CSCI 5409

ADVANCE TOPICS IN CLOUD COMPUTING

TICKET BOOKING SYSTEM

GROUP – 8 ALPHA TEAM

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CONTENT

PROJECT OVERVIEW

Ticket Booking System is an online booking portal that helps their user to register and book their tickets for any event that are registered on the website. For the past year, the world is hit with this uncertain phase of COVID pandemic that has created an imbalance in everyone's movement. With COVID being a high transmissible disease, experts have asked people to avoid/cancel social gatherings in large number and thus, many social events like charities, concerts, book show, Comic Con, counsel meetings and many more have been impacted the most by this pandemic. As these events are preplanned months before, the organizer has made big investment with the hope of good return but such sudden cancellation, even though for greater good surely takes a huge toll on their returns. However, with vaccine rollouts around the world and the situation getting back to pre-COVID times, the authorities allowed to conduct these social events but with one condition that their event should only have limited number of people.

To meet previously mentioned criteria and ensure only limited number of people attend their events, every organizer have to ask their customer to register themselves for their event beforehand so that they can conduct the event in a safe environment. So, that's when our system comes into picture. Our system will have two type of users – Event Organizer and Interested Audience. First, organizer can post their events and related information like date, location, safety measures, capacity and any other requirements. And, then the interested party who wise to attend the event can register themselves for that event after he/she meets the minimum requirements set by the organizers like proof of vaccination and pay event fee (if any). Once registered, that user will get auto generated ticket number which will act as a pass to the event and that same number will also be reflecting on organizer's side as well which makes it easy for them as well to authenticate their audience and ensure only limited, registered audience is attending the event in person. In terms of security and privacy of user information, our system will be authenticating the organizer and their audiences, both parties are required to create and login to their account and register themselves as registered user. Also, when audience will register for the event, they need to verify themselves using the OTP that will be send to their given email id or phone number. Also, the card details which the user will use to make the payment will be validated by custom verification algorithm and these details will be encrypted with SHA-256 encryption, providing extra layer of security.

We feel that even though pandemic is here to stay for the time being, our system will be the key element for the organizers to safely conduct their social events while meeting minimum requirements for people's safety. Also, our platform ensure that each piece of information provided by user is not shared and kept secured within the system's database.

FUNCTIONALITY

As mentioned in the overview our main objective is to develop a cloud based ticketing system which could generate the tickets automatically and without intervention from the human. In this system we are adding multiple layers of safety for users and there are many services from AWS used in development of this cloud-based project.

There would be a complete cloud-based system in which user could log in and then book as many tickets as they want. The payments would be handled by the Payment gate way and there would be an additional layer of encryption and security for the payments. User's data would be saved in database for easy and smooth access of the website and that would be completely encrypted with SHA level algorithms. Along with the security, each time the user books any tickets they would get the SMS notification or the direct mail generated by the cloud API's.

The proposed project would completely base on the AWS services and we would use python language if any lambda function is required to be created. Using cloud services would ensure the complete usability of the system and would allow us to have a remote database which could be further utilized on saving the cache memory in S3.

The platform could independently book the tickets and for the extension of the project according to the time there could be a functionality to implement reporting with the help of AWS quick sight. In upcoming module all the required services are mentioned will all redundant use proposed in this project.

LIST OF THE PROPOSED SEVICES

MECHANISM	SERVICE	FUNCTION
COMPUTE ENGINE	• EC2 • Docker	These services will allow users to book their tickets. The Docker would be hosted on Elastic Beanstalk and the application would be run via an EC2 compute engine.
DATABASE	• RDS • DynamoDB	These services will be utilized to store the data that will be given by the user at sign up time. Also, it will store the allotted ticket number and events details per user as well
COACHING OF THE DATA	• S3	This service is used for storing intermediate user data that might be used on later stage of the process.
GENERAL	• SNS • SQS • SECRET MANAGER	SNS would be used to send SMS/email notifications to the users. SQS would be used for queuing and secret manager for password management.
ENCRYPTION	• SHA-256 (Python Lambda)	This class will be used to encrypt the user data

NETWORK	• VPC • API GATEWAY	These services will be used to create VMs and to deploy our Docker images
ADDITIONAL/ FUTURE EXTENTIONS	• AWS GLUE • QUICKSORT	It will be used to manage and operate the data.
SECURITY OPTIONAL	• Card Authentication Code	It will be an additional thing for the security

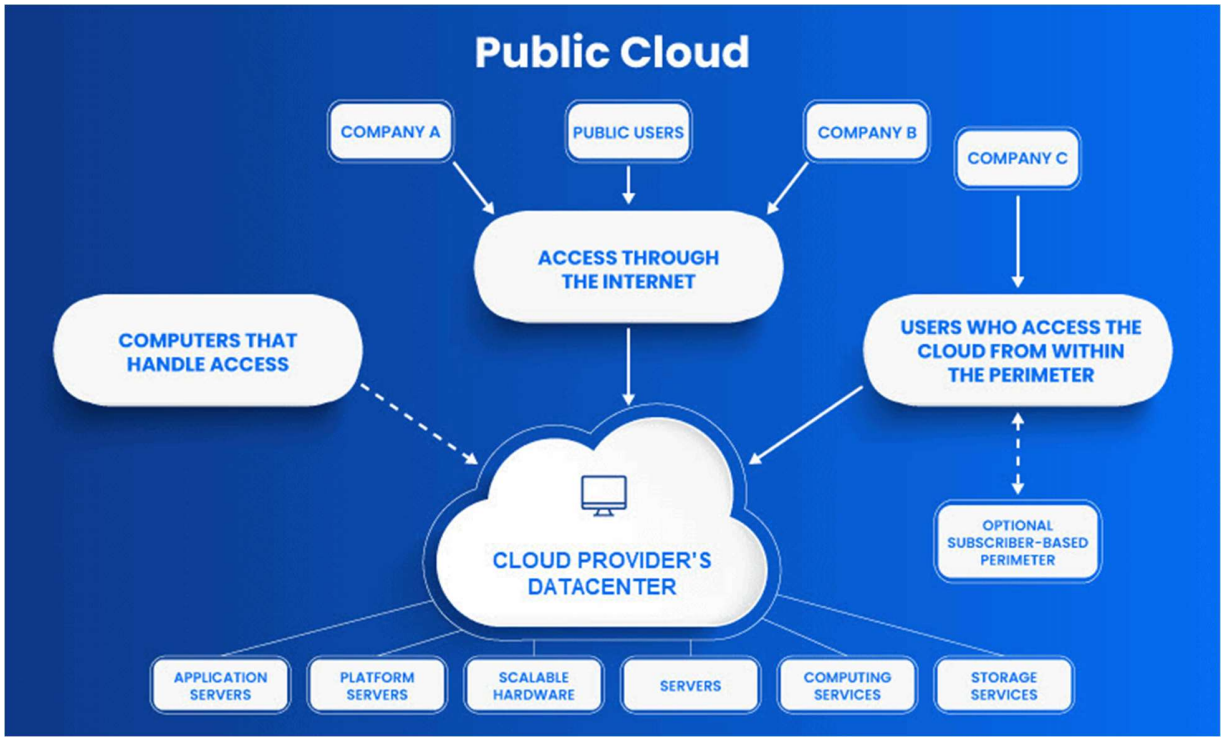
EXPECTED TIMELINE

SPRINT(2WEEKS)	DELIEVERABLE	PROJECT STATUS
20th September – 10th October (Sprint 01)	• Discussion about what should be our definition • Figuring out the strengths of each member • Deciding the services that we will use in our project • Defining the deployment model	20%
13th October- 29th October (Sprint 02)	• Defining Overall Project design • Deciding on individual task • Implementation of Sign Up and Sign in for audience and organizers using AWS S3. • Store the user data using AWS DynamoDB or RDS and SECRET MANAGER.	45%

30th October- 14th November (Sprint 03)	• Implement booking system for audience and event registration system for organizer • Implement unique ticker number generation. • Implement payment gateway with automatic card verification system	75%
15th November – 30th November (Sprint 04)	• Setup user authentication using OTP via mobile number or email. •	100%
2nd December (Sprint 05)	• Final Report • Video Presentation • Final Submission	

DEPLOYMENT MODEL

The Ticket booking system would be se deployed as a Software as a Service model. It would be deployed on Amazon AWS which is a public cloud. The implementation would be in python and a Docker image would be deployed on Elastic Beanstalk on a AWS EC2 compute engine.



In a public cloud environment, the application is run on the devices in the cloud provider's datacenter and users can access the cloud for testing and developing the applications. Our system would be resting on some AWS datacenter and hence we would be able to access it using the public IP of the application.

ADVANTAGES

- Since the application would be hosted on a public cloud, we would have no hardware investment and no infrastructure management would be required. However, we would require AWS credits to use the services.
- The model is scalable as there are no restrictions, we pay for the services we use.
- The cost associated is low.
- High reliability which means if a datacenter where our application resides fails, we would still be able to access the application through the backup data center

TRADEOFF'S / DISADVANTAGES

- Since the application is located on a public cloud there are security concerns associated with it.
- Some services may be unable to use which could have been available with a private cloud.
- Public cloud would not offer customization. We have to choose from the list of services and resources.
- Shared cloud and hence can have high latency.

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