Hacknight Project – Byte by Byte

Proposal

Problem Statement Introduction:

In our college, if a student needs to know what all events are happening in college during that week, he/she needs to comb through outlook emails to find out the exact time/date of that event. Some events are also only posted on the facebook group. This proves to be highly inconvenient if he/she wants to schedule their time.

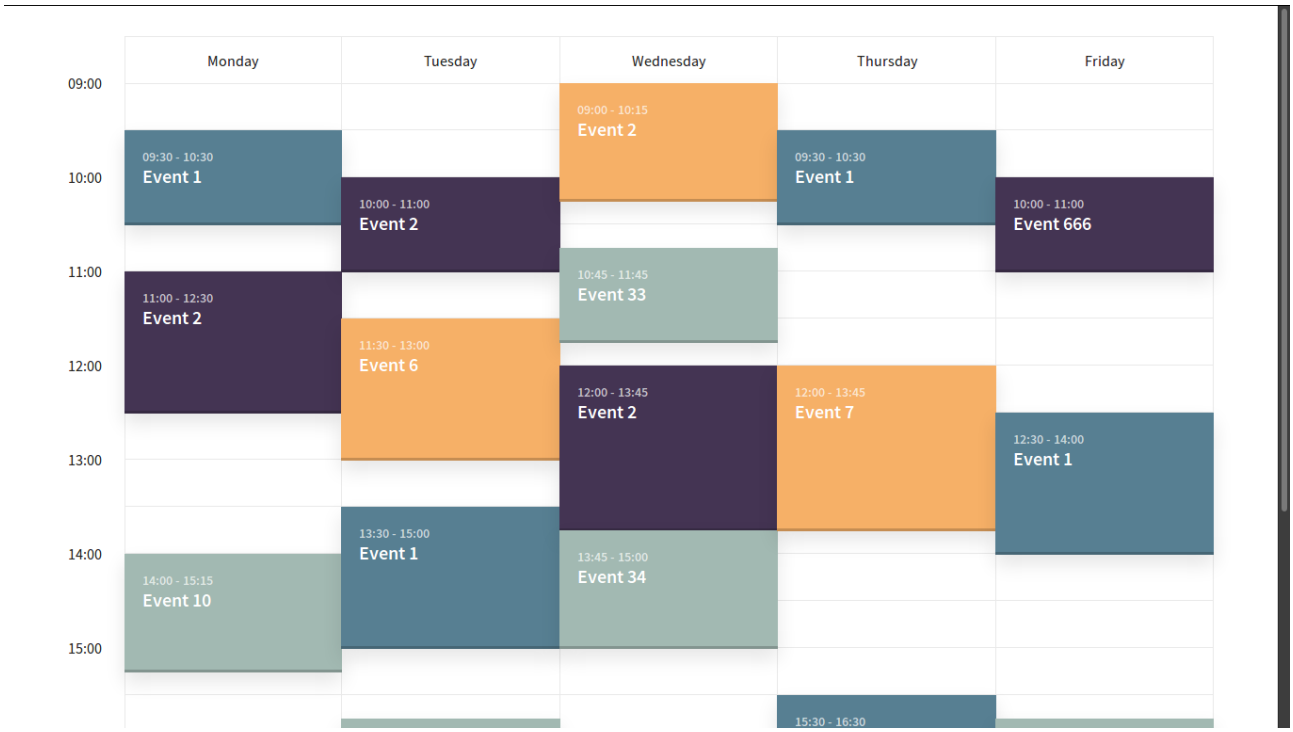
So, we want to create a site where we can view all the events that are happening over the week in one glance!

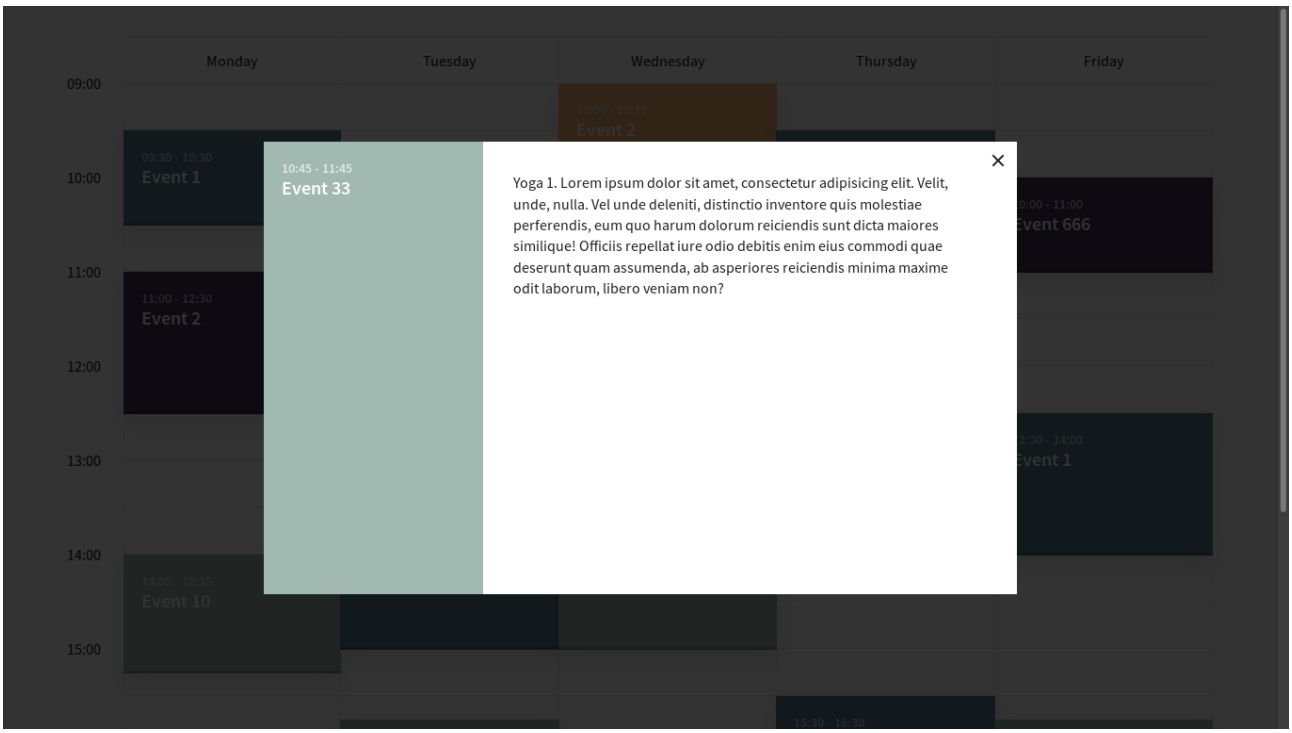
Our Solution:

Create a scheduler style application where students/faculty can view and manage events. It shall be the 'go to' portal for all information regarding all the events happening in College, for both students and faculty.

Key points:

1) We shall have a scheduler that shall list out all the events that occur on that day. It shall be shown on a timetable format as shown in the picture below. (This format is tentative, and can be improved upon in the future).





Each event shall have a name, timings, date,location and a description.

2) We have basically used the facebook graph API to extract the post about some event from the IIITB lounge group. This is for the student affairs events. To handle events posted by the administration, we shall have a dedicated email account for this application. The administration can ‘cc’ the email to this account. So, whenever an email is received, the application shall scrap this and extract the post.

3) The description shall contain the original post on which we apply our NLP algorithm. (Natural Language Processing).
We are using an NLP algorithm to extract the date, time, location, name and other details from the post on facebook/email on outlook.

4) All these steps shall be done on the back end. Now, after we have extracted all these details, we shall use Javascript to display this information on the webpage, in the format as shown in the above picture.

How is it useful to students:

Students will be able to easily remember about events happening in college. They can schedule their time easily and will not miss events, because of a long forgotten e-mail or a buried facebook post.

How is it useful for the administration:

They will also be able to easily organize events, easily determine clashes of events in the same classrooms, and also be able to view at a glance, all the events happening in the college.

Why is this better than existing/other solutions?

This allows everyone to be updated on all the events happening immediately. Also, there is no solution as of now, which allows for organized scheduling of events. Forum posts in lms, outlook e-mails and facebook posts are the only methods (depending on the type of event)through which people get intimated by , which are all disorganized.

Tech:

Language/framework:

Backend:
The reason we are using Flask is mainly because of easy implementation. Flask is quick and easy to write, which makes it good for the current project which is simple and not a heavyweight application.
An alternative we could have used is Django. Django has very good scalability, but the code is somewhat longer/heavier to handle and that is why we have chosen Flask for implementation.
Also, approximately, at max, about 200 users will be viewing at the same time, which won't stifle the bottleneck in Flask, which can handle only one request at a time.

Front End:
We will be implementing the pages using Javascript for this presentation. We have a template which display's the calendar in a scheduler format. In the future, if need be, we can use a framework like react/view to improve scalability and make it easier to write.

Facebook graph API and Outlook API:
We are using this API to be able to extract posts from the lounge. Since lounge is a secret group, we shall have a dedicated facebook account that shall be a member of this group to allow the application to extract the facebook posts. As of now, due to the recent privacy issue, facebook has stopped access to group feeds through their API as of now. In the future, we hope that this restriction will be removed.

We have a demo program which is able to extract the last email from an email account. Using this, we are able to acquire events for the program. All the administration needs to do is cc a copy of their usual email to a dedicated account, which will be read by the application.

NLP library (NER's):

We have explored a lot of libraries such as TextRazor, SpaCy, Stanford's CoreNLP,OpenNLP etc.
We tried a lot of test cases on all of these and we have a few results:
1)CoreNLP provides the best result. TextRazor has also provided a good result
2)The NLP can also be trained to recognize new patters and be able to find events more easily after learning from previous cases.

Database Management:

For database management we have chosen SQLAlchemy. It is easy to use and workes well with Flask.

Authentication and Authorization Problem:

As a result of automization of the entire procedure, we won't need to have any login procedures for anyone. It will work on its own, which makes it easy for everyone else.

Deployment Plan:

We are planning to deploy this application in a subdomain in the websites hosted by IIIT-Bangalore.

Timeline and Work Distribution:

We would like to request 1 month for development time, starting during the vacations. Once summer vacations start, we believe that by 1 month, we will have a perfectly functional implementation of the given idea with all the essential features and depending on the feasability and success, we can add extra features to enhance the experience in the future.

Ayush: Facebook graph API/Outlook email API implementation and Flask
Kaushal: NLP algorithm implementation and Flask
Ram: HTML front end implementation and Flask