Automated Placement and Recruitment System Using Cloud Service

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Abstract - Training and placement cell of an institute is responsible for providing placement opportunities to the students for getting placements. Currently most of the T&P cells are dependent on other systems (I.e. Google Forms, excel sheets) for storing data of students in relation with recruitment drives held in the organization. Also most of the work like generating reports and handling student documents is done manually. In the proposed system Automation of recruitment process eliminates the degree of dependency on other systems. Automation focuses on sharing of details of various placement drives with eligible students, generating CVs, QR based attendance system and generate reports in form of Charts. As a result details of placed students can be monitored and updated. The system is to be Hosted on Cloud so the issue comes with the security, So to deal with that SHA256 algorithm is used in the form of JWT (Json Web Token) for all the transactions. Resultant system leads to ease in recruiting the students and also reduction in paper work leading to digitization.

I. INTRODUCTION

Cloud Computing is a technology that uses the internet and central remote servers to maintain data and applications. Cloud computing allows consumers and businesses to use applications without installation and access their personales at any computer with internet access. This technology allows for much more efficient computing by centralizing data storage, processing and bandwidth. Iaas, Paas, Saas Architectures.

Iaas gives us facility to use infrastructure of the service providers and load our services on infrastructure and so is to be done for this application. This automated system is to be hosted on Cloud servers of service providers like AWS (Amazon Web Services) or GCP (Google Cloud Platform). Cost depends on the quantity of resources used.

Today every student want to get placed in organization before he/she completes the Graduation from the College. Also every college wants to get a higher no. Of students placed from their college so as to get a popularity. But, when the thing comes to an actual placement system, most of the work is still done on paper. Else there is a dependency on Google forms to get the students data. Each time students need to fill all of there information again and again. Even after registering for the placement drives, on the day of drive paper based attendance system is used. In this era of digitization there should not be place for such type of system.

II. RELATED WORK

On June 7, 2016, Oracle announced the Oracle Cloud. This cloud oaring is poised to be the est to provide users with access to an integrated set of IT solutions, including the Applications (SaaS), Platform (PaaS), and Infrastructure (IaaS) layers. In May 2012, Google Compute Engine was released in preview, before being rolled out into General Availability in December 2013. This paper describes how the different decision tree algorithms used to predict students performance in placement.Decision tree algorithm, tree shaped structure that represent decision sets. They generate Rules which are used for the classification of data. [1].

Saroj Goyal, Dr. Surendra Yadav and Manish Mathuraiya in [2] explored the usability of QR in general life and described how to use it as digitization in securing the educational documents. Their research also implements Digital Authentication using on QR Code Verification in Education System. They also described the working of QR I.e. Encoding and Decoding a QR.

Shay Gueron, Simon Johnson and Jesse Walker in [2] described two hashing algorithms SHA256 and SHA512. Both the algorithms used 64 bit architectures. Cryptography in SHA is done such that it is only one way algorithm i.e. the data can only be encrypted but cant be decrypted easily. It Generates encrypted of same length for any length of plain text message.

III. METHODOLOGY

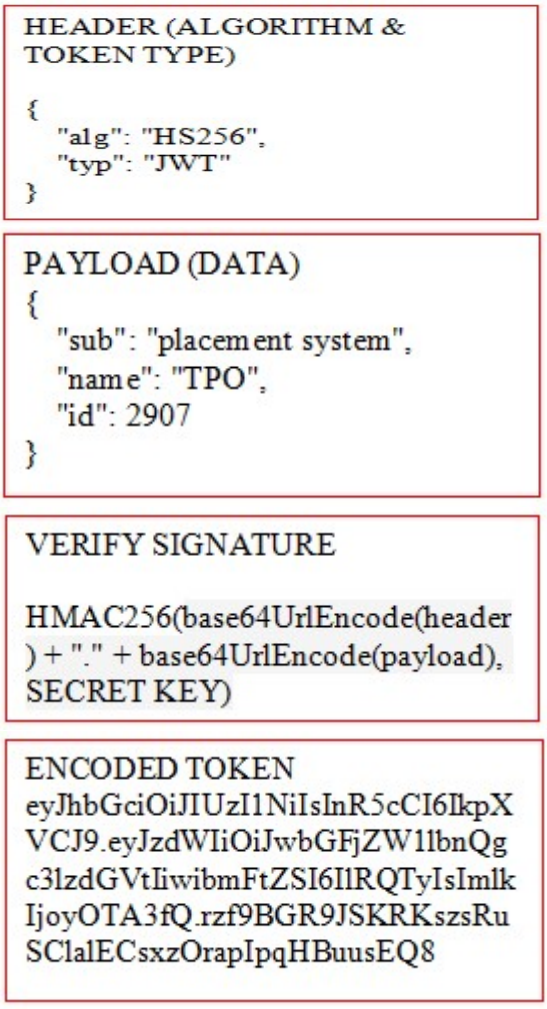
Using the system the students can create their account filling up all of there academic details and personal details. Also students can upload the required documents so that they need not submit documents every time during the interview. Whenever any organization is coming to hire students from the college, TPO needs to create the drive and fill up all the details of eligibility criteria. On creating a drive all the students who come under that eligibility criteria are sent a mail regarding the drive. Those eligible students can register by logging in to the system or by using the link received in email. After registration a QR code will be generated and student will get a confirmation form containing that QR code. On the day of interview QR code will be scanned so as to mark the attendance of the student for the particular drive. Student can take their own CVs designed by them or can also use the standard resume formats provided for CV generation on the system. Later on TPO can set the status of student who got placed as Placed and then generating the report regarding the same.

➢ Security

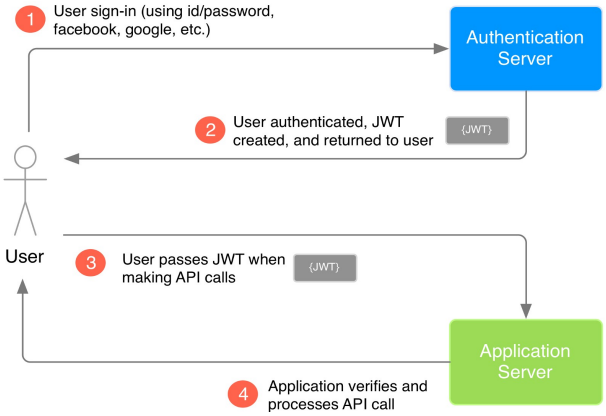
Biggest concern of cloud hosted systems is their security. As our system holds storage of documents for all the students, the system should be secured highly as possible. For security concerns all the transactions of the system are going to be token based. Json Web Token (JWT) are to be used along with SHA256.
JWT consists of 3 major parts :-

1. **Header** :- Contains details about the algorithm used and the type of token we are using (I.e. JWT)
2. **Payload (data)** :- It consists of data in form of Key and value
3. **Signature** :- It contains the encoded header and payload along with the secret key.

Look at the example given below:-



This tokenized transaction means when the student or TPO will log in then a token will be assigned to the user. That token will contain the details of the user encrypted with SHA256. Whenever the user performs any operation token will be passed first and checked whether the user exists or not, and if it exists then it is checked that is the user Authenticated. Whole scenario is depicted in figure below.



➢ **Sending mails asynchronously using :-**

The system is going to send the mails to eligible students for a particular drive. List of eligible students will be fetched according to the given request and then mails will be sent accordingly. Email-ids in the resultant list will be stored in a Queue of RabbitMQ server. Mails will be sent continuously in the background till the queue gets empty. We just create a mailing task and assign it to Celery in Django.

IV. IMPLEMENTATION

System is implemented using the following technology stack :-

- Django (Python Framework)
- VueJs (Javascript Framework)

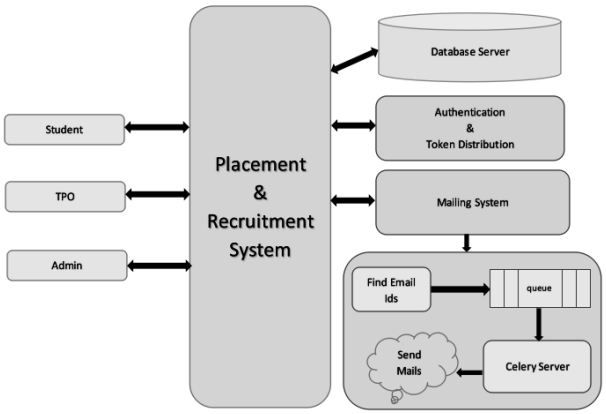
Django uses a object based querying language so as to provide a Object oriented concept. All the logics to handle data and authentication are implemented using Django. As Python language has a vast future scope so this system can be extended to a level of Artificial Intelligence also. Django gives facility to use Email Multi Alternatives, MultiValueAttributes which is useful to divide students according to their eligibility.

Django provides a admin template to handle the users (i.e., Student and TPO). Users are put up in two groups. Developer is responsible to create a superuser and provide credentials to admin or make the admin learn to do so if required.

Data from client side is recieved in form of Json. Json format just consist of a key and value pair. Parameters in the Json data are loaded into a variable and then later on various elements are fetched out of that variable.

VueJs provides a better designing and dynamic designs for better User Experience and exchange of data using axios. Vue-Bootstrap is mixed framework of VueJs and Bootstrap that provides better responsive designs and more alternatives for designing.

All of the onload funtions (i.e, on loading of a page) are handled by computed section whereas other data sending and operation functions are handled in method section.



➢ **Authentication System :-**

Lets take "A" as a user
Step 1 - A Logs in to the account and becomes authenticated.

Step 2 - JWT is generated and stored into the local storage on the browser for reference of A.

Step 3 - A sends request for any operation (register for drive, update profile etc.) JWT stored at the local storage is also sent along with the request.

Step 4 - Decode JWT

Step 5 - Check
if (A in user list && authenticated)
If (authenticated)
Perform operation;
Return response data;

- **Asynchronous Mail sending**

Suppose TCS is coming to hire candidates from IT and computer department who are holding an aggregate of more than 65%.

Step 1:- TPO creates a drive registration form filling up all the details and eligibility criteria of the student and sends a request over django server to create a drive and send mails to all the eligible students only.

Step 2 :- Student whose department is among the given departments and overcomes the eligibility criteria are selected.

Step 3 :- Emails of selected student are appended to a list.

Step 4 :- Task of sending emails is assigned to celery server that sends mails to all the email ids in the background.

Step 5 :- After assigning the task, response of drive registration is sent to the TPO where as the email sending task keeps on working in the background.

V. CONCLUSION

In the existing systems, most of the tasks are to be performed manually such as report generation, Attendance, Resume Generation, Sending mails etc. Proposed solution will somehow lead to reduction of time consumption and stress too. Automation of the Placement System will also result in better enhanced job opportunities for students.

VI. REFERNCES