Unique User Identification across Multiple Social Networks

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Abstract: *Social Medias are the great place where people can connect with all their family and friends. Number of people has their account on social Medias and this number is increasing tremendously. Many users have their accounts on various social network sites and also there friends may be registered on multiple sites with different requirements like users may register to LinkedIn for professional purpose while Facebook for connecting with friends; hence it has become difficult to locate friends and former colleagues. These problems arise due to private profiles, multiple usernames, lack of profile descriptions and different profile picture on different sites. User may login to different social networking sites at different timing, so user may not find his friends online when he logins to the particular social networking website.*

The application proposed in this paper overcomes these problems. This application will bring together our online friends on different social networking sites into a single integrated environment (FeedBuzz) and hence eradicating the need of logging in to the different sites individually for communicating and would also enable the user to keep up-to-date with their virtual contacts more easily and will also allow users to search their peers across multiple sites through one platform.

In this paper, two existing social Medias Facebook and Twitter with different fields of interests are aggregated on FeedBuzz. Hence even though the user is online on Facebook and his friend on Twitter, they can easily communicate with each other. Other than these advantages the system also achieves security and privacy.

Keywords: *Social Medias, APIs, OAuth Verification, SDK.*

1. INTRODUCTION

Due to the tremendous growth in online social media, the size of users is also growing. In India more than 58% of populations are highly active on social Medias. The rate of population registering into social networking sites is growing day by day. Social media are computer- mediated tools that allow people or companies to create, share, or exchange information, career interests, ideas, and pictures/videos in virtual communities. Every social media applications differ from each other on the basis of their goals and characteristics. Each has different ways to store and display information about a user and all has their specific content, way of communication, and the information provided by the user in their profiles, relationships among users, etc. For example, users create account on Facebook for personal connections, and they may use Twitter for sharing public information while in Facebook information sharing is restricted. It depends on user to keep the information public or private while users join LinkedIn for professional connections. The different services are offered by each social network, users then become members of multiple social networks. On each networking sites user provides description about their identity. Identity is the set of attributes that differentiates a user from others. Each site provides a column for describing themselves. It depends on user that how are they defining. For instance, on LinkedIn, they may give the professional description and casual for Facebook. There may also be restriction on characters for different sites. The online identity includes user's username, profile picture, their friend's network, and the content they create or that is shared with them. The virtual identity creation process on each social network gives her a control to hide, put public and skip their attributes and therefore her identity attributes may vary largely across multiple social networks. Because of varied and non-linked identities of a user, it is difficult to find them across sites, as it may happen that there exists more than one account of same username. Therefore, this application is solution to this problem.

Our application can also be helpful in different domains. In security domain, it can be helpful in recognizing malicious user. Malicious users exploit online social networks for activities such as Spam,

Identity theft, Phishing etc. These kinds of users create account using the same identity of our friends therefore we add them to our account thinking that they are our friend. For identifying such user, this application will be in great help.

Services such as Friend Feed, Alter ion and Flavors. me are based on social media aggregation. These sites help you to combine your different social networking profiles into one, and enable search across multiple social networks but the limitation to these services is that the user must explicitly register to all the services he wishes to combine.

In this paper, the application is designed given a set of functional requirements such as integrating the existing social media applications with our application and eradicating the need of login in separately for communication process and the non-functional requirements such as usability, security and privacy.

The contribution of this work is the creation of an application that allows the user to communicate with their peers even if they and their peers are online on different social Medias and also allows searching another user across different sites through one single platform.

2. RELATED WORK

To the best of our knowledge, the work presented by [1], has used the concept of Digital footprints. The information about the user that exists on the virtual world as the result of their online activity is said to be digital footprints. They have introduced two identity search algorithms based on content and network attributes and improves on traditional identity search algorithm based on profile attributes of a user. These algorithms were applied to find a user's identity on Facebook, given their identity on Twitter.

The work presented by [2], has used the Profile matching algorithm to search and match the users across the sites. The data from two popular social networks were taken into consideration to study the similarity of profile definition. They evaluated the importance of fields in the web profile and developed a profile comparison tool.

Another work proposed by [3], includes an algorithm for profile matching in social networks, which helps to identify a particular person who has multiple social networking accounts and map his/her profile's attribute values with others in the same network to

make a search of friends easier. They prepared a dataset from the attributes present in their profiles. The common attributes are matched and search a friend over a network. The profile of one person is matched over the two sites rule based classification algorithm is applied to decide whether these two profiles belongs to a single person. Similarities between two attribute's values are calculated using similarity functions of name similarity.
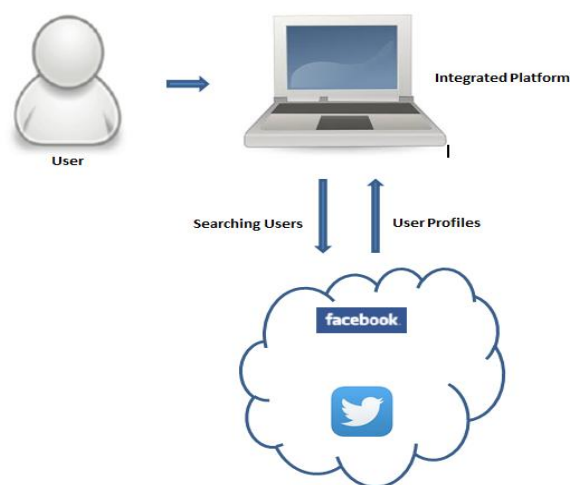
3. PROPOSED METHOD

Fig 1: *High Level Overview of the System*

3.1 Social Medias

Social media is basically a service that allows people to interact and also they create, share, and update the Information. There are several social Medias like Facebook, Twitter, and LinkedIn etc.

3.1.1 Twitter

Twitter is a service that allows user to post blogs that is called as tweets. The tweet is restricted up to 140 characters. For posting the tweet, the user must be a registered user. The unregistered user only has the permission to read the tweets. Every registered user has one profile in which they can give description about themselves. The users can connect with each other or form a virtual relationship by following them. The concept of hash tag, "#" is used to highlight a word in the tweet and to show what's trending on twitter. If any user wants to search any specific blog then he/she can use the hash tags for finding.

In this paper, twitter is used as one of the site that is being aggregated. It will allow you to post and read the tweets and also it will provide you an accessibility to talk with the friends that are active on Facebook.

3.1.2 Facebook

Facebook is one another service that lets you connect with your close mates. To be able to use Facebook, the users have to create their own personal profile. Unlike twitter, the concept of friend request is used in Facebook for getting connected with other users. It also allows you to follow the pages of some famous people or brands etc. This also supports the creation of event pages or groups. Facebook have also added support for hash tags in posts where each hash tag is given a link that the users can press to view all other posts containing that same hash tag.

In this paper, Facebook is used as another site that is being aggregated. It will allow you to post photos and videos, publish status and also it will provide you an accessibility to exchange messages with the friends that are active on Twitter.

3.1.3 API

API stands for an application-programming interface. Many applications provide this interface to access the application. It is basically set of subroutine definitions, protocols, and tools for building application software. The set clearly defines methods of communication between different software. When any application provide public API, applications allow developers to design products and applications that utilize the services accessible exposed through the API.

3.1.4 OAuth Verification

Most of the applications use OAuth verification for authentication of the user. Facebook and Twitter are among them. This is an open standard for authentication. The owners of the specific application use OAuth to permit access to third-party client application without sharing their credentials. Once a client application is authenticated they are given an access token that is used when issuing queries to the resource owners APIs. Users only have to request the access token once. The access token is granted valid until it expires. Once a token is expired, the user will have to request a new access token.

In this paper OAuth verification is used for fetching the data from Twitter.

3.1.5 SDK

Software Development Kit (SDK) is a set of tools for software development that allows you to create applications for a certain software package, operating system, video game console etc. In this paper SDK is used for Facebook.
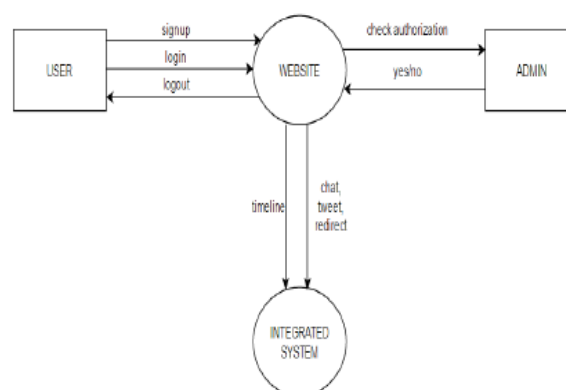
3.2 DESIGN AND IMPLEMENTATION

Fig 2: *Context Level Diagram*

For accessing the application (FEEDBUZZ), the user has to register on to the application. OAuth verification is done for verifying an authenticated user. The integrated platform/ website uses hibernate framework to interact with the MySQL server.
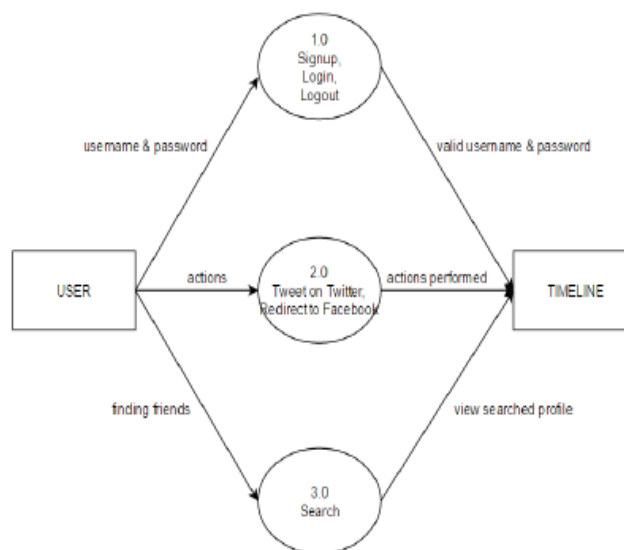

Fig 3: *Level 0 DFD*

The user can perform operations like updating posts, tweeting on twitter, reading the newsfeed, searching friends on portal and chatting with friends. All the activities will be displayed on user's timeline.

External Entities:

1. Admin
2. Users
3. Desktop

Processes:

1. Sign in

2. Login

3. Create profiles

4. Login to sites

5. Information of user profile from different sites

6. Updated / Modified Data (optional)

7. Chat box communication

8. Search on portal

9. Logout

Data Store:

1. Account created

2. Information of the users
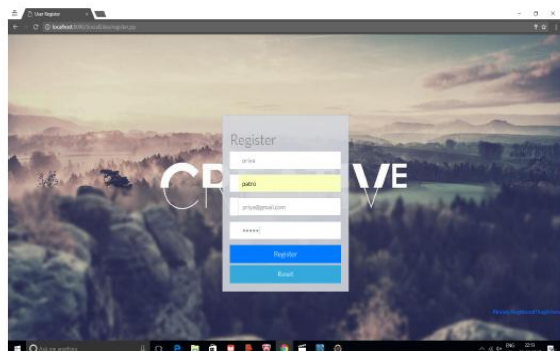
3. Changes in the timeline

4. RESULTS

Fig 4: *Registration Page*

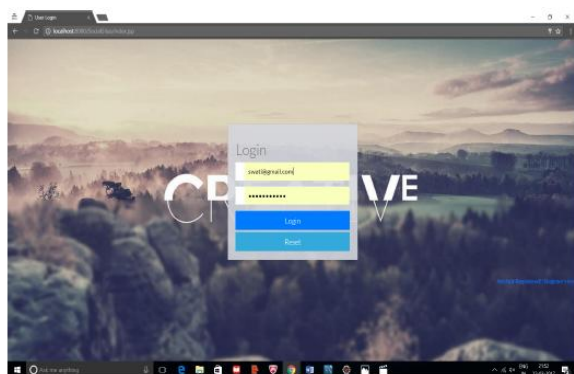The new users need to register to create an account on FeedBuzz.

Fig 5: *Login Page*

The login page checks if the user is authenticated or not. The user needs to put their username and password to view their timeline.
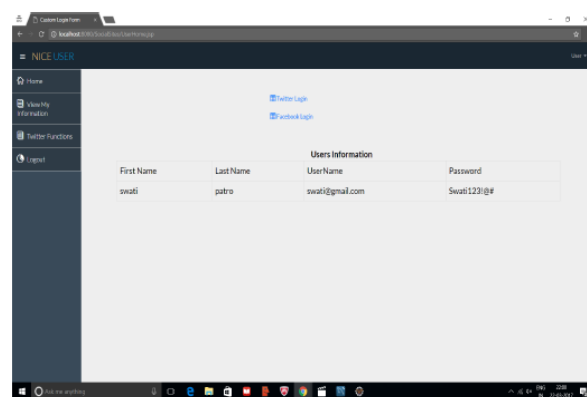
Fig 6: *Home Page*

The homepage has two tabs- Twitter login and Facebook login. Clicking on either of the tabs gives the information of the user.
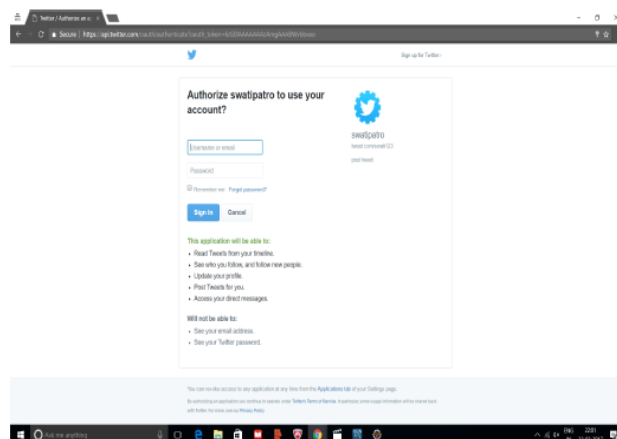
Fig 7: *Twitter Login Page*

The user after logging in to portal, then have to login to twitter by providing username or email and password of twitter to get the user's twitter information. This step is needed only when the user uses this system for first time. This step need not be followed each time the user logs in.
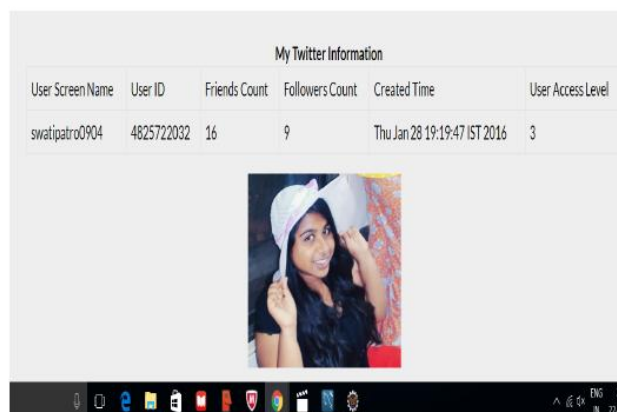
Fig 8: *Twitter information*

User screen name, user ID, friends count, followers count, created time and user access level are some fields that are shown in the twitter information.
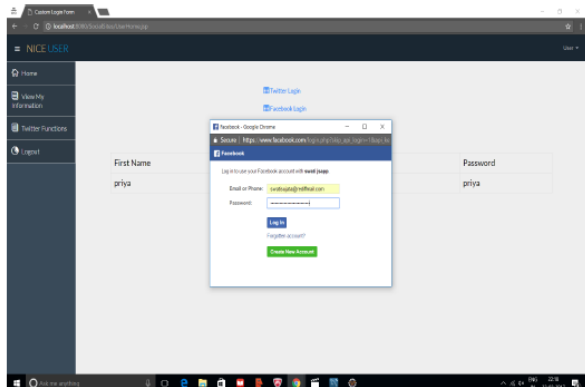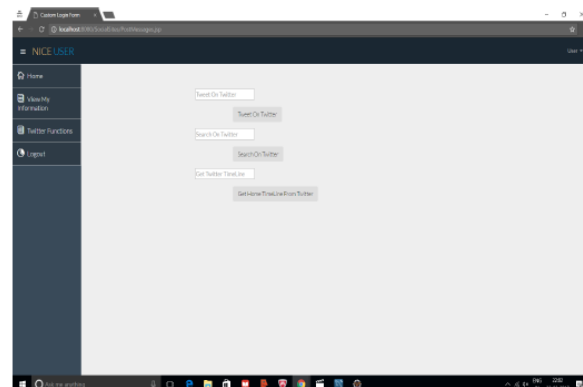

Fig-9: *Facebook Login Page*

The user after logging in to portal, then have to login to Facebook by providing username or email and password of Facebook to get the user's Facebook information. This step is needed only when the user uses this system for first time. This step need not be followed each time the user logs in.

Fig 10: *Facebook public information*

Only the information that user has kept public are shown in Facebook information.

Fig 11: *Facebook Information*

For the account we have tested with, shows the first name, last name, birthday, email, full name, Facebook ID and link as the user's information as the account holder has marked those fields public.

Fig 12: *Twitter Functions*

Tweet on Twitter, search on Twitter, get home timeline from Twitter are the twitter functions that can be performed by the user.
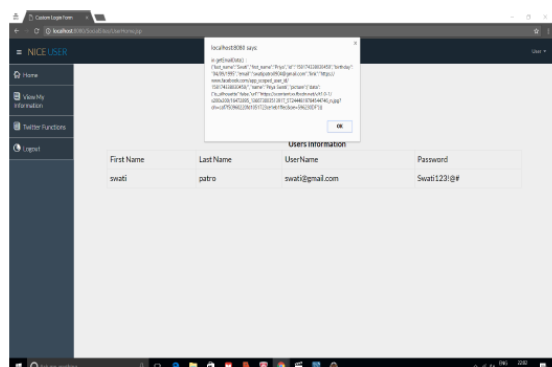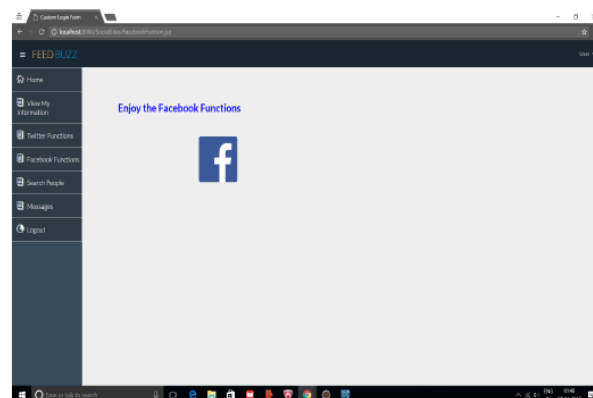

Fig 13: *Facebook Functions*

Clicking on this logo, redirects the user to their Facebook page. Like twitter, Facebook does not allow one to perform specific functions; hence we have made a system that redirects to the page.

Fig 14: *Facebook Redirect*
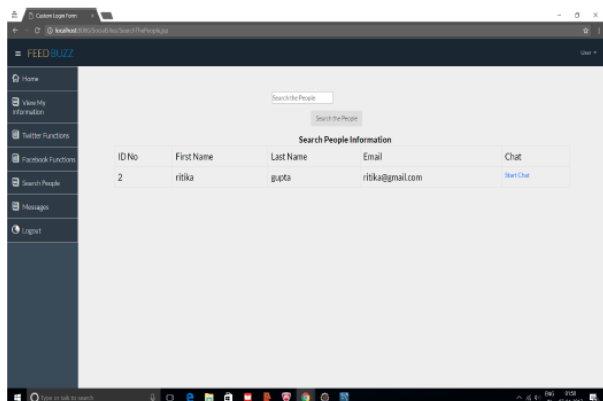
The users timeline on Facebook.

Fig 15: *Search on Portal*

The user can search their friends on portal. And they will get the information like ID no., first name, last name and email. The last row has a link of "start chat", after user clicks on that link, they can chat with that particular friend.
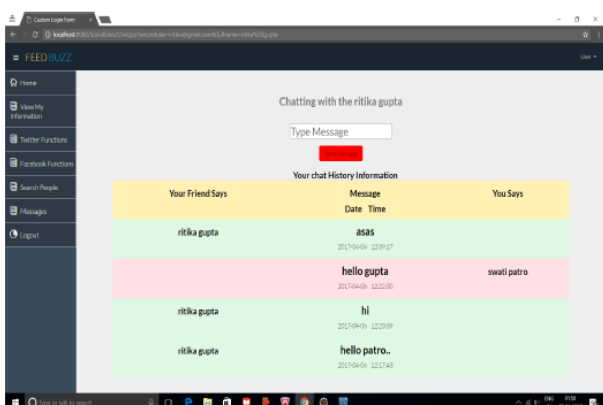

Fig 16: *Chatting*

The middle row shows the message along with the date and time. The first row shows the name with whom are you talking to while the last row shows the user's name.
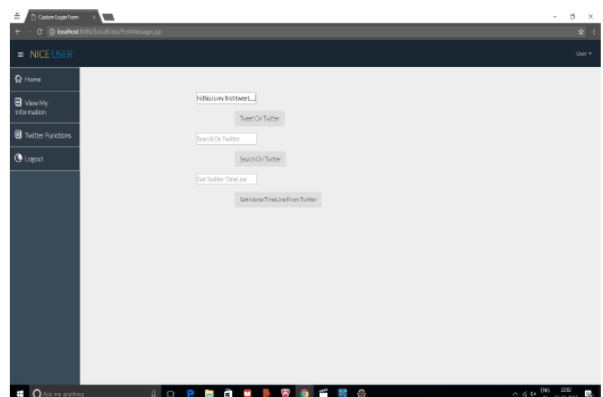

Fig 17: *Tweet on twitter*

The user can tweet using the tab "tweet on twitter".
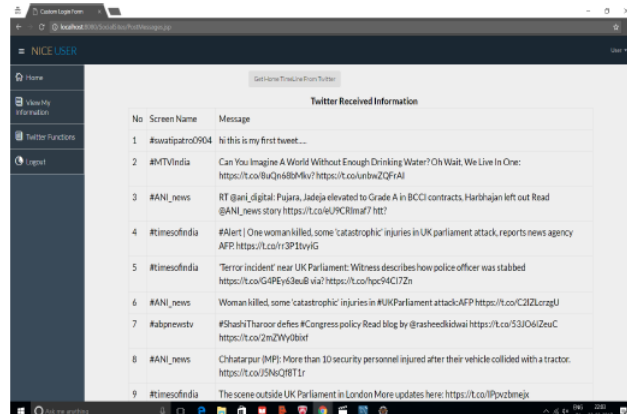

Fig 18: *Timeline Updates*

Shows all the tweets. This has fields- sr. no. , screen name (the one has tweeted) and the message field displays the tweet.
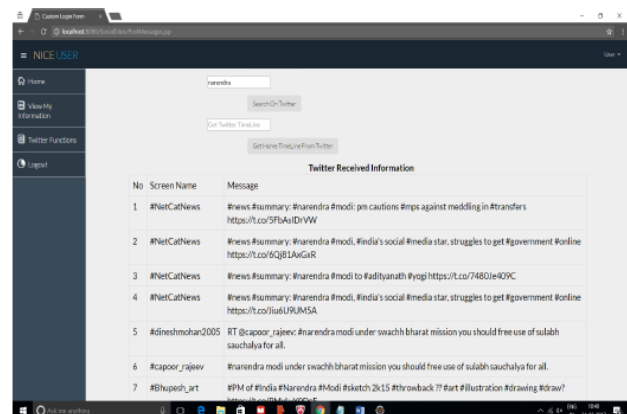

Fig 19: *search hash tags*

We have tested this using hash tag of "Narendra Modi", clicking search on twitter tab, gives you all the tweets that includes that hash tag.
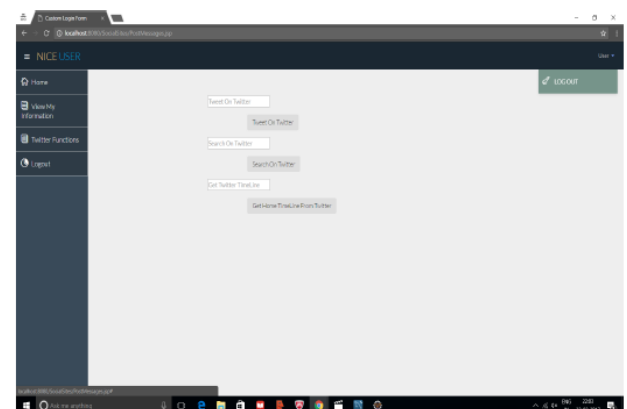

Fig 20: *Logout Page*

Logging out from the Portal.

5. CONCLUSION

In this paper, a system has been developed and tested, which combines multiple social media on one platform. The system is integrated with Twitter by the use of OAuth , where the OAuth is used to retrieve information from twitter and consumer key and consumer secret key are used to get access to the users account on twitter. OAuth also gathers username from the tweet and shows the received information on the timeline which is shown to the end-user of the application. Another system that is been integrated is Facebook that uses App ID to give access to the application for redirecting it to the Facebook website. The application includes onetime login to access the Twitter and Facebook rather than logging in separately. The information that is received on the portal is the public information. This application also updates the attributes and the timeline if any of the sites is updated separately. The application was tested with tweets from handpicked 2 Twitter users, where both of them have profiles on Facebook and 2 non-Twitter users who just have account on Facebook. This test was done to check if the user active on Twitter can chat with the user active on Facebook. The Public figures, for example: Mr. Narendra Modi was used as hash tag to test and to get the result of all the tweets that includes narendra or modi. The username were used to search the users on Facebook and Twitter separately. FeedBuzz is highly secure and the privacy is reserved as only one user account can be added and the developer itself gives the access to the App ID.

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