Summer Fellowship Report

On

Web Development : Statistics

Submitted by

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Under the guidance of

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Chapter 1

Introduction

The tasks FOSSEE assigned to me during the Fellowship was to update the existing FOSSEE stats module by showing the statistics on Map of India with state level and district level data from different FOSSEE Projects in Drupal 7 and later migrate it into Drupal 8.

Drupal is a free and open source content-management framework written in PHP and distributed under the GNU General Public License. Drupal provides a back-end framework with PHP language for personal blogs to corporate, political, and government sites. Systems also use Drupal for knowledge management and for business collaboration. I have used Drupal 7 and Drupal 8 in this time period.

jQuery is used for the smooth performance in the Map and for doing Ajax function. jQuery is a cross-platform JavaScript library designed to simplify the client-side scripting of HTML It is free, open-source software.

Chapter 2

Development of India Stats Map

My first task was to show the statistics of FOSSEE on India Map in the existing FOSSEE Stats Drupal 7 Custom Module. This module is already connected with many databases of FOSSEE Projects. Aman Chauhan and I were working together on this custom module.

2.1 Requirements for Development

For the development of India Stats Map in the existing custom module, following are the requirements,

- Drupal 7 for running the module

- Apache Server as a local server

- MySQL with Adminer for Database Management

- Inkscape for creating and manipulating the SVG images

- India Map with states level and district level

- jQuery for Ajax and navigating the map page

2.2 Implementation of Stats Map in Custom Module

In the beginning, I was asked to fork the code from Github repository and import different database dumps. As the part of implementation, I learnt the working and method of existing Custom Module. The custom module already has a statistics page, which displays the data in

the form of tables and charts. So, the same functions cannot be used for the development of map which led to the creation of new functions in the existing module.

As an initial step I added url path to Stats map page in hook_menu and the url is '/fossee-stats-map'. And defined page callback function as drupal_get_form to show the selecting of different projects, activities and status.

2.2.1 Search Bar

The search bar allows the user to filter the Map with projects, activities and status. The projects will only be displayed and on changing the projects, the Ajax request is sent to get the response with the proper element for the activities. The same will happens when the user changes the activities to show status. The map displayed below the search bar changes accordingly when the user clicks on 'Submit'button.

2.2.2 Displaying the Data Range of Map

The map shows all the states and union territories in India, and the colour of States changes according to their data ranges. For the data range, I created a data set according to large value to smaller values. So, the states colours will vary from orange to grey according to the states value.

This range will change dynamically and show the total count. It will be displayed in the right top of the map.

2.2.3 Displaying the Map

The map is generated according to the filters. The filtering process is done by taking projects types, activities and status. According to these types the states colours will change due to the change in their data when the filters are submitted.
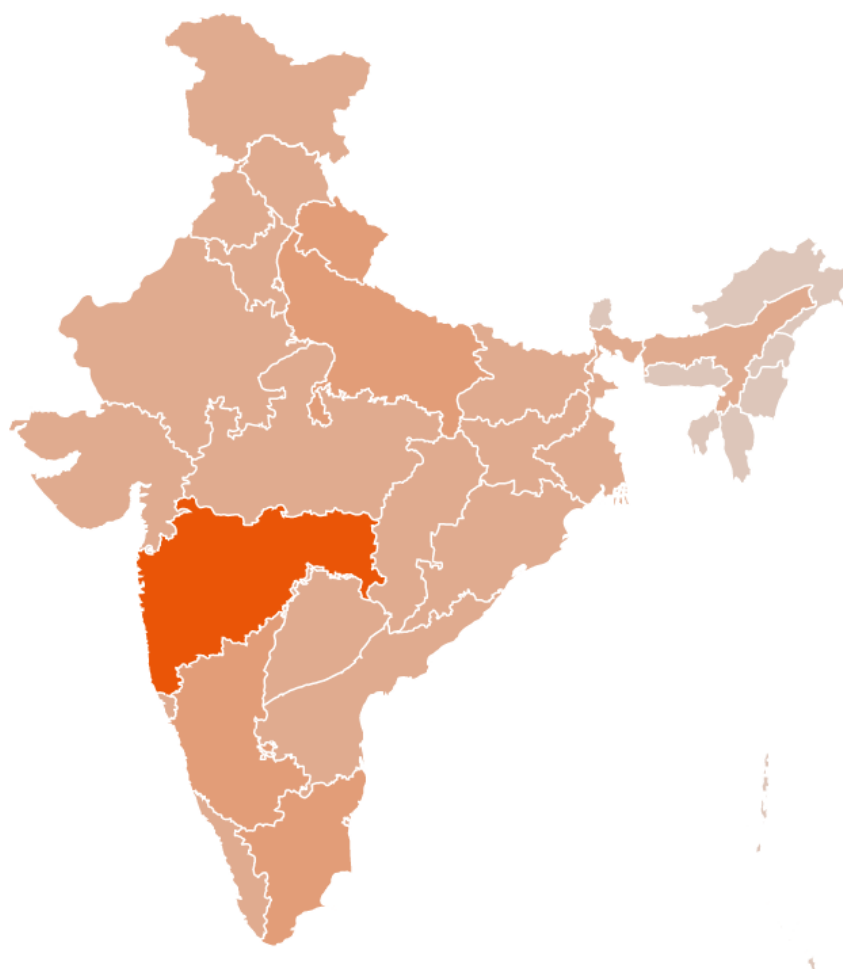
While hovering on each state, the colour changes to black and on clicking, that particular state will load with their district level map will have different colour on different district with respect to their data and the colour range will change accordingly. The figure shown below is the representation of Maharashtra state with their corresponding map as default.

Maharashtra

Back to India Map

Total : 323

0   100
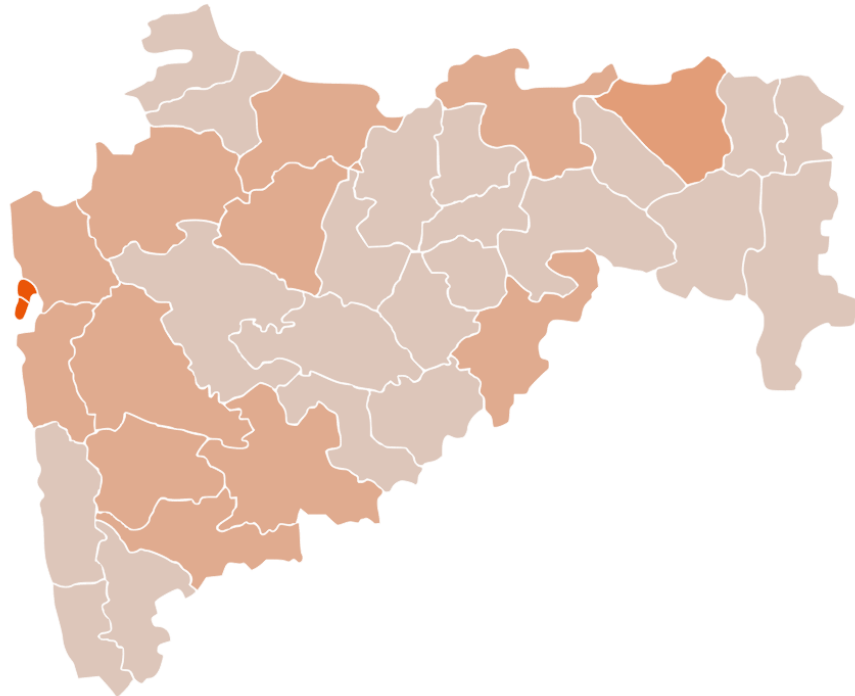
On the top left of the state map, there is a link to go back to India Map.

2.2.4 Displaying Pop Up

When clicking on each district, a popup appears on the center of the screen with district corresponding data on different activities like

1. Textbook Companion

2. Lab Migration

3. Workshop

4. Conference

5. Flowsheet (for DWSIM)

6. Circuit Simulation (for eSim)

On the popup, there is select option also available for user to change the places inside the district. When user select a particular place, the

data on popup will change. If there is only one place have contributed, then the place selection option will be disabled. If there is no available data at a particular place, it is automatically disabled from the options displayed.
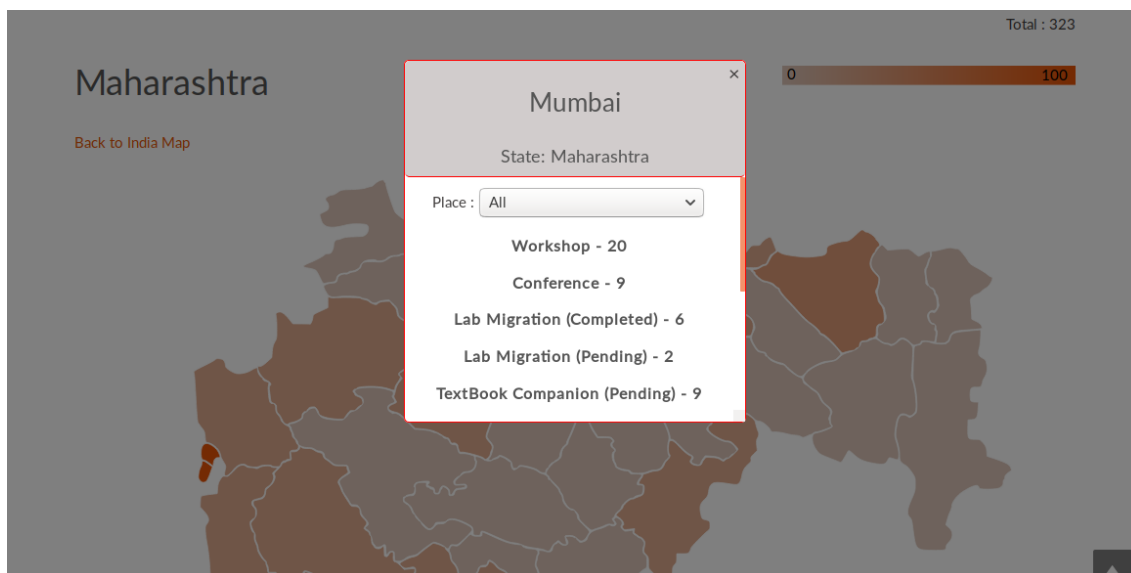
There are many districts in different state's map, which doesn't have any data, for that districts popup will write 'There is no data available'. There is a close button on top-right of the popup, for closing and going back to states map.

2.3 Challenges Faced in Development

There were many issues faced during the development due to the displaying map and querying data from different databases due to the naming of states, districts and pincodes.

2.3.1 Map Development

During the screening task, I made use of GMap API to display the map. But, now Google started have a premium plan on implementing GMap API on websites. Because of that I found another solution for making the map by choosing SVG images for showing the map. As a part of implementation I have learnt the SVG tags that are used for creating SVG image. So, I used SVG ¡path¿ tag to display the different states in complete one image of India and states map. Moreover, I learnt to make the map responsive for different devices by changing

the attributes used in SVG tags and I made different colour for each path by adding new attributes.

I got the map India map from the following links https://commons.wikimedia.org/wiki/Category:SVG_maps_of_India#/media/File:India_encoded.svg

2.3.2   Database Naming

I found the common names of each states used in databases and used the ai_pincode table to get the particular district and place name by checking the pincode for displaying correct data in the map.

2.4   Conclusion

By implementing the FOSSEE Stats on India Map, I have learnt to work with different databases in single module and create responsive SVG images from scratch and Inkscape.

Chapter 3

Migration of India Stats Map to Drupal 8

When I almost completed the development of Stats map in Drupal 7, I got my second task to migrate the module with Aman Chauhan. So, I started migration and it was not easy, because I had to learn Drupal 8. The Drupal 7 and Drupal 8 were different due to the performance and features like Drupal 8 is using twig files for theming and yaml files are used to define the routing (hook_menu in Drupal 7), libraries, info and permission. Moreover, Drupal 8 is using Object Oriented PHP.

3.1 Requirements for Development

For the migration of Drupal 7 module to Drupal 8, following are the requirement,

- Drupal 8 for running the module

- Apache Server as a local server

- MySQL with Adminer for Database Management

- jQuery for Ajax and navigating the map page

3.2 Challenges Faced with Drupal 8

Drupal 8 is working with Object Oriented PHP and it is using yaml, instead of hook_menu and hook_schema. Because of that I learnt these technologies. By, the migration I need to change the database query to different form for Drupal 8. I have created routing for giving the url

paths for each pages and assigned controller and form for each pages in routing.

I had to move all functions in Drupal 7 custom module to Drupal 8 controller with classes for different needs and namespace for each classes. And for form also I had to do the same as creating classes. Inside that classes, it is compulsory to have these functions called 'getFormId', 'buildForm'for defining the form element (it is same as Drupal 7), 'validateForm'for validation purpose and 'submitForm'for the operation on submitting the form.

3.3 Migrating Complete Module

Aman Chauhan and I were doing the migration together and we both were new to Drupal 8. But, we learnt it and completed the work as team. Because of that, learning became easy and completed migrating the module faster than as we expected.

3.3.1 Migrating Statistics Page

The statistics page uses Drupals API function for sending Ajax request and getting response. But while migration the class has to be defined and that class needs to be called in the callback of Ajax. Because of that I changed all the Ajax callback to Statistics page.

3.3.2 Migrating Map Page

The map page was not hard enough to change, because I used the jQuery for Ajax request and response due to that I just move the JavaScript page and defined its path in Library yaml file as front-end. But, for the back-end I had to change the database query method as defined in Drupal 8, which is like calling database class from Drupal Core.

3.4 Installation

The FOSSEE_stats module can be installed easily in Drupal 8. For the installation,

1. We need to install Drupal 8 firstly

2. Then change the settings file of module by defining all databases as same in Drupal 7.

3. Move the FOSSEE_Stats module folder to Modules inside the Drupal 8.

4. Then clear the cache on the admin tab -¿ Configuration -¿ Performance.

5. Then open the drupal 8 in browser and go to extends in the admin tab

6. Search for the FOSSEE_stats and mark that module and click Install.

3.5   Conclusion

Migration of FOSSEE_Stats was done faster with good teamwork of Web Development team. I have done the migration of module with Aman Chauhan and we merged the codes of module. We tested the working of module by checking the data shown in statistic, map and event page.

Reference

- Drupal 7

- Drupal 8

- jQuery

- Stack Overflow