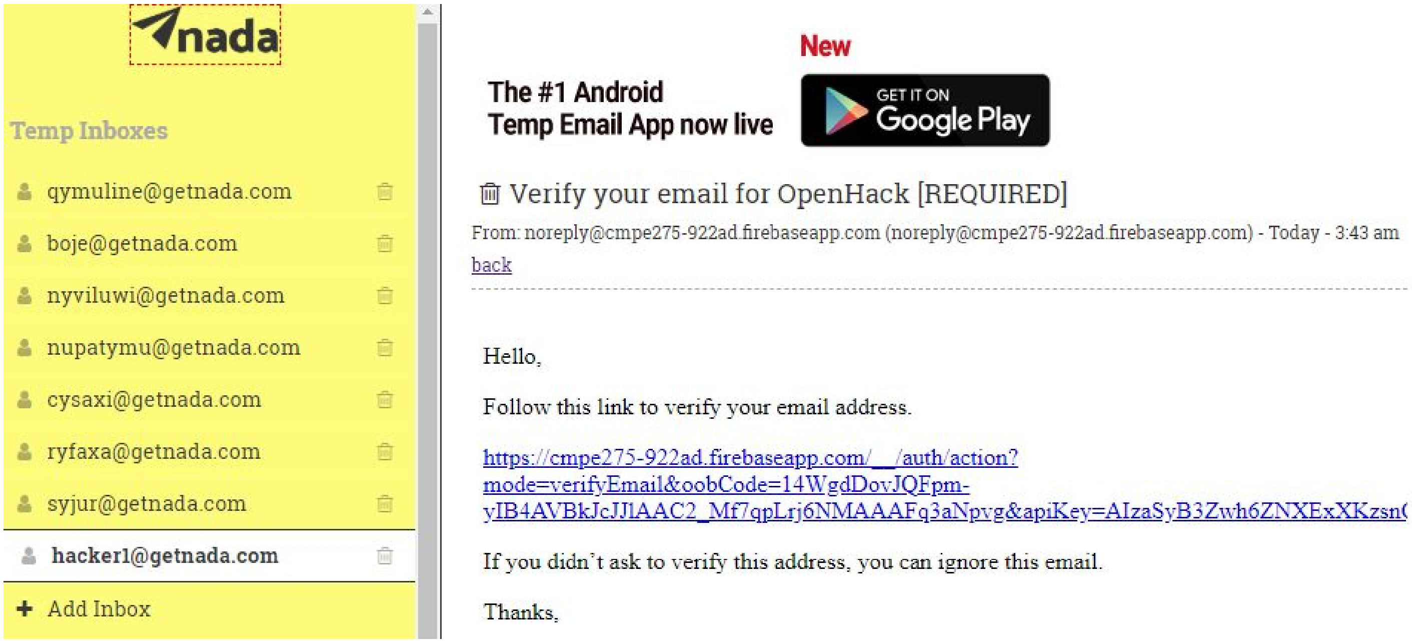
hacker1@ge

•••••••

Registration Successful

Verify the email link sent before Login!

Verification email:



Verify your email for OpenHack [REQUIRED]

From: noreply@cmpe275-922ad.firebaseapp.com (noreply@cmpe275-922ad.firebaseapp.com) - Today - 3:43 am

back

Hello,

Follow this link to verify your email address.

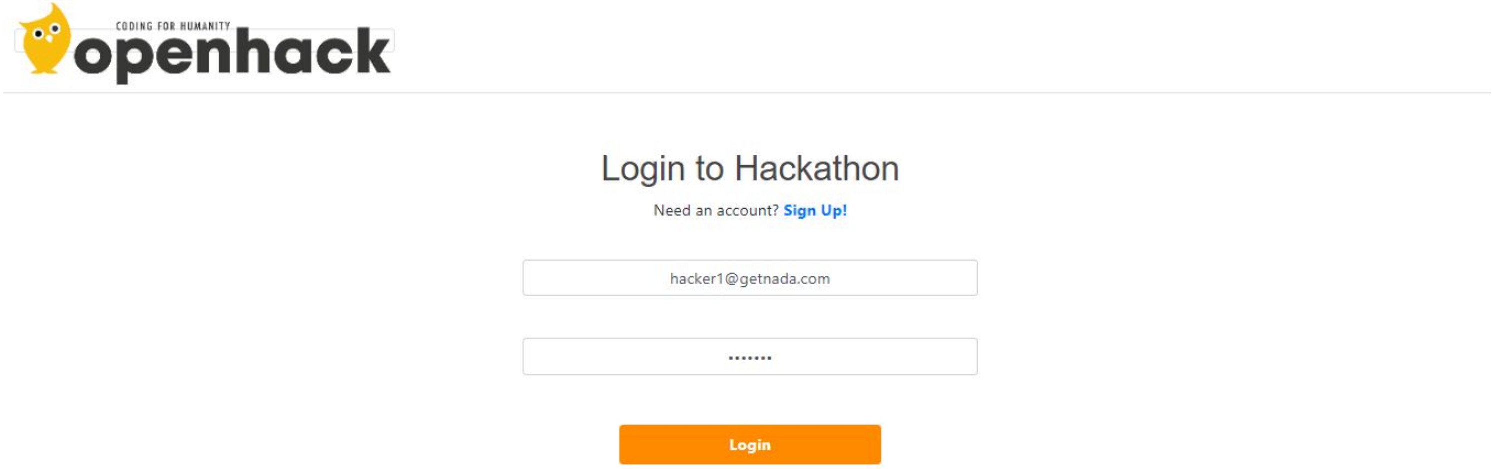
https://cmpe275-922ad.firebaseapp.com/__/auth/action?mode=verifyEmail&oobCode=14WgdDovJQFpm-yIB4AVBkJcJJlAAC2_Mf7qpLrj6NMAAAFq3aNpvg&apiKey=AIzaSyB3Zwh6ZNXExXKzsn

If you didn't ask to verify this address, you can ignore this email.

Thanks,

3. **Login**
    a. After the verification of account a user can log in using the credentials and depending upon the role he assumed during registration, he will be directed to appropriate homepage - admin page or hacker page

Login screen:



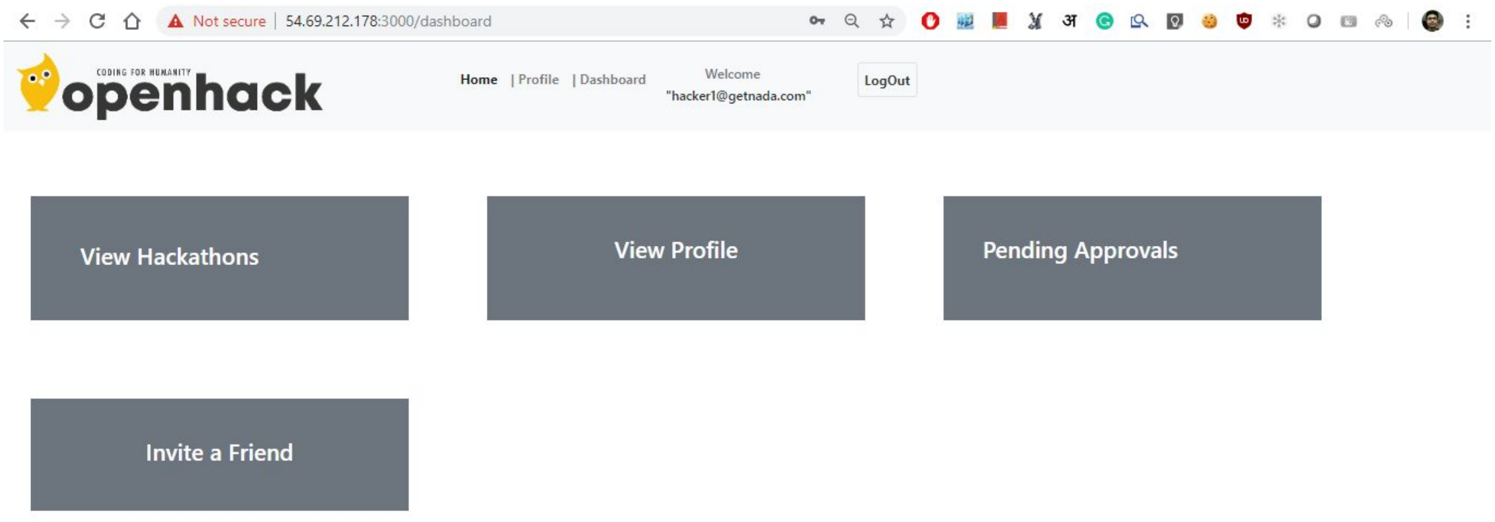
Login to Hackathon

Need an account? Sign Up!

hacker1@getnada.com

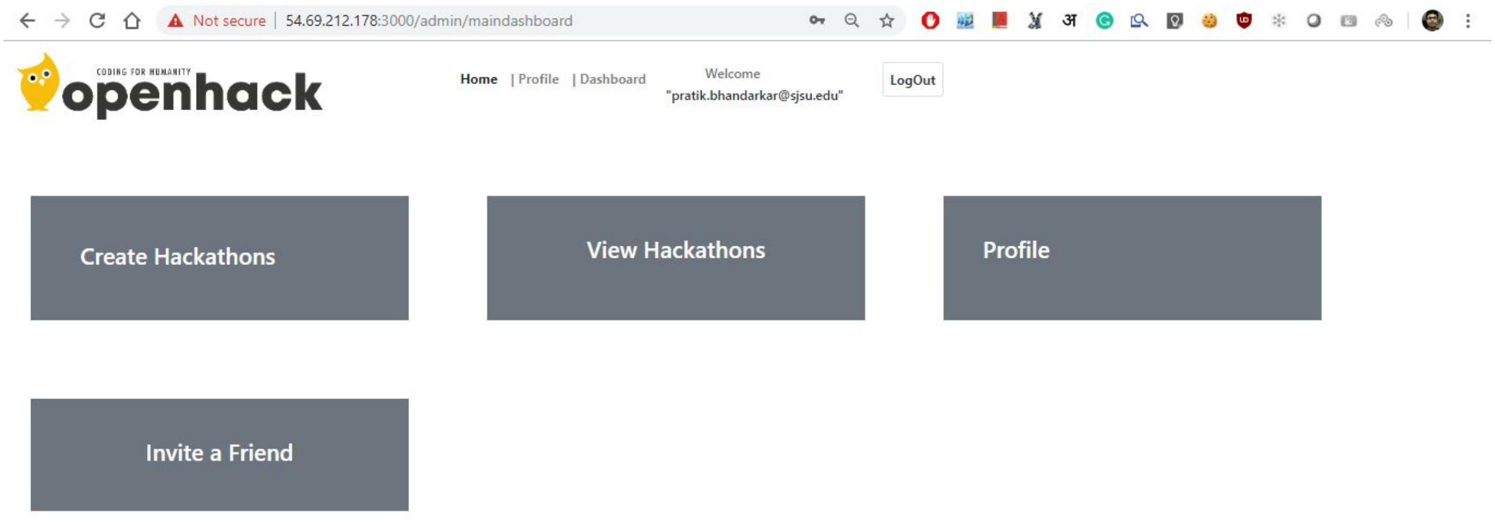
•••••••

Hacker dashboard page:



Welcome "hacker1@getnada.com"

Admin dashboard page:



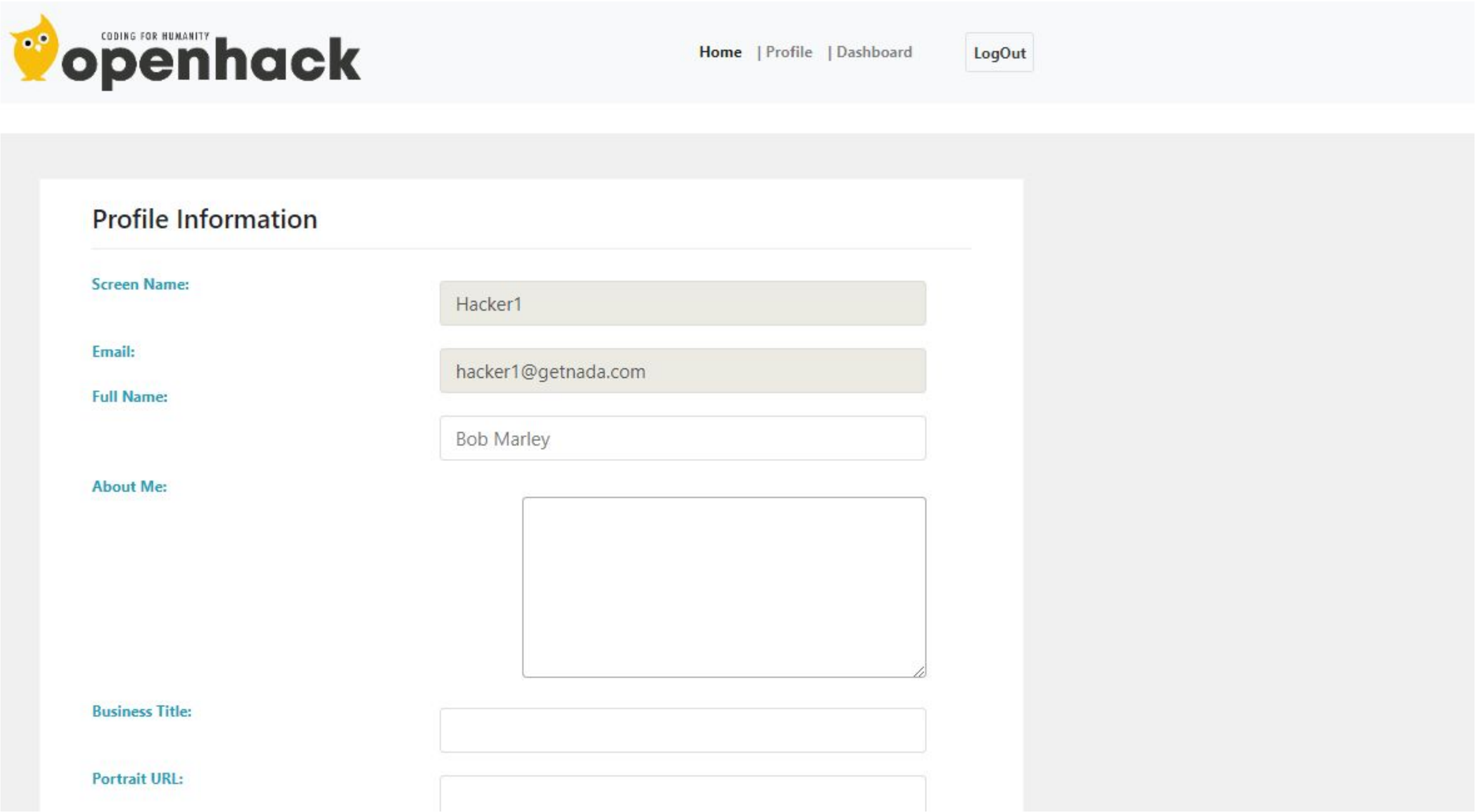
Welcome "pratik.bhandarkar@sjsu.edu"

4. Profile page

a. Every registered user has a profile page where he can view and update his information. (NOTE: A user is able to change *any* of his attributes, except email and screen name)

b. From this page, he can create/join/leave an organization.

Profile page:



Profile Information

Screen Name: Hacker1

Email: hacker1@getnada.com

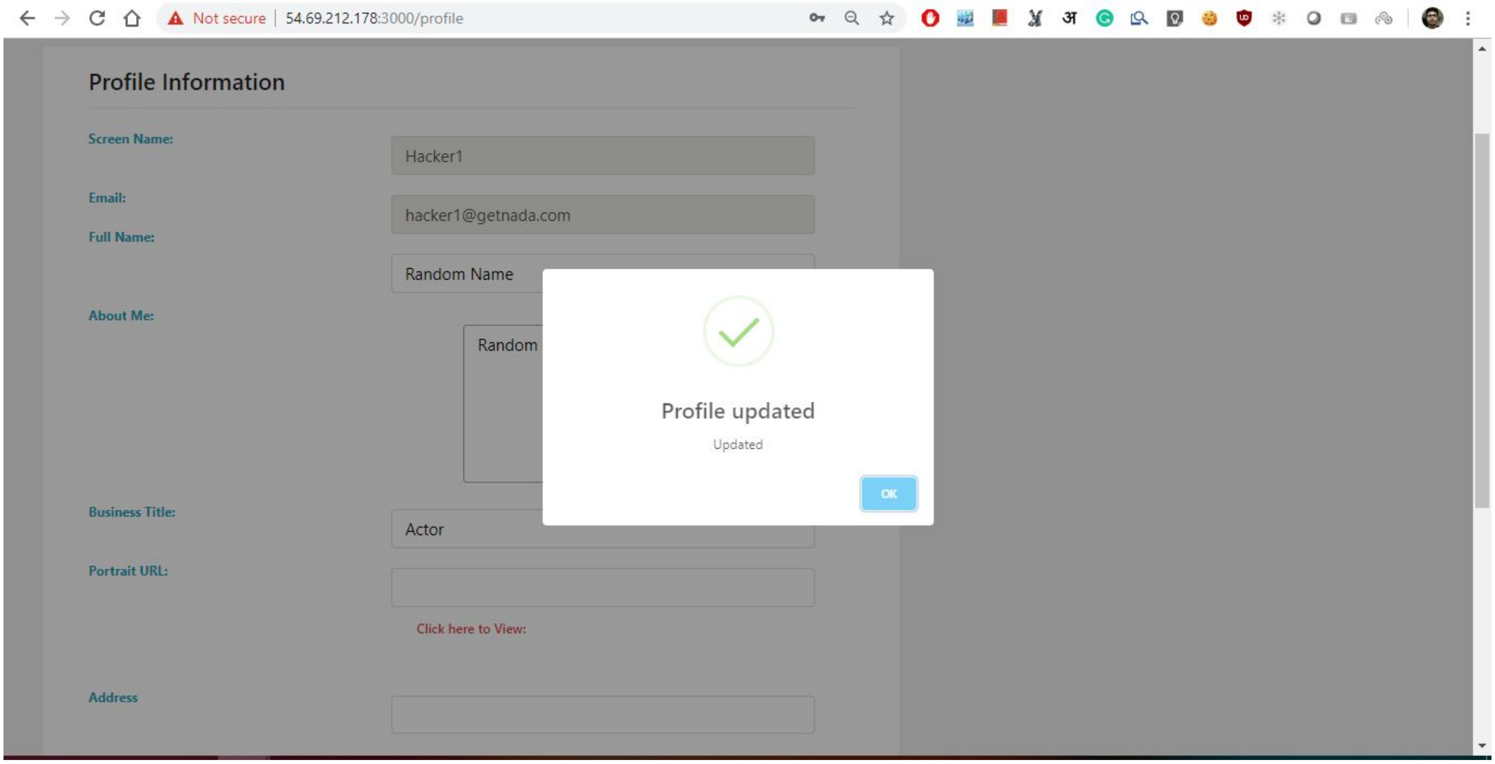
Full Name: Bob Marley

About Me:

Business Title:

Portrait URL:

Update profile:



Profile Information

Screen Name: Hacker1

Email: hacker1@getnada.com

Full Name: Random Name

About Me: Random

Business Title: Actor

Portrait URL:

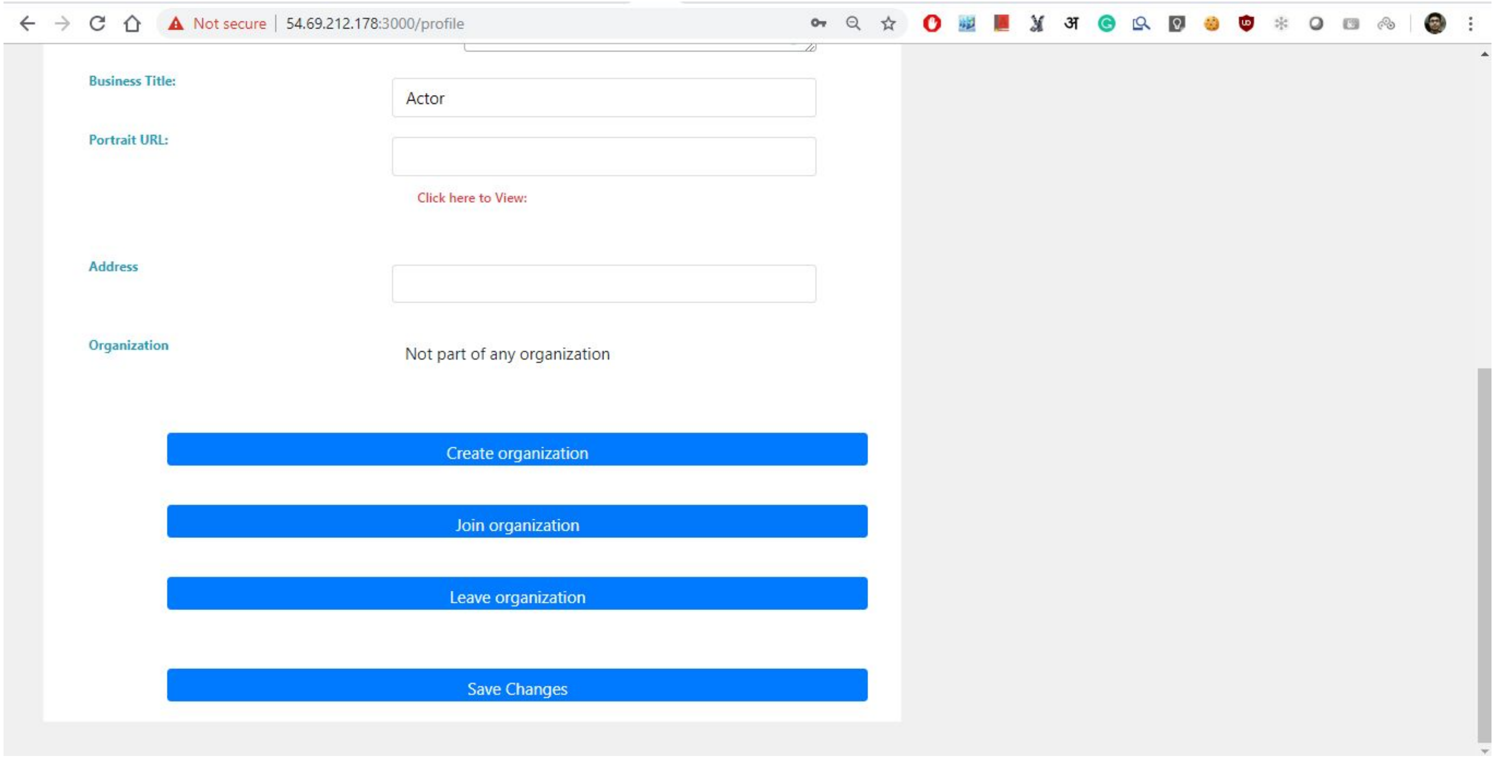
Click here to View:

Address

Profile updated

Updated

Organization options:



Business Title: Actor

Portrait URL:

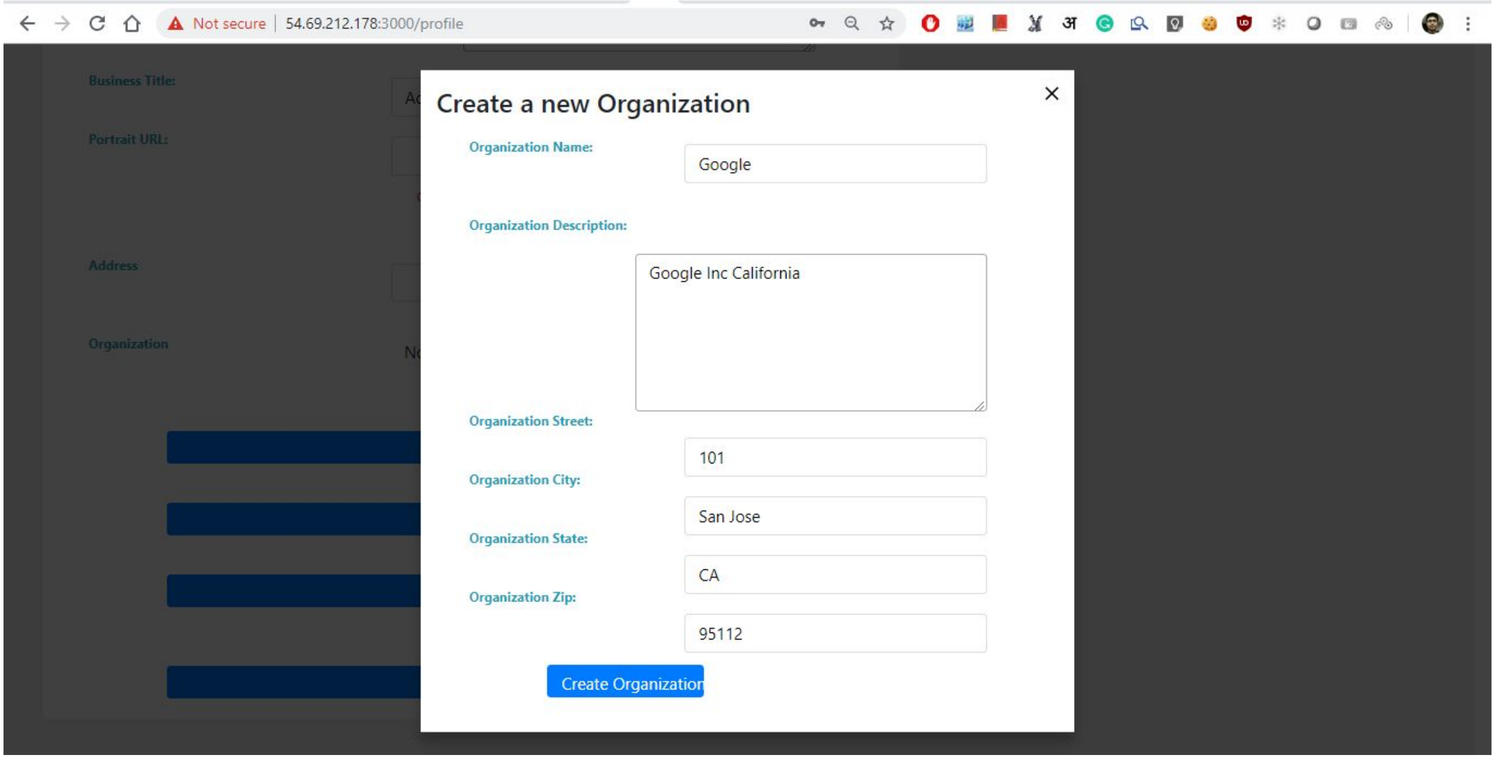
Click here to View:

Address

Organization: Not part of any organization

5. **Create an organization**
   a. Any hacker can create an organization. Once an organization is created by a user, the user becomes the owner of an organization. Other hackers can join the organization.

Create new organization:



Create a new Organization

Organization Name: Google

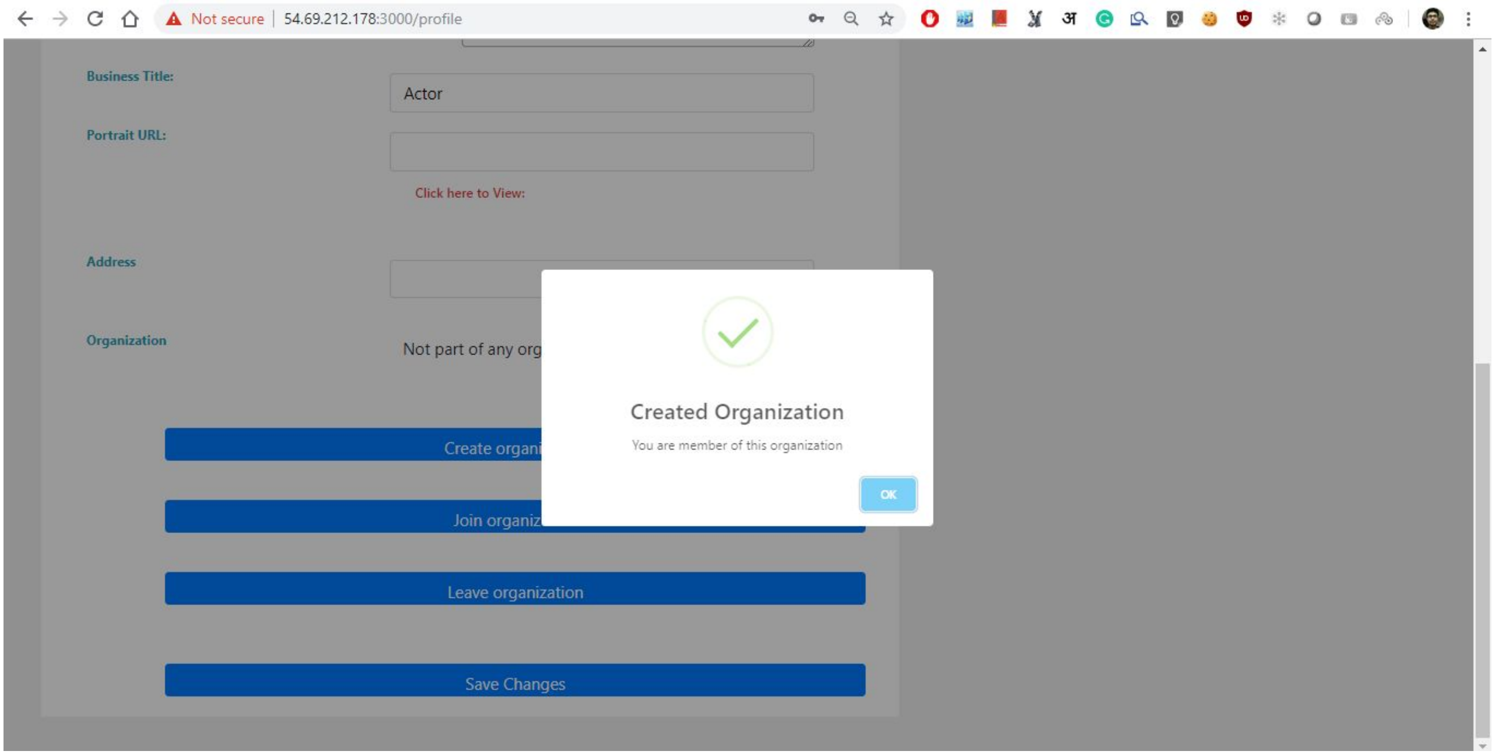
Organization Description: Google Inc California

Organization Street: 101

Organization City: San Jose

Organization State: CA

Organization Zip: 95112



Not secure | 54.69.212.178:3000/profile

Business Title: Actor

Portrait URL:

Click here to View:

Address

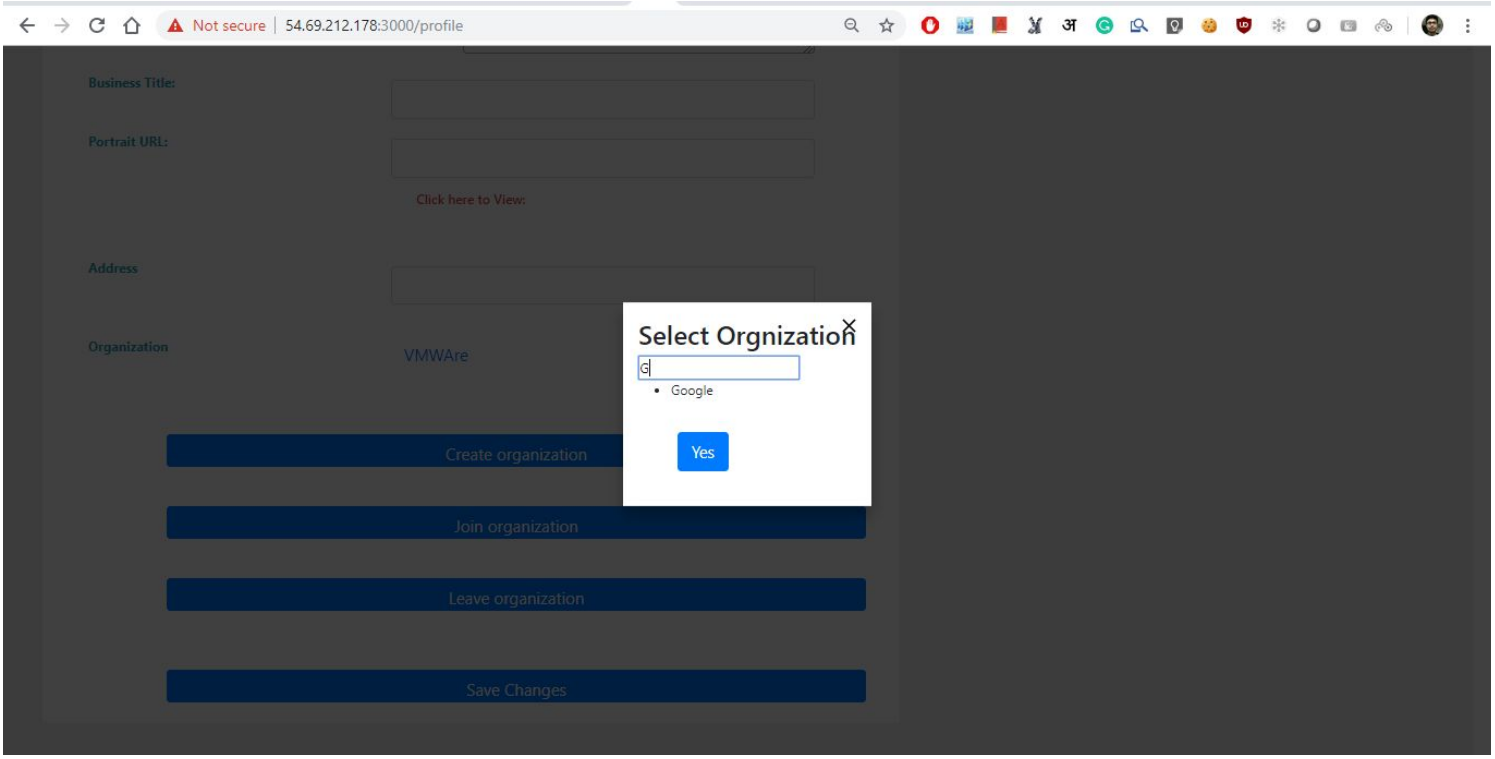
Organization: Not part of any org

Created Organization

You are member of this organization

6. **Join an organization**
   a. A user can join an organization by specifying the target organization's name in his profile page.
   b. After a user specifies a new or different organization name, a join request is automatically sent to the organization's owner by the system.
   c. An organization owner can see, approve and reject the join-request from his dashboard page.

Select organization:



Not secure | 54.69.212.178:3000/profile

Business Title:

Portrait URL:

Click here to View:

Address

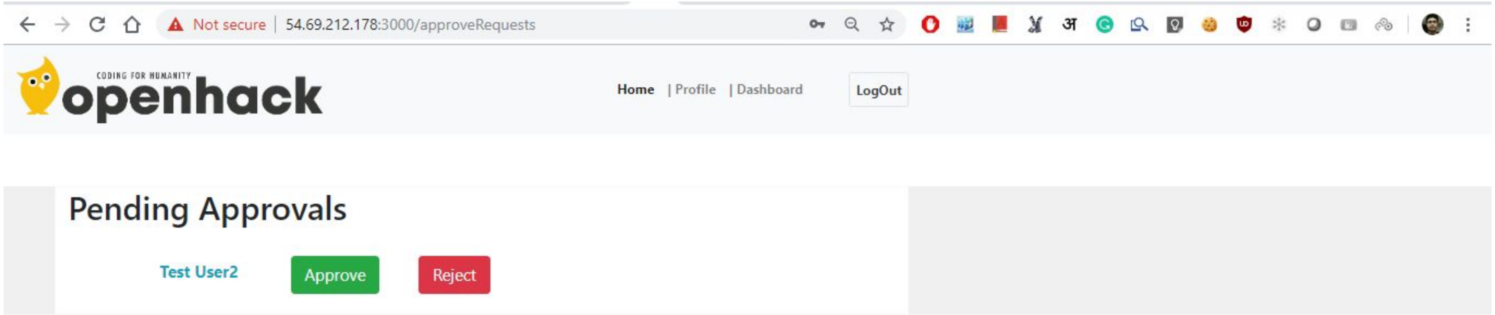
Organization: VMWAre

Select Orgnization

G

- Google

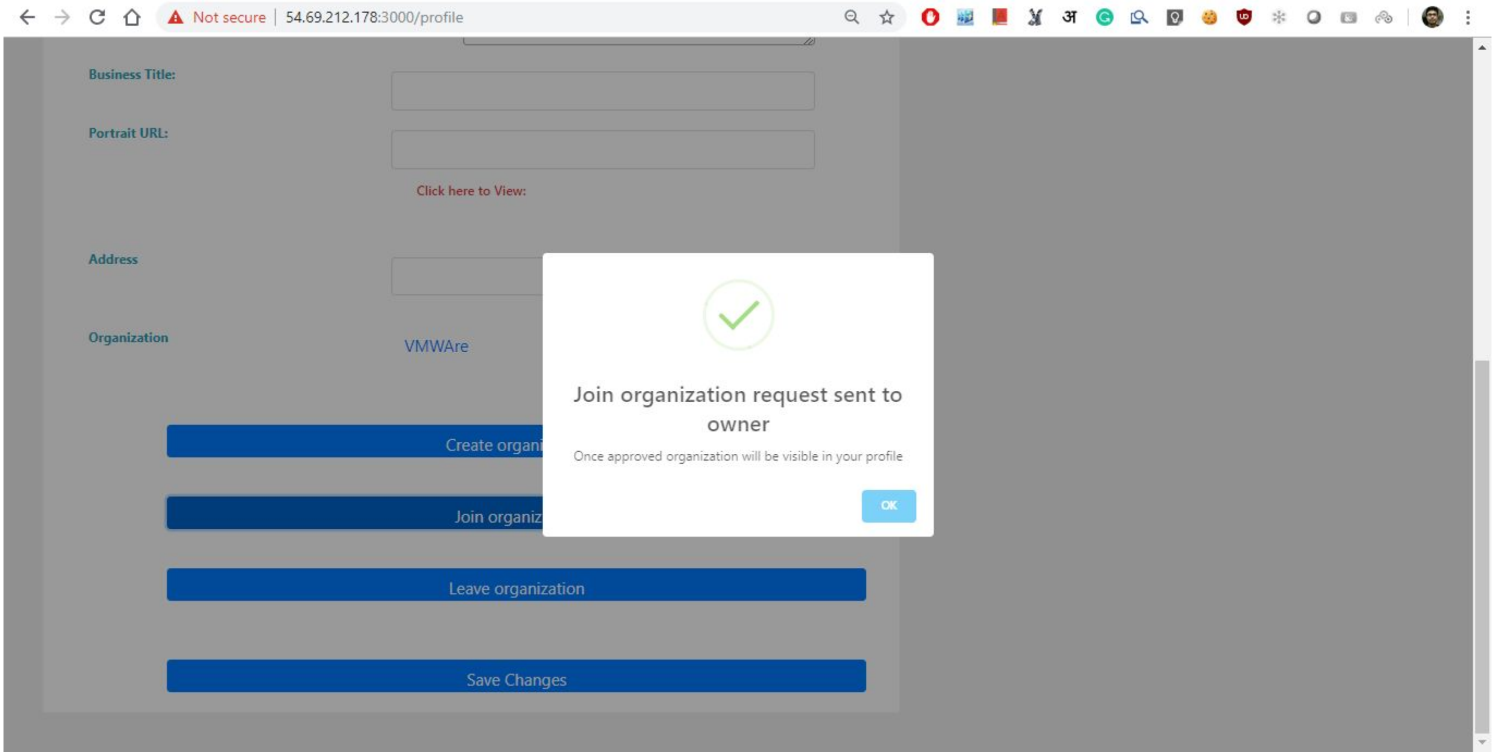
Pending approval:



Pending Approvals

Test User2

Join organization:



Business Title:

Portrait URL:

Click here to View:

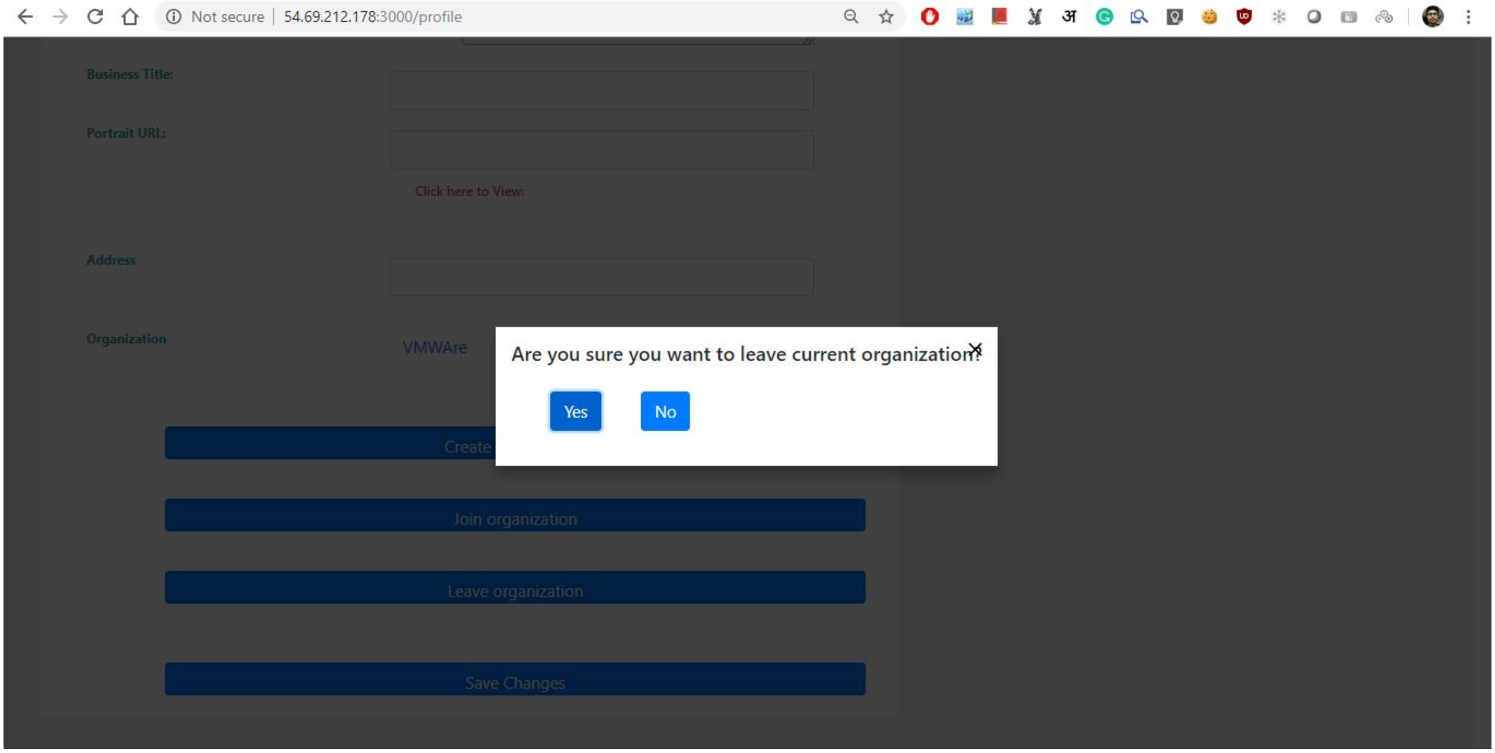
Address

Organization VMWAre

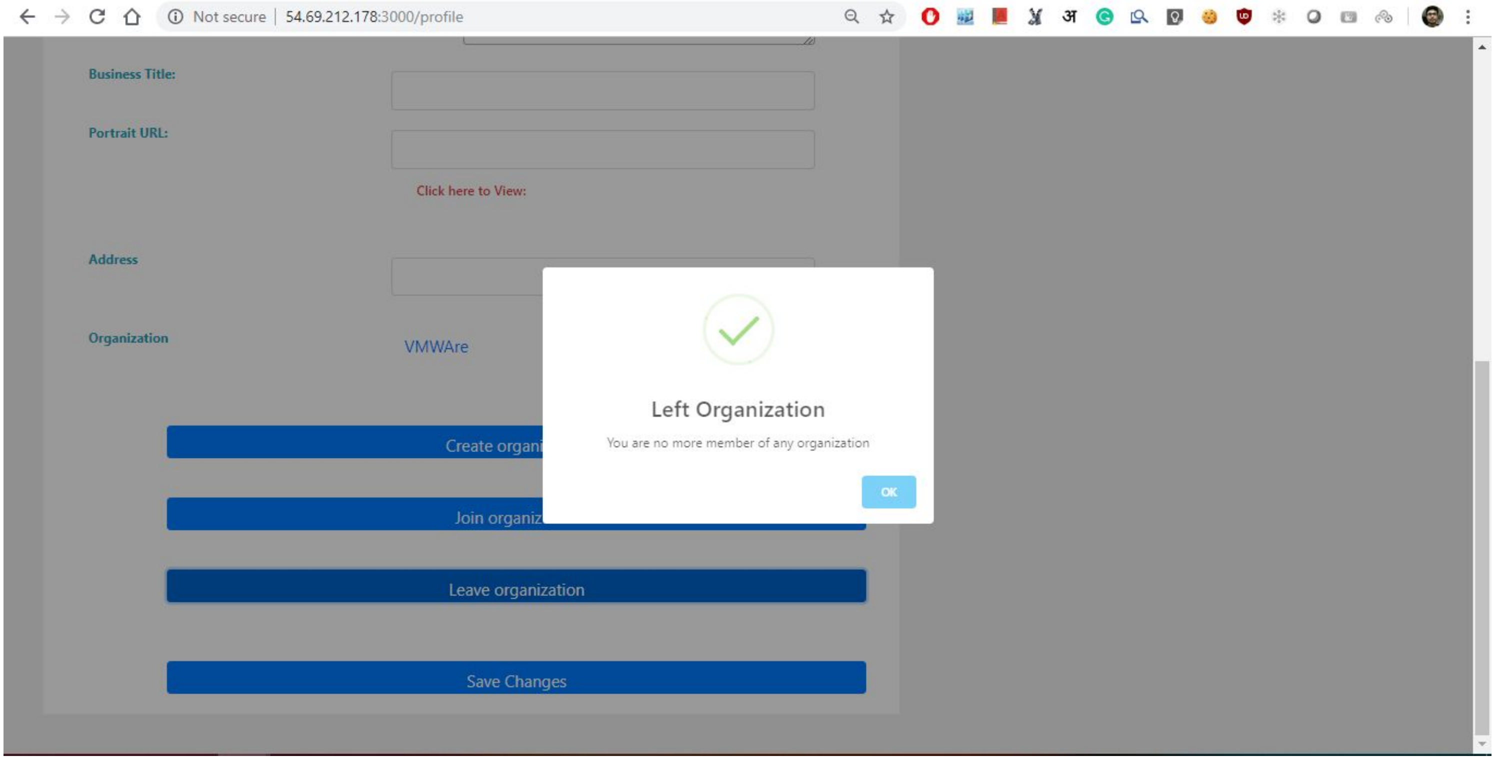
Join organization request sent to owner

Once approved organization will be visible in your profile

7. **Leave an organization**
   a. No approval needed for leaving an organization



Are you sure you want to leave current organization?

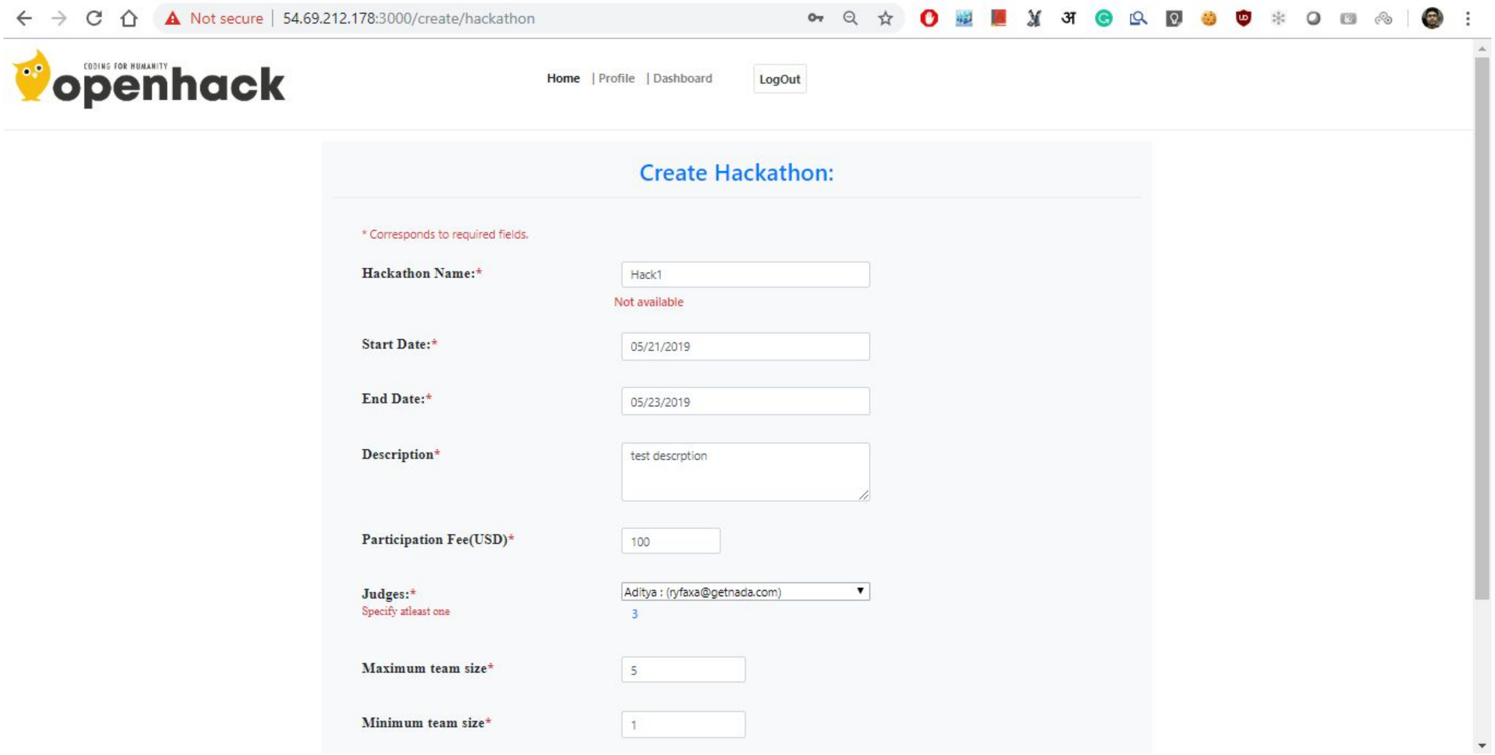


Left Organization

You are no more member of any organization

8. **Create hackathon**
    a. Only an admin can create a hackathon
    b. While creating a hackathon, an admin must assign a judge to the hackathon.
    c. After a hackathon is created, admin can view its judges, teams, sponsors, participants payments statuses, and hackathon expense details

Create hackathon:


Not secure | 54.69.212.178:3000/create/hackathon
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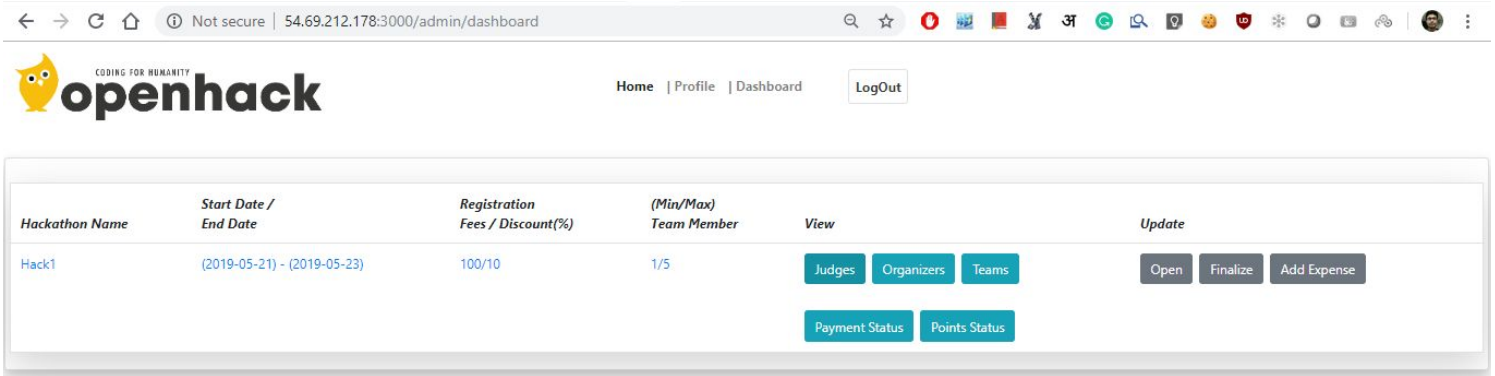
Home | Profile | Dashboard
LogOut

Create Hackathon:

* Corresponds to required fields.

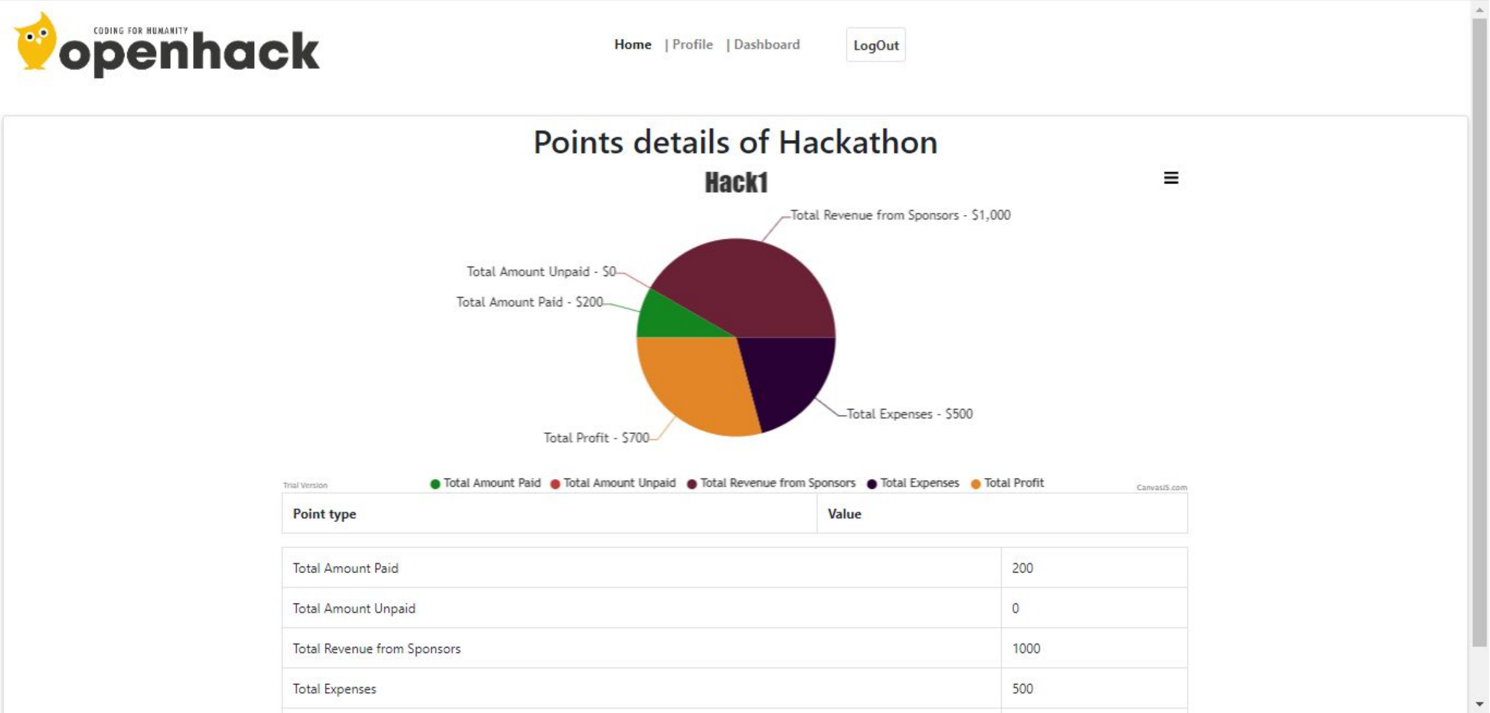
Hackathon Name:*	Hack1 Not available
Start Date:*	05/21/2019
End Date:*	05/23/2019
Description*	test descrption
Participation Fee(USD)*	100
Judges:* Specify atleast one	Aditya : (ryfaxa@getnada.com) 3
Maximum team size*	5
Minimum team size*	1

View hackathon details on dashboard:


Not secure | 54.69.212.178:3000/admin/dashboard
CODING FOR HUMANITY
openhack
Home | Profile | Dashboard
LogOut

Hackathon Name	Start Date / End Date	Registration Fees / Discount(%)	(Min/Max) Team Member	View	Update
Hack1	(2019-05-21) - (2019-05-23)	100/10	1/5	Judges Organizers Teams Payment Status Points Status	Open Finalize Add Expense

Expense details: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Home | Profile | Dashboard
LogOut
≡
Total Revenue from Sponsors - $1,000
Total Amount Unpaid - $0
Total Amount Paid - $200
Total Expenses - $500
Total Profit - $700
Trial Version
● Total Amount Paid ● Total Amount Unpaid ● Total Revenue from Sponsors ● Total Expenses ● Total Profit
CanvasJS.com

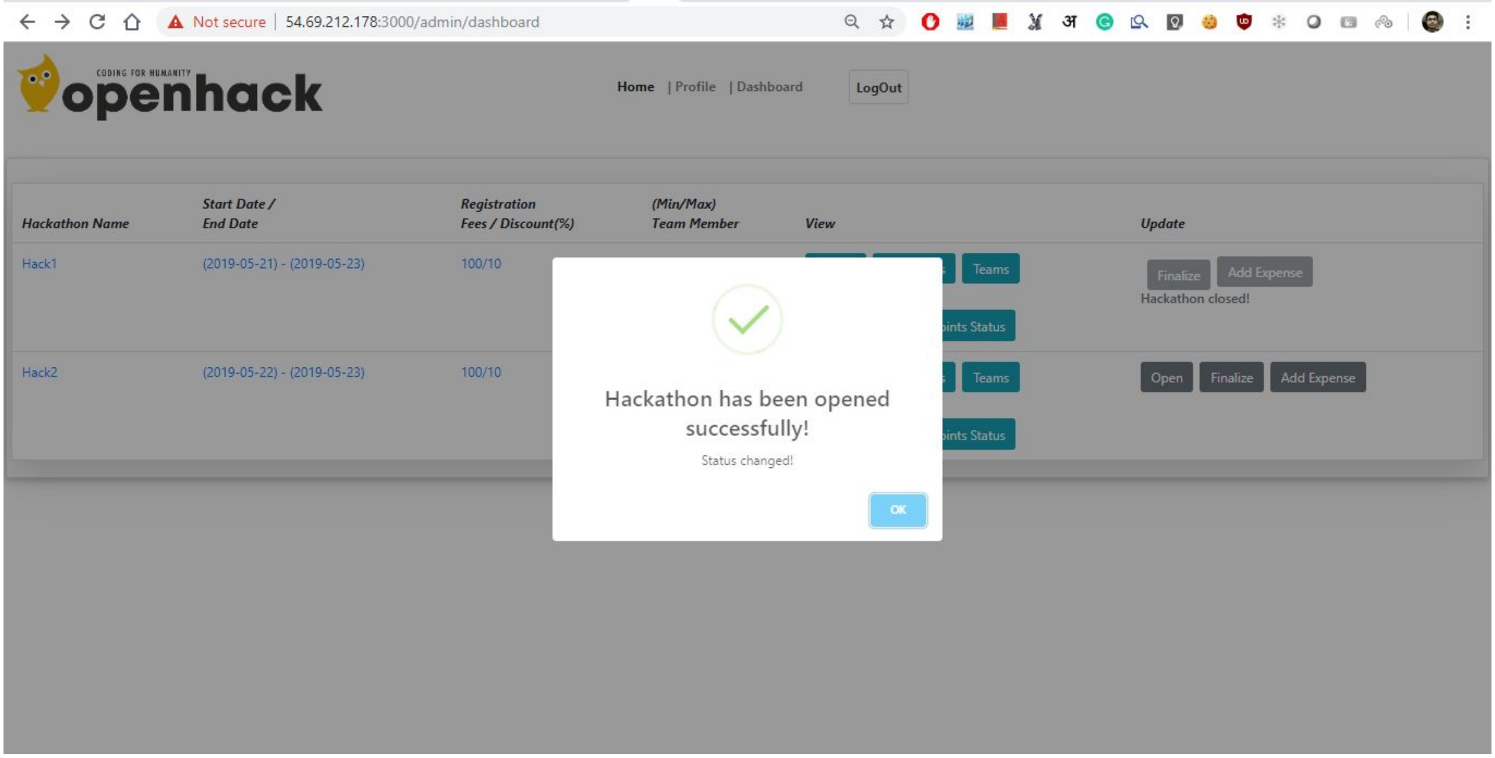
Points details of Hackathon

Hack1

Point type	Value
Total Amount Paid	200
Total Amount Unpaid	0
Total Revenue from Sponsors	1000
Total Expenses	500

9. **Open/close a hackathon:**
   a. An admin can open/close a hackathon created by himself.
   b. An admin can close the submission after it is open, even before the end date. Once a hackathon is closed and any grade has been given by any judge to any submission, the hackathon cannot be re-opened for submission again.

Open hackathon:

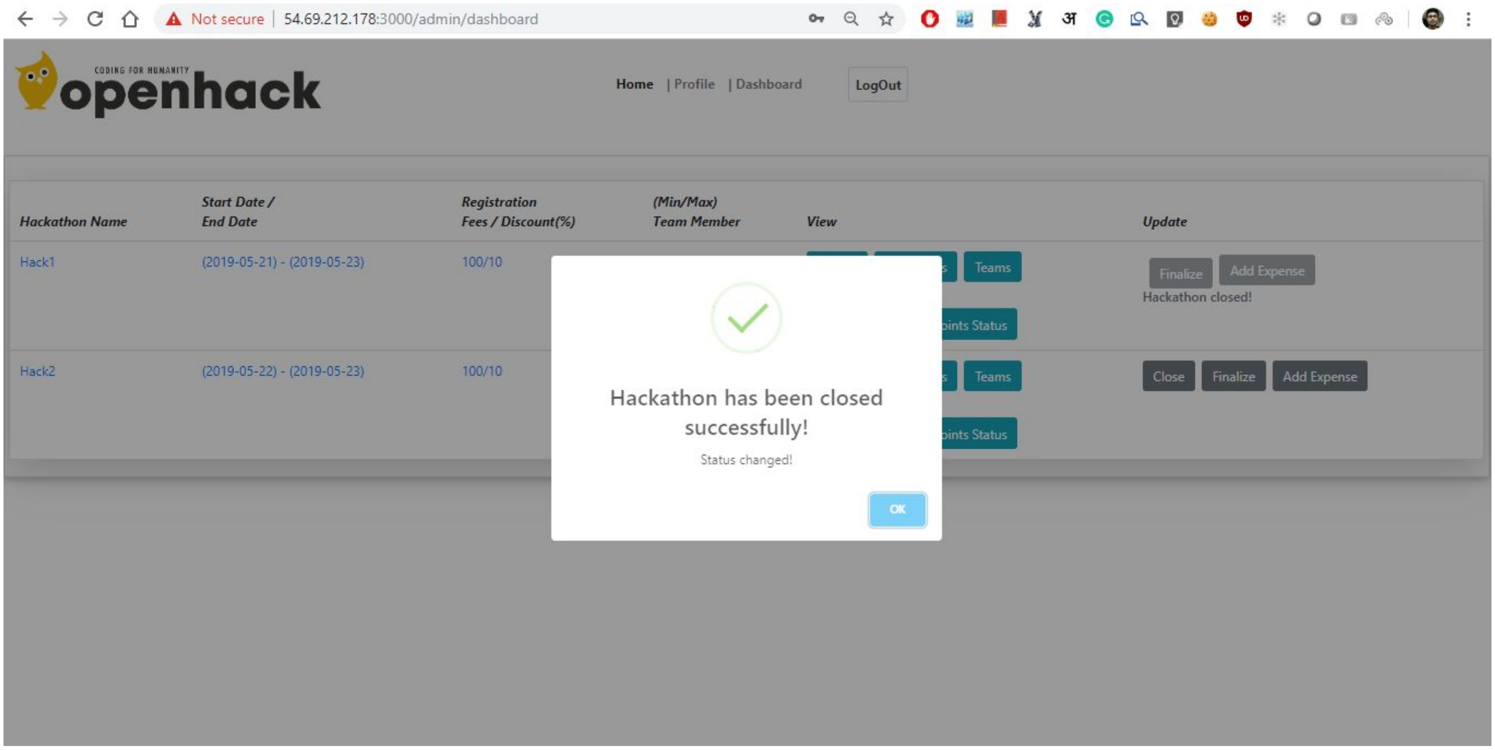


Hackathon Name	Start Date / End Date	Registration Fees / Discount(%)	(Min/Max) Team Member	View	Update
Hack1	(2019-05-21) - (2019-05-23)	100/10		Teams ints Status	Finalize Add Expense Hackathon closed!
Hack2	(2019-05-22) - (2019-05-23)	100/10		Teams ints Status	Open Finalize Add Expense

Hackathon has been opened successfully!

Status changed!

Close hackathon:


Not secure | 54.69.212.178:3000/admin/dashboard
CODING FOR HUMANITY openhack
Home | Profile | Dashboard
LogOut

Hackathon Name	Start Date / End Date	Registration Fees / Discount(%)	(Min/Max) Team Member	View	Update
Hack1	(2019-05-21) - (2019-05-23)	100/10		Teams oints Status	Finalize Add Expense Hackathon closed!
Hack2	(2019-05-22) - (2019-05-23)	100/10		Teams oints Status	Close Finalize Add Expense

Hackathon has been closed successfully!

Status changed!

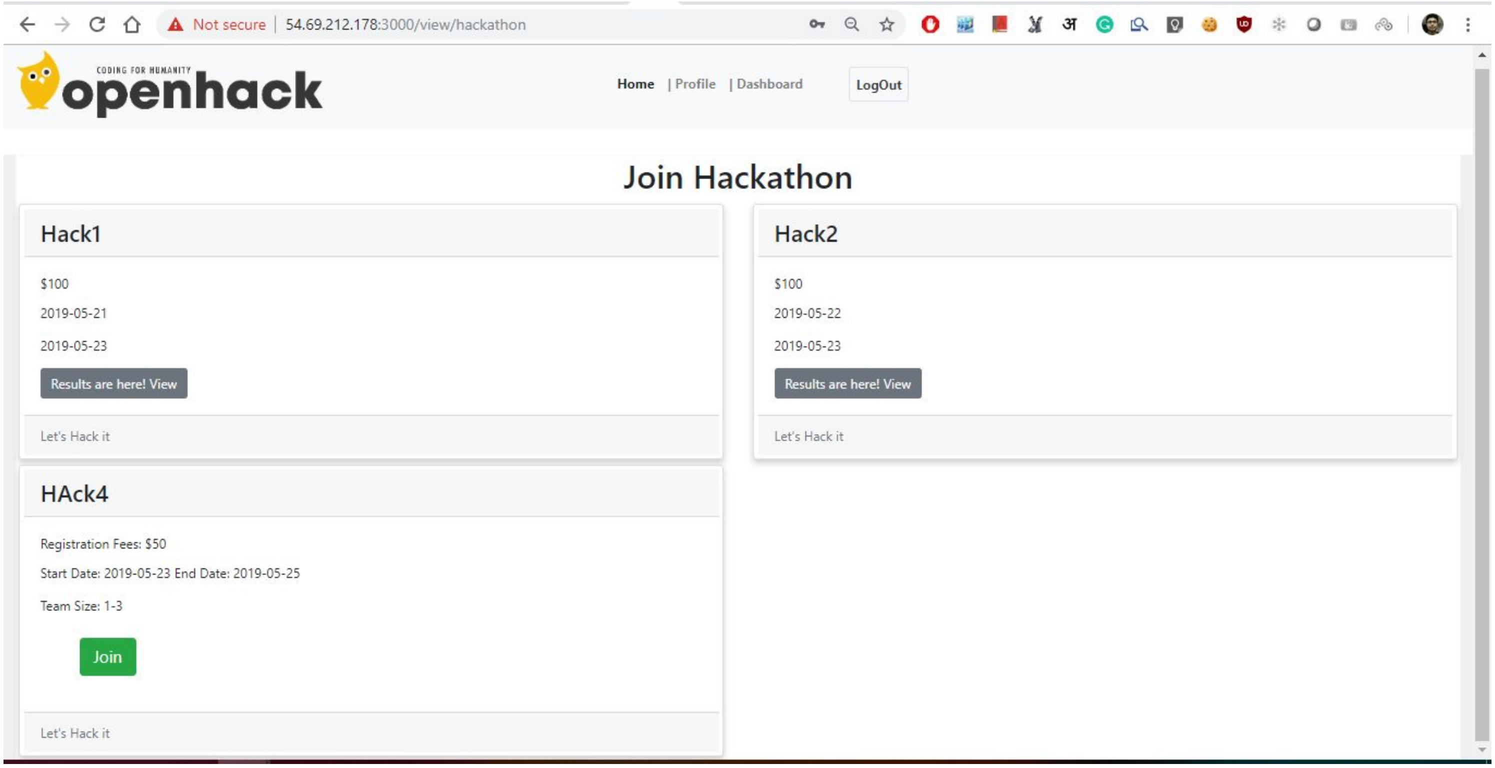
10. Browser future and ongoing hackathons

a. Any hacker can see all future and ongoing hackathons on his dashboard page.

b. He can also choose to register to join a hackathon from the same page.

c. An admin, however, can only view the hackathons that are created by him.

Browse hackathons:


Not secure | 54.69.212.178:3000/view/hackathon
CODING FOR HUMANITY openhack
Home | Profile | Dashboard
LogOut

Join Hackathon

Hack1

$100

2019-05-21

2019-05-23

Let's Hack it

Hack2

$100

2019-05-22

2019-05-23

Let's Hack it

HAck4

Registration Fees: $50

Start Date: 2019-05-23 End Date: 2019-05-25

Team Size: 1-3

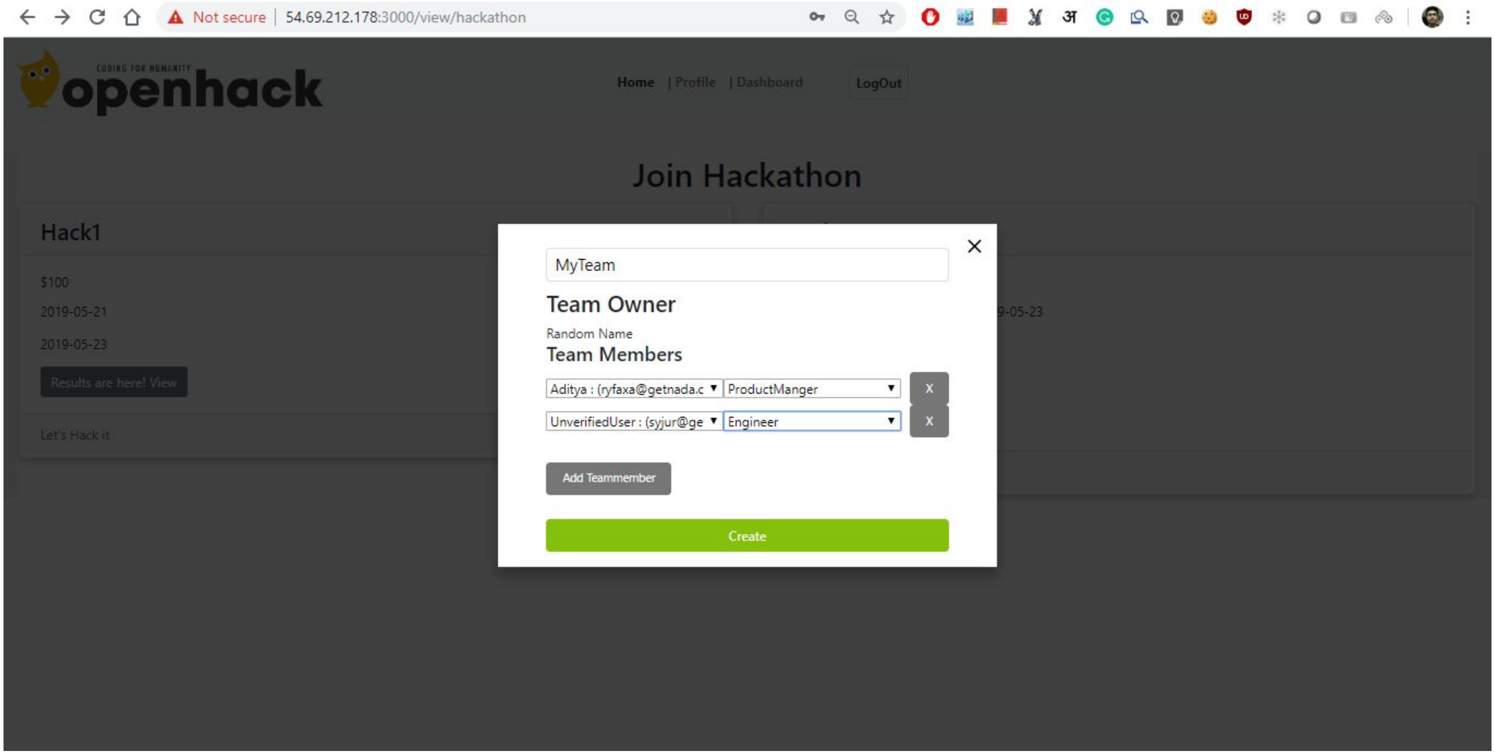
Let's Hack it

11. Join/Register for a hackathon

a. A hacker can register for a hackathon using his dashboard page

b. While joining a hackathon, a hacker is prompted to choose his team and he, by default, becomes the team lead.

Select team for hackathon:


Not secure | 54.69.212.178:3000/view/hackathon
CODING FOR HUMANITY
openhack
Home | Profile | Dashboard
LogOut
Add Teammember
Create
x

Join Hackathon

Hack1

$100

2019-05-21

2019-05-23

Results are here! View

Let's Hack it

9-05-23

MyTeam

Team Owner

Random Name

Team Members

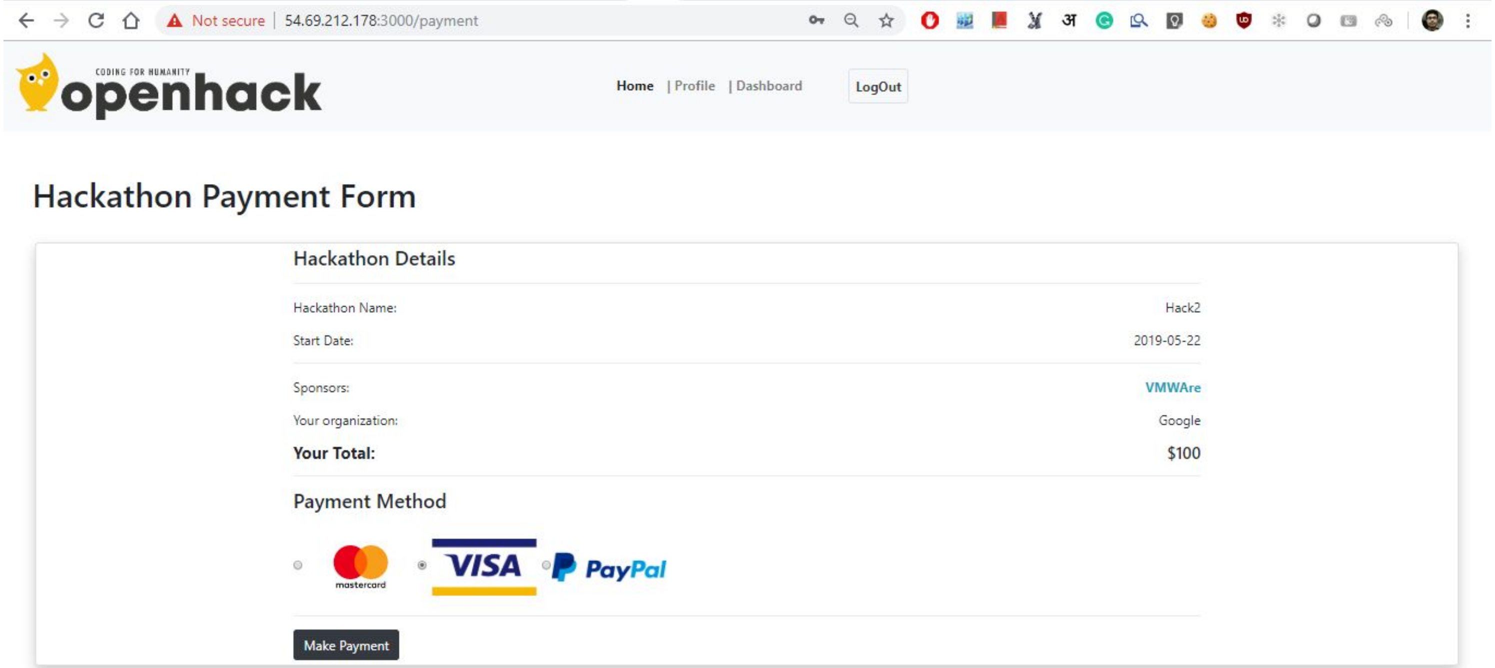
Aditya : (ryfaxa@getnada.c	ProductManger
UnverifiedUser : (syjur@ge	Engineer

12. Make payment for a hackathon

a. After joining a hackathon, the registering hacker is automatically taken to payment page where he can pay for the hackathon. At the same time, each member of his team is sent an email asking to complete the payment as well.

b. After all the participants finished payment for the hackathon, the team lead will receive an email confirming that all members have finished the payment.

Payment screen:


Not secure | 54.69.212.178:3000/payment
CODING FOR HUMANITY
openhack
Home | Profile | Dashboard
LogOut
mastercard
VISA
PayPal
Make Payment

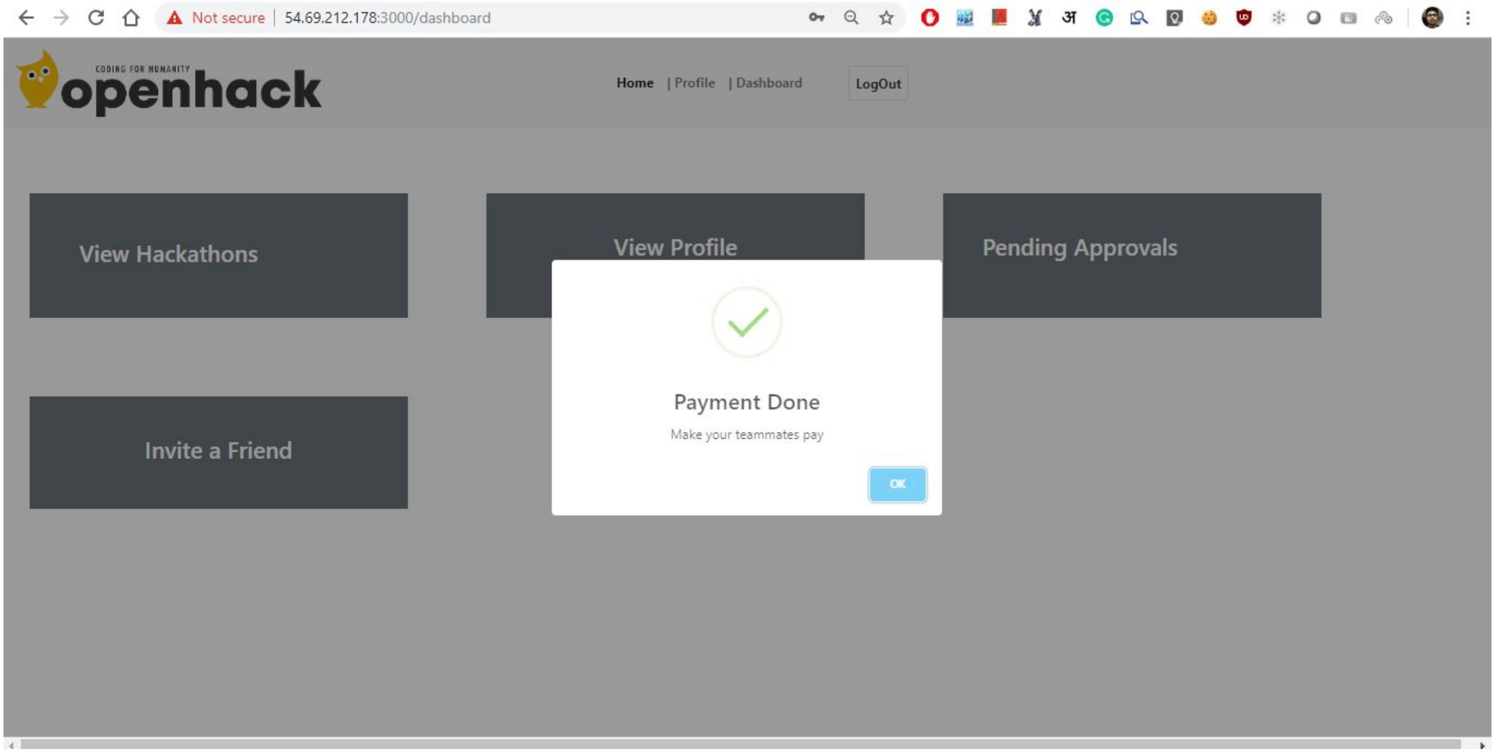
Hackathon Payment Form

Hackathon Details

Hackathon Name:	Hack2
Start Date:	2019-05-22
Sponsors:	VMWAre
Your organization:	Google
Your Total:	$100

Payment Method

Payment done screen:

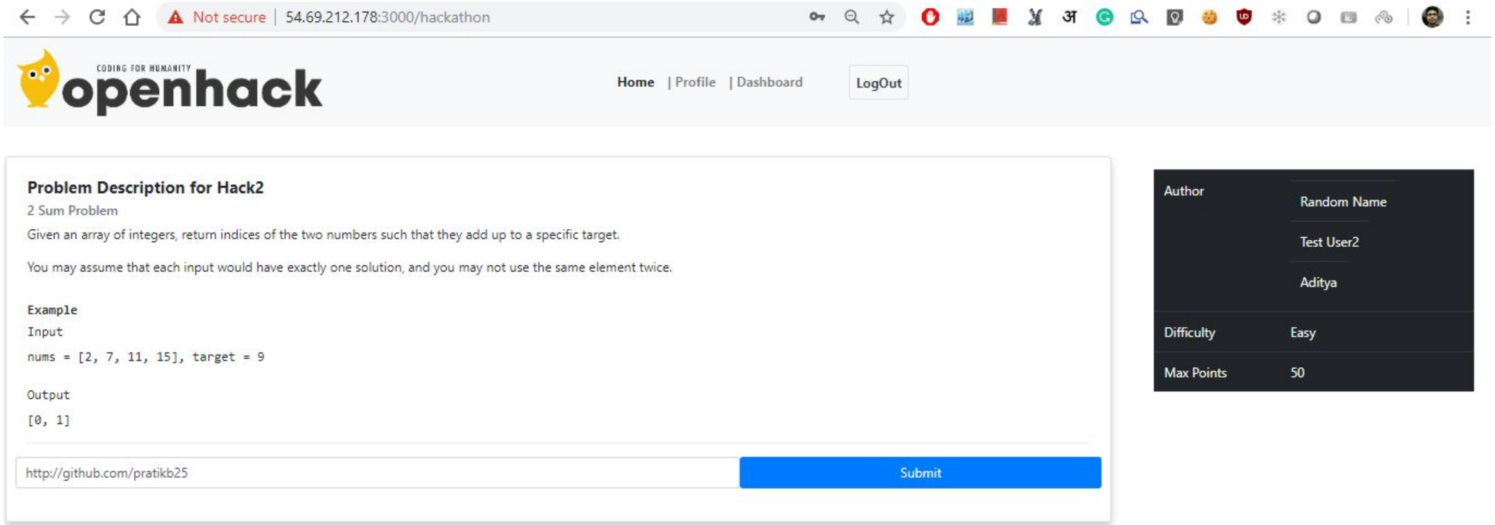


Payment Done

Make your teammates pay

13. Submit code link

a. A team can only submit a code link until all members have completed the payments. Also, any team member can submit the link. A link submitted by one member will overwrite the link submitted by other member.



Problem Description for Hack2

2 Sum Problem

Given an array of integers, return indices of the two numbers such that they add up to a specific target.

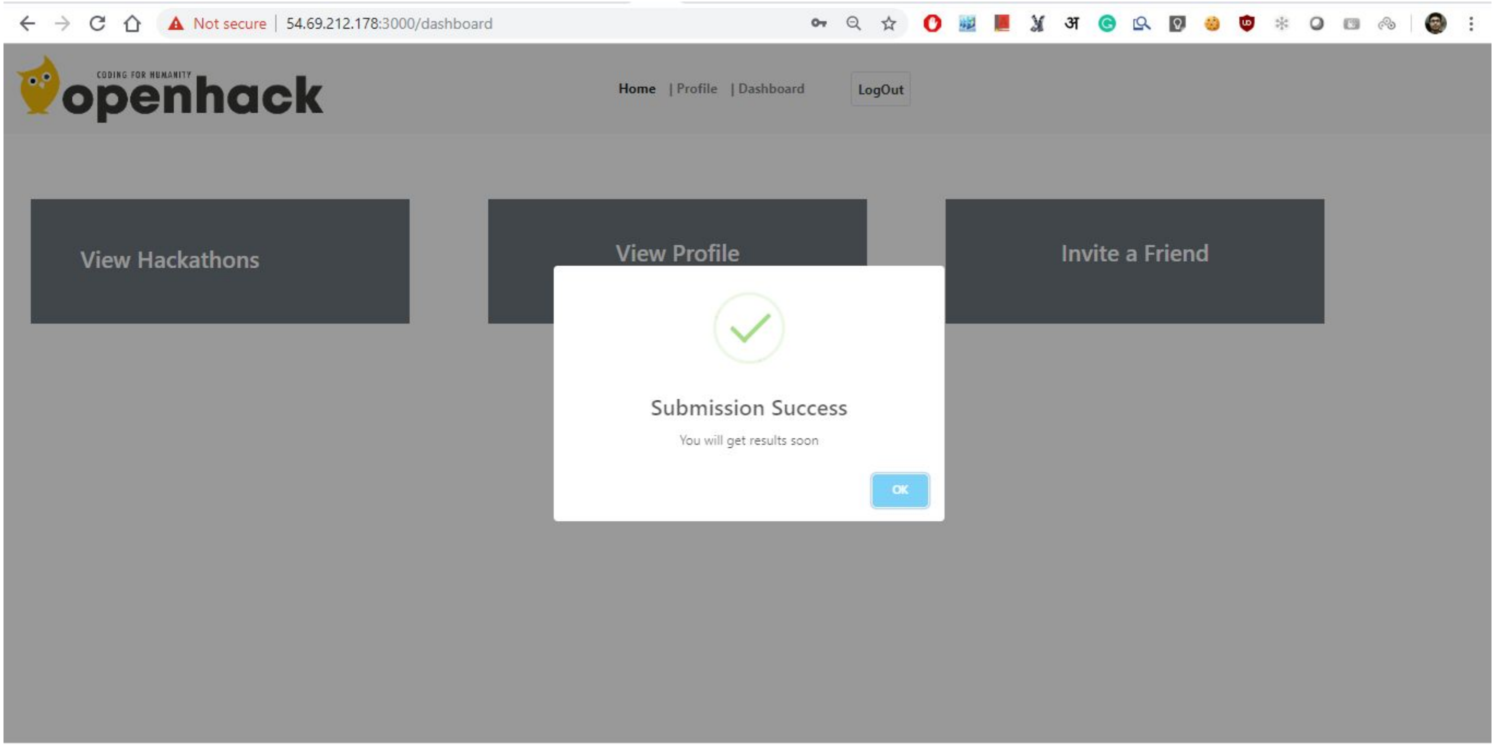
You may assume that each input would have exactly one solution, and you may not use the same element twice.

```
Example
Input
nums = [2, 7, 11, 15], target = 9

Output
[0, 1]
```

http://github.com/pratikb25

Author	Random Name Test User2 Aditya
Difficulty	Easy
Max Points	50

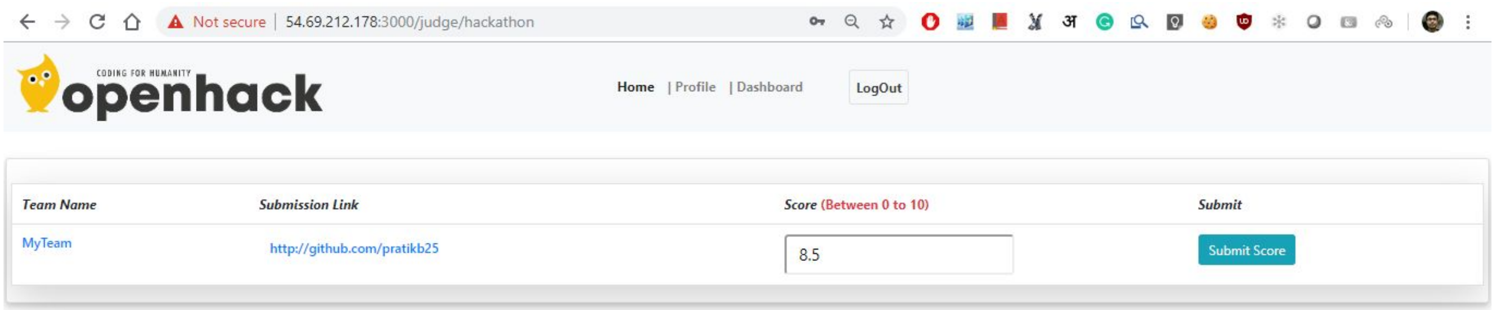


Submission Success

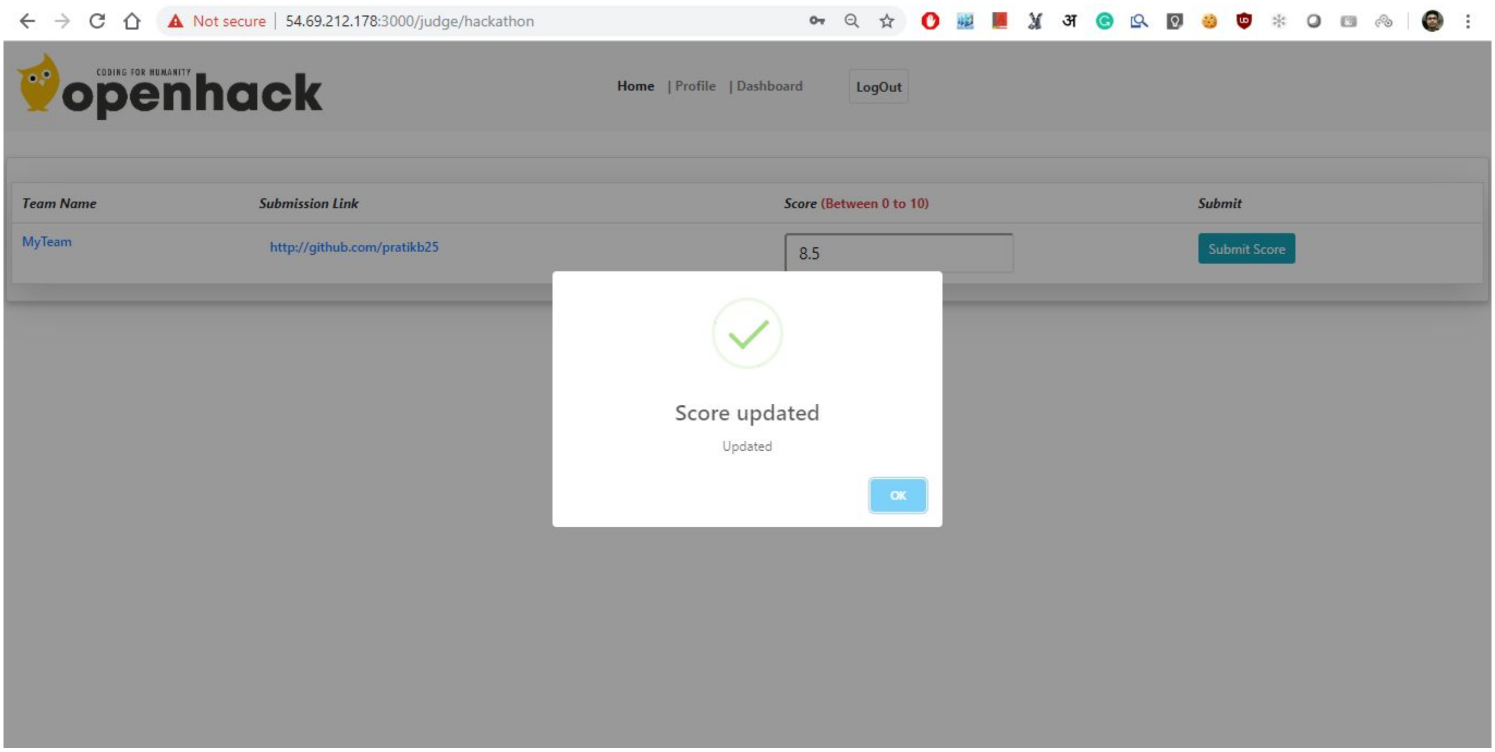
You will get results soon

14. Evaluate a hackathon

a. A judge cannot participate in a hackathon he is evaluating.
b. Evaluation cannot take place until the hackathon is closed by an admin.
c. One judge's grading for any team overrides previous grading for the same team, no matter it was by the same or a different judge; i.e., only the latest grading counts.
d. No evaluation or grading changes can take place after a hackathon is finalized.



Team Name	Submission Link	Score (Between 0 to 10)	Submit
MyTeam	http://github.com/pratikb25	8.5	Submit Score



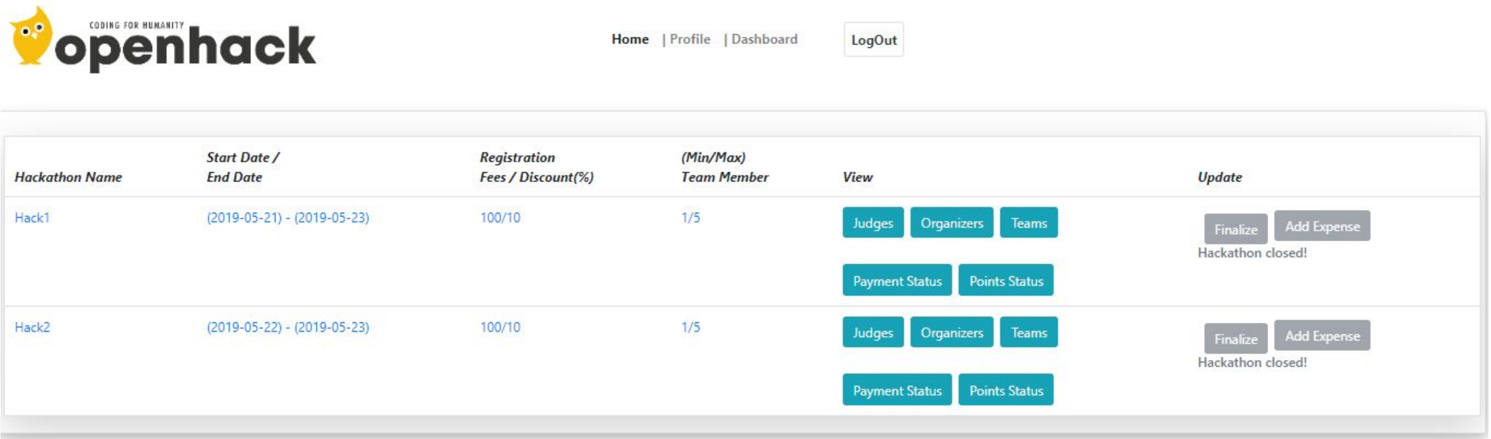
Team Name	Submission Link	Score (Between 0 to 10)	Submit
MyTeam	http://github.com/pratikb25	8.5	Submit Score

Score updated

Updated

15. Finalize hackathon

a. Only the admin who created a hackathon can “finalize” it.



Hackathon Name	Start Date / End Date	Registration Fees / Discount(%)	(Min/Max) Team Member	View	Update
Hack1	(2019-05-21) - (2019-05-23)	100/10	1/5	Judges Organizers Teams Payment Status Points Status	Finalize Add Expense Hackathon closed!
Hack2	(2019-05-22) - (2019-05-23)	100/10	1/5	Judges Organizers Teams Payment Status Points Status	Finalize Add Expense Hackathon closed!

16. View hackathon results

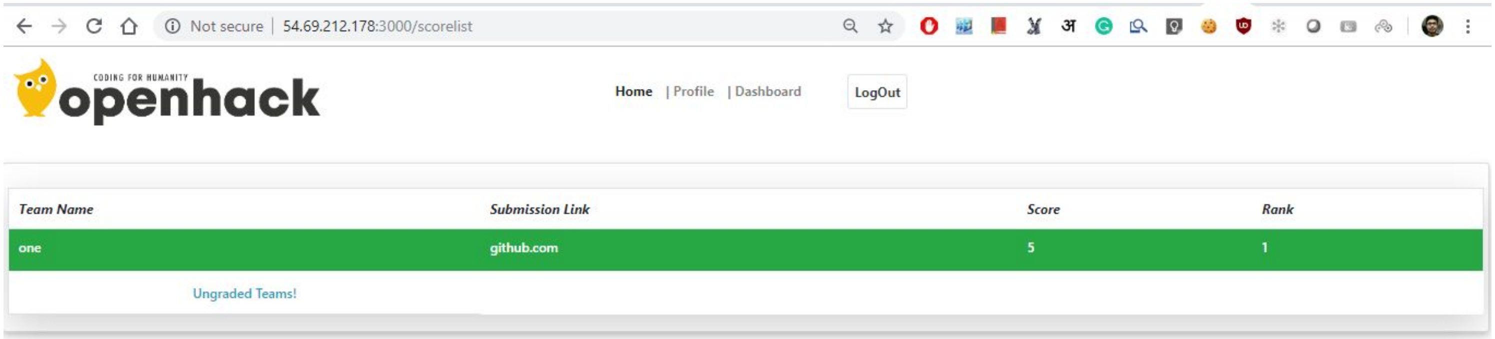
a. Grading result for a hackathon are available after it is closed or finalized

b. All participants and judges need to be notified through email about the results once a hackathon is finalized.

c. The email needs to contain a link to the details results mentioned above.

d. Email for winners must have congratulatory phrases in the subject and message body.

Hackathon results:

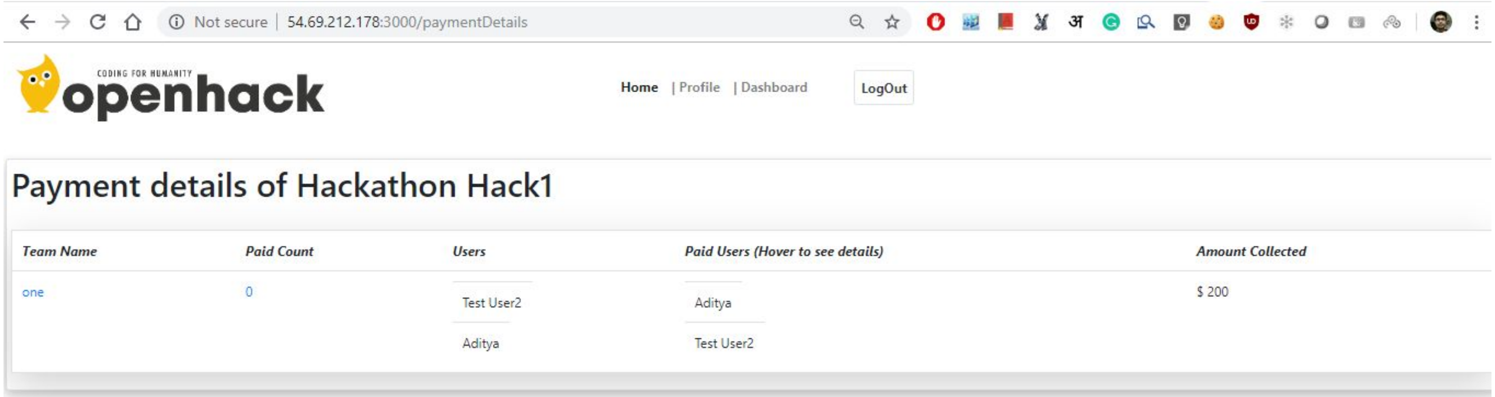


Not secure | 54.69.212.178:3000/scorelist
CODING FOR HUMANITY openhack
Home | Profile | Dashboard
LogOut

Team Name	Submission Link	Score	Rank
one	github.com	5	1

Ungraded Teams!

17. Registration Fee Payment Report

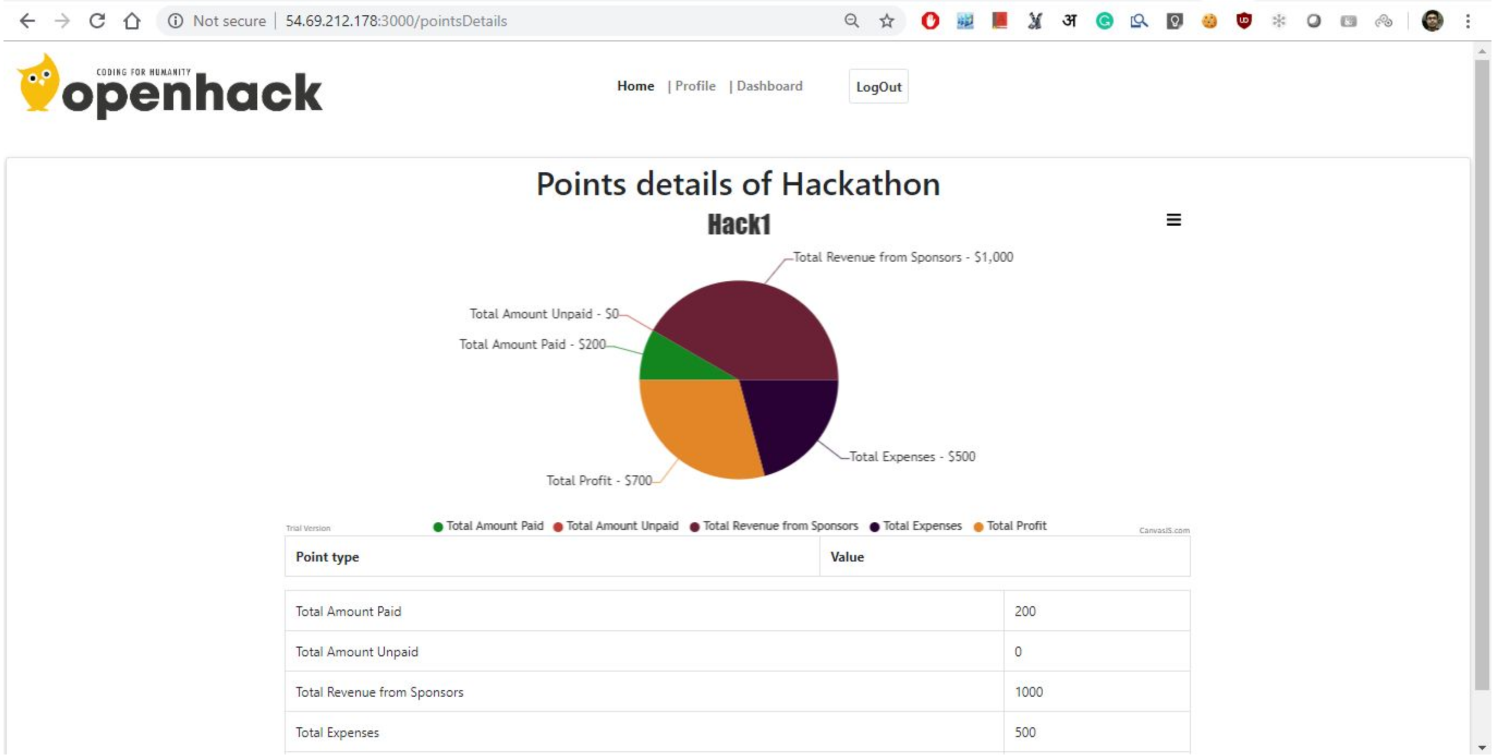


Not secure | 54.69.212.178:3000/paymentDetails
CODING FOR HUMANITY openhack
Home | Profile | Dashboard
LogOut

Payment details of Hackathon Hack1

Team Name	Paid Count	Users	Paid Users (Hover to see details)	Amount Collected
one	0	Test User2 Aditya	Aditya Test User2	$ 200

18. Hackathon earning report



Not secure | 54.69.212.178:3000/pointsDetails
CODING FOR HUMANITY openhack
Home | Profile | Dashboard
LogOut

Points details of Hackathon

Hack1
≡
Total Revenue from Sponsors - $1,000
Total Amount Unpaid - $0
Total Amount Paid - $200
Total Expenses - $500
Total Profit - $700
Trial Version
● Total Amount Paid ● Total Amount Unpaid ● Total Revenue from Sponsors ● Total Expenses ● Total Profit
CanvasJS.com

Point type	Value
Total Amount Paid	200
Total Amount Unpaid	0
Total Revenue from Sponsors	1000
Total Expenses	500

Testing plan executed and results

Sr No	Test case	Results and observations
1	Admin Signup - provided email ID with @sjsu.edu domain	Admin received verification email. After verification, the admin can successfully login to the app and is directed to admin dashboard
2	Create hackathon: 1. Login as admin 2. Click “Create HAckathon” button on dashboard	Verified that only admin can create a hackathon
3	View Hackathon results: 1. Login with credentials 2. On the dashboard, click “View Hackathon” button	For admin, “view hackathon” page is opened which displays all the hackathons. Admin can click on “Teams/Result Status” button to view team scores for each hackathon. If login as hacker, clicking the “View Hackathon” button displays past and current hackathons of the hacker. Click “Results are here! View” button of a hackathon to see its results. This button is not displayed until the results are available for that hackathon.
4	Profile page updation: 1. Login to the app 2. Click the profile link in navigation bar 3. Update the profile details such as street, city 4. Save profile changes	Verified that the profile changes are successfully reflected when the page is refreshed.
5	On the profile page, Click the “Create Organization” button. Provide the name of new organization and relevant details. Save new organization details	Verified that new organization is displayed in the profile page after refreshing the page.
6	Use profile page to join an organization. To view join request, login to owners account and click “Pending Approvals” button on the dashboard.	Verified that the join request is sent to the organization owner.
7	View hackathon as admin: 1. Login as admin 2. Click “View Hackathons” button on dashboard	Verified that details for all the hackathons are displayed. Also, admin can view 1. Judges 2. Teams and results status 3. Payment status for that hackathon 4. Hackathon earning report In this page, user can also open/close/finalize a hackathon. After user finalizes a hackathon using “Finalize” button, buttons in updated columns are disabled.

8	Join a hackathon: 1. Login to app as hacker 2. CLick on “View Hackathon” button on dashboard 3. Displays a list of hackathons. 4. Click on ‘Join’ button to join a hackathon. 5. Provide the team name and choose team members and roles from the pop-up 6. Click “Create Team” to create new team and join hackathon	The current user is taken to the payment page where as all the members of the team receive email asking to complete the payment.
9	Payment for hackathon: 1. Login to app and go to “View Hackathon” page. 2. Click the “Pay” button to make payment for the hackathon.	The user is taken to payment page where he can make the payment. If user has already pied for a hackathon, the “Pay” button for that hackathon in “View Hackathon” page is disabled.
10	Submit code: 1. Login to app as hacker 2. Dashboard displays all the hackathons. 3. The hackathons, the current user is part of, has “Code” button. 4. Click this button to open the submission page. The submission box displays the previously submitted link, if any. 5. Provide new submission link and click “Submit”.	Verified that the user cannot make submission for the hackathon until entire team has paid.
10	Finalizing a hackathon: 1. Login as admin user and go to “View HAckathon” page 2. Click “Finalize” button to finalize a particular hackathon	Verified that admin cannot finalize a hackathon until all teams have received some score (the “Finalize” button is disabled). Also, once a hackathon is close, it is evaluated and participants are informed about the results via email. Winners of the hackathon are sent congratulatory emails.
11	Add expenses for a hackathon (Bonus feature): 1. Login as admin 2. Click “View Hackathons” button - displays list of all hackathons 3. Click “Add Expense” button in the Update column to display expense modal. Provide the expense details in the modal.	Verified that the new expenses are reflected in the earning report. To See the earning report 1. Login as admin user 2. Click “View Hackathon” button to go to view-hackathon page 3. Click “Earning Report” Button to see the earning report for given hackathon.
12	Invite non-member to hackathons: 1. Login to the app 2. Click “Invite Friend” button on the dashboard to open the modal where you can provide the email address of a friend	Verified that non-members receive invitation emails.

Lessons learned

1. Deployment of the app on cloud need some expertise. It is a time-consuming activity and should be well planned before deployment.
2. Establishing database schema and use of Normalization methods help minimize further changes when if done at the very beginning of development cycle.

Possible future work

1. Enhancements in the presentation layer (frontend) to better support mobile devices such as tables, smartphones
2. Improve service availability and scalability by deploying the business tier of the application as containers with Kubernetes