

ANALYTICS PANEL

Project Report submitted in partial fulfillment of the require

Bachelor of Technology

In

COMPUTER SCIENCE AND ENGINEERING

By

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Under the supervision of

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to



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Certificate

Candidate's Declaration

I hereby declare that the work presented in this report entitled “**Analytics Panel**” in partial fulfilment of the requirements for the award of the degree of **Bachelor of Technology in Computer Science and Engineering/Information Technology** submitted in the department of Computer Science & Engineering and Information Technology, Jaypee University of Information Technology Waknaghat is an authentic record of my own work carried out over a period from February 2017 to August 2017 under the supervision of Dr. Yashwant Singh .

The matter embodied in the report has not been submitted for the award of any other degree or diploma.

(Student Signature)

Vivek Raj, 131277

This is to certify that the above statement made by the candidate is true to the best of my knowledge.

Dr. Yashwant Singh

Associate Professor

CSE

Dated:

Acknowledgement

We wish to express our profound gratitude and indebtedness to our guide, **Dr. Yashwant Singh**, Department of Computer Science and Engineering, JUIT Solan for giving us the opportunity to work with him.

I also place on record, my sense of gratitude to one and all, who directly or indirectly have lent their helping hand in this venture.

I feel proud and privileged in expressing my deep sense of gratitude to all those who have helped me in presenting this project.

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CHAPTER 1

Introduction

In today's world competition between the MNC's and start up is increasing at a lot of pace. Every one is trying to move ahead of other. There are lots of things which contribute in success of a company.

The main area through which a company lead on the path of success is by analysing the real time data of the company.

It is the area where the stakeholders or manager gets the hold on other company. By analysing the data company head can easily find out the reason that why there product is going down or up. As well as they can find out about the users behaviour also which helps in taking a lot of powerful decision.

1.1 Problem Statement

A centralized system to view key metrics that are used in decision making for all aspects of the business. For a company to be successful ,it should be able to make a proper decision about the things which needs to be done. And for that decision,company need the proper data that is provided by analytics panel. The panel would need to house sensitive data and numbers of the company in a secure and restrictive space.

The panel also needs to be accessible on phones, laptops and desktops alike and needs to have access level based restrictions for individual users. The data presented on the panel needs to be filtered and manipulated on demand to more accurately assess the data's meaning. For ex. It include all the data related to company's product like app opens , number of new customers etc.

1.2 Objective

Finding key business metrics like Revenue, CAC, Churned Users etc is difficult for an evolving

business or already evolved business ventures. So using Data Science Tools like MYSQL, BigQuery etc find such key metrics in a business to help them to grow.

The provided data also needs to be neatly presented in a variety of different formats and form factors. Having access to the data on the go is an important factor.

For example if the company has started any new product in the market then to analyse about the product popularity proper data is needed. This can be done using analytics panels which contain the cards , graphs, cohorts of the real data. By analysing that data , a company can come upto a good decision. For example using graphs , one can find out that what was the number of the first time users or what is the total number of orders that came 10 days ago, what is the success rate of the team.

Live number cards can help to know about the today's real data information i.e what is the number of orders that came today etc.

All this has to be achieved in a scalable fashion such that the process of adding a new visualization/graph is effortless and error free.

1.3 Methodology

A centralized web panel can be used to generate the needed data visualizations. The panel will be web based and will incorporate internet technologies like HTML, CSS, JavaScript, Node.js, MySQL, etc.

The panel will have user accounts that users can use to log in with. The data available on the panel will be behind a layer of authentication. Only the users with correct privileges can access the panel.

And even the panel itself can be selectively made available to different users based on what their mode of operation is.

The panel will help key players make wise decisions and track their progress as they apply those decisions on the operations side of the business. The panel is the primary place to track growth and answer any questions they might have regarding the day to day or long term progress of the business venture.

Chapter 2: Tools

2.1 Visual Studio Code

Visual Studio Code is a source code editor developed by Microsoft for Windows, Linux and mac OS. It includes support for debugging, astute code completion, snippets, and code refactoring. User can customize it according to them.. It is free and open-source, albeit the official download is under a proprietary license.

Visual Studio Code is a source code editor. It fortifies a number of programming languages and a set of features that may or may not be available for a given language, as shown in the following table. Many We can utilize it for modification or getting some data from the database. It is an implement which is plenary free and open sourced . when the event loop enters a given phase, it will perform any operations concrete to that phase, then execute callbacks in that phase's queue until the queue has been exhausted or the maximum number of callbacks has executed. Whenever an event occurs, the message is sent to event listener. If there is no event listener then the event gets lost. When one of these operations consummates, the kernel tells Node.js so that the opportune callback may be integrated to the poll queue to eventually be executed. When the queue has been exhausted or the callback inhibition is reached, the event loop will pergrinate to the next phase, and so on

In the role of a source code editor, Visual Studio Code sanctions transmuting the code page in which the active document is preserved, the character that identifies line break (a cull between CR and CRLF), and the programming language of the active document.

2.2 phpMyAdmin

phpMyAdmin is a database management tool that is used to manipulate and query the data that's in the databases of the system.

Users can log into their phpMyAdmin panel and see the databases they have access to.

The panel allows the user to write and execute SQL queries on the table data, change the data, remove rows or add new rows in the tables they have access to.

The panel also acts as a GUI for performing many other tasks on the database such as importing/exporting data, creating and managing indices, truncate, copy or rename tables and databases, manage users and their privileges, see running mysql processes, etc.

It is an implement which is plenary free and open sourced . It is utilized through the avail of user's browser. It is utilized to for the manipulation of databses. For example with the avail of phpMyAdmin we can efface the tables or can make some modifications in table. We can utilize it for modificatioon or getting some data from hte database.It is an implement which is plenary free and open sourced . It is utilized to handle the MySQL through the avail of user's browser. It is utilized to for the manipulation of databses. For example we can efface the tables or can make some modificatiions in table. We can utilize it for modification or getting some data from hte database.

Features

It does not have much problem because unlike other servers there is no problem of limited threads for handling the requests. Due to event loop it can handle large number of requests at once. Once the server give commands to phpMyAdmin then it moves to the next phpMyAdmin and then event loop mechanism of node js helps to get the response from the previous phpMyAdmin which we have called..

We can use phpMyAdmin to export the data in various formats like :

Word, LATEX CSV, SQL, OpenDocument Text and Spreadsheet, XML, PDF, and others.

Creating graphics of your database layout in various formats.

Query-by-example (QBE) can be used to create complex queries.

2.3 Redis

Redis is one of the open source (BSD licensed), in-memory data structure store, utilized as a database, cache and message broker. For example with the avail of Redis we can efface the tables or can make some modifications in table. We can utilize it for modification or getting some data from hte database. It is an implement which is plenarily free and open sourced . It is utilized to handle the redis through the avail of user's browser. It is utilized to for the. The data presented on the panel needs to be filtered and manipulated on demand to more accurately assess the data's meaning. For ex. It include all the data related to company's product like app opens , number of new customers etc.

Redis is able to handle large number of requests at once. Once the server give commands to API then it moves to the next API and then event loop mechanism of node js helps to get the response from the previous API's which we have called.

2.3.2 Performance

When the durability of data is not needed, the in-recollection nature of Redis sanctions it to perform well compared to database systems that indite every transmutation to disk afore considering a transaction committed. Each phase is special in its own way, generally, when the event loop enters a given phase, it will perform any operations concrete to that phase, then execute callbacks in that phase's queue until the queue has been exhausted or the maximum number of callbacks has executed. When the queue has been exhausted or the callback inhibition is reached, the event loop will pergrinate to the next phase, and so on. Consequently, a single Redis instance cannot utilize parallel execution of tasks such as stored procedures.

Examples

KEYS

Returns all keys matching pattern.

```
redis> MSET one 1 two 2 three 3 four 4
```

```
"OK"
```

```
redis> KEYS *o*
```

```
1) "four"
```

```
2) "two"
```

```
3) "one"
```

```
redis> KEYS t??
```

```
1) "two"
```

```
redis> KEYS *
```

```
1) "three"
```

2) "four"

3) "two"

4) "one"

2.5 Ubuntu

Ubuntu is a Debian-predicated Linux operating system for personal computers, tablets and smartphones, where Ubuntu Touch edition is utilized; and withal runs network servers, customarily with the Ubuntu Server edition, either on physical or virtual servers (such as on mainframes) or with containers, that is with enterprise-class features; runs on the most popular architectures, including server-class ARM-based.

Ubuntu is published by Canonical Ltd, which give commercial support. The data presented on the panel needs to be filtered and manipulated on demand to more accurately assess the data's meaning. For ex. It include all the data related to company's product like app opens , number of new customers etc.Npm creates package.json which keeps all the specifications of projects . Due to this ,anytime when we want to run the project we will run npm install and it will automatically install all the specifications that are used in that project. It will create package.json which keeps all the specifications of projects . Due to this ,anytime when we want to run the project we will run npm install and it will automatically install all the specifications that are used in that project.It is predicated on gratuitous software and denominated after the Southern African philosophy of ubuntu (literally, 'human-ness'), which Canonical Ltd. suggests can be loosely translated as "humanity to others" or "I am what I am because of who we all are". It utilizes Unity as its default utilizer interface for the desktop.

Due to this ,anytime when we want to run the project we will run npm install and it will automatically install all the specifications that are used in that project. Npm creates package.json which keeps all the specifications of projects . Due to this ,anytime when we want to run the project we will run npm install and it will automatically install all the

specifications that are used in that project. It will create package.json which keeps all the specifications of projects . Due to this ,anytime when we want to run the project we will run npm install and it will automatically install all the specifications that are used in that project.

Here the event loop works by sending the request to event provider which can be internal and external . After that call to the main event handler is made. Event emitter calls the events. And then through event loop event is sent to event handler. Event handler performs the action. Whenever an event occurs,the message is sent to event listner. If there is no event listener then the event gets lost.

Ubuntu operates under the GNU General Public License (GPL) and all of the application software installed by default is gratuitous software.

Chapter 3: Technology

3.1 NODE.JS

For executing javascript code server side we use node js which is an open source cross platform javascript run time environment. Earlier javascript was used for client side scripting but with the help of node js it is used for server side scripting which is used for running server side script for producing the content of dynamic web page before it is sent to the user's browser.

Following are some of the important features that make Node.js the first choice of software architects.

- **Asynchronous concept and Event Driven** – Node js API's are asynchronous i.e non blocking. It means that the server of node js never waits for the API for returning the data. Once the server gives commands to API then it moves to the next API and then event loop mechanism of node js helps to get the response from the previous API's which we have called.

- **Single Threaded but Highly Scalable** – Node js is single threaded. But due to event loop it is highly scalable. It does not have much problem because unlike other servers there is no problem of limited threads for handling the requests. Due to event loop it can handle large number of requests at once. Once the server give commands to API then it moves to the next API and then event loop mechanism of node js helps to get the response from the previous API's which we have called.

- **No Buffering** – Node js applications gives the data output data in chunks. These applications never buffer the data.

Event Loop :-

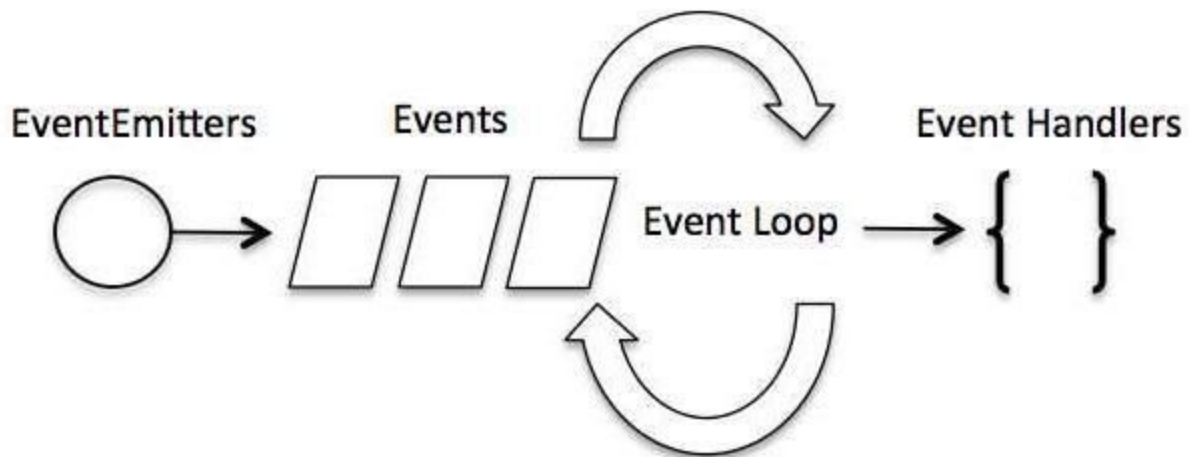


fig 1.1

Here the event loop works by sending the request to event provider which can be internal and external . After that call to the main event handler is made. Event emitter calls the events. And then through event loop event is sent to event handler. Event handler performs the action. Whenever an event occurs,the message is sent to event listner. If there is no event listener then the event gets lost.

The event loop is what sanctions Node.js to perform non-blocking I/O operations — despite the fact that JavaScript is single-threaded — by offloading operations to the system kernel whenever possible.

Since most modern kernels are multi-threaded, they can handle multiple operations executing in the background. Event emitter calls the events. And then through event loop event is sent to event handler. Event handler performs the action. Whenever an event occurs,the message is sent to event listner. If there is no event listener then the event gets lost. When one of these operations consummates, the kernel tells Node.js so that the oportune callback may be integrated to the poll queue to eventually be executed.

When Node.js commences, it initializes the event loop, processes the provided input script (or drops into the REPL, which is not covered in this document) which may make

async API calls, schedule timers, or call `process.nextTick()`, then commences processing the event loop.

Each phase has a FIFO queue of callbacks to execute. While Each phase is special in its own way, generally, when the event loop enters a given phase, it will perform any operations concrete to that phase, then execute callbacks in that phase's queue until the queue has been exhausted or the maximum number of callbacks has executed. Whenever an event occurs, the message is sent to event listener. If there is no event listener then the event gets lost. When one of these operations consummates, the kernel tells Node.js so that the opportune callback may be integrated to the poll queue to eventually be executed. When the queue has been exhausted or the callback inhibition is reached, the event loop will pergrinate to the next phase, and so on. Since any of these operations may schedule more operations and incipient events processed in the poll phase are queued by the kernel, poll events can be queued while polling events are being processed. As a result, long running callbacks can sanction the poll phase to run much longer than a timer's threshold

The following diagram shows a simplified overview of the event loop's order of operations.

┌→| timers |

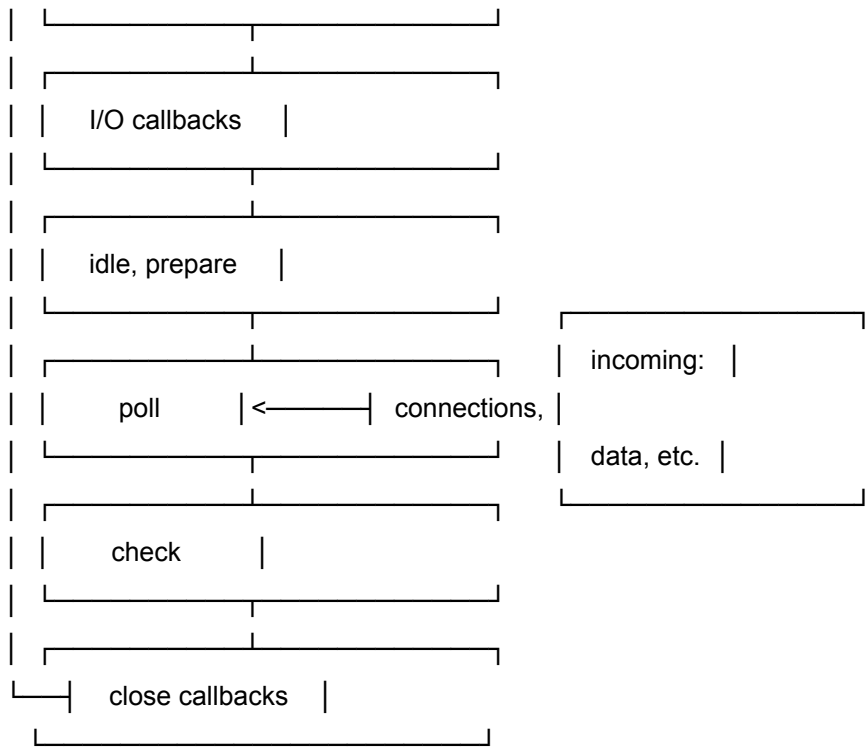


fig 4

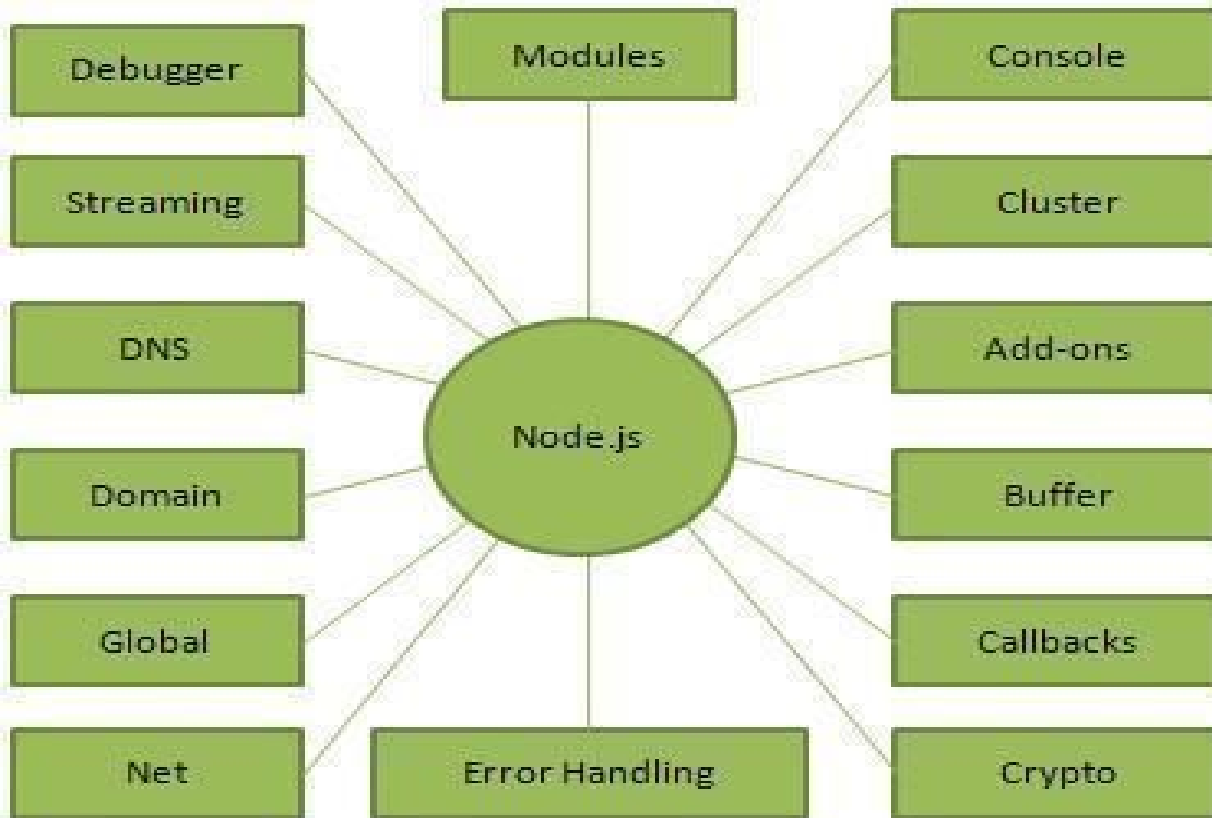


fig.2

For executing javascript code server side we use node js which is an open source cross platform javascript run time environment. Earlier javascript was used for client side scripting but with the help of node js it is used for server side scripting which is used for running server side script for producing the content of dynamic web page before it is sent to the user's browser. We can run the applications of node js in windows,linux,mac.

One of the basic difference between php and node js is that , in node js commands are being executed one after the other but in node js commands can be executed simultaneously.

Many of its modules are written in javascript.

Various modules of node js :-

1. Async
2. npm
3. Csv
4. Express
5. PM2
6. http-server
7. socket.io

Async :-

For working with asynchronous javascript we need to use this module. This helps in providing greater efficiency to the code.

Npm :-

It is the node package manager used for node js projects. It helps in making our directory organised. It also leads to auto dependencies. Npm creates package.json which keeps all the specifications of projects . Due to this ,anytime when we want to run the project we will run npm install and it will automatically install all the specifications that are used in that project. Npm creates package.json which keeps all the specifications of projects . Due to this ,anytime when we want to run the project we will run npm install and it will automatically install all the specifications that are used in that project. It will create package.json which keeps all the specifications of projects . Due to this ,anytime when we want to run the project we will run npm install and it will automatically install all the specifications that are used in that project.

Csv :-

This module is used for generation of csv in node js.

Express :-

It is a framework which is indited in javascript . It is run in the node js run time environment. Express is a minimal and flexible Node.js web application framework that provides a robust set of features to develop web and mobile applications. It facilitates the rapid development of Node predicated Web applications. So this becomes quite hectic because everytime we make some change in the code we need to restart the server. So this can be avoided by using watch with pm2 . Because of watch we need not to start server again and again. Once we start the server watch command will automatically take up the changes made in the code.

We can use the command **node install express --save**.

This command is used to install the express.

In this we use request and response parametres in REST API and both of these parametres are passed in one callback function.

For Example,

```
app.get(/,function(req,res) {  
  
});
```

Request parametre can contain stringsbody , http headers etc .

Response parametre sends the response which is created when it gets the HTTP request.

```
var express = require('express');
```

```
var app = express();
```

```
app.get('/', function (req, res) {  
  res.send('Hello World');  
})  
  
var server = app.listen(8081, function () {  
  
  var host = server.address().address  
  
  var port = server.address().port  
  
  console.log("Example app listening at http://%s:%s", host, port)
```

PM2 :-

It manages the the node js applications. It has a load balancer which keeps the application alive.

The command which are normally used of pm2 are

pm2 restart

pm2 logs

pm2 restart command is used to restart the server once the changes have been made in the code. Because once we make any change in the code ,then to see the output according to the change we need to restart the server and for that we use this command.

pm2 logs command is used to check the logs , once we start the server i.e if there is any error . We can also use this log command to check the flow of code by using the console object.

So this becomes quite hectic because everytime we make some change in the code we need to restart the server. So this can be avoided by using watch with pm2 .

Because of watch we need not to start server again and again. Once we start the server watch command will automatically take up the changes made in the code.

Http-server :-

Http-server is used by node js for transferring the data over HTTP.

It is simple and can be used for local development.

- The system is written primarily in JavaScript, Node JS, MYSQL, Big Query, Redis.
- The System uses Redis for caching so that data can be loaded easily from cache without making unnecessary requests to server and database again and again.
- .sql are used to store the queries in an organized manner and are automatically picked up by the api.
- The panel has filters like city, country, data range, rolling averages etc to access graphs, live numbers, cohorts accordingly.
- Express & pm2 for easy server management
- Automated API testing is done to ensure uninterrupted service.
- API response data can be historically compared to see if any data algorithm changes the response data.
- Cron to automate tasks.
- BigQuery for high fidelity data.
- Git is used to manage the project among team members as it change over time.

3.2 Javascript

Javascript is a computer programming language which is dynamic. It is lightweighted and normally used as a part of web pages, whose implementation allow client-sided script to make interaction with the user and have dynamic pages. It has object-oriented capabilities with capabilities of object-oriented .

JavaScript was initially called as LiveScript, and Netscape denominated it to JavaScript, just because of the exhilaration that java engendered. It appeared in Netscape 2.0 in 1995 with the denomination LiveScript. The general-purpose core of the language has been embedded in Netscape, Internet Explorer, and other web browsers. Since most modern kernels are multi-threaded, they can handle multiple operations executing in the background. Event emitter calls the events. And then through event loop event is sent to event handler. Event handler performs the action. Whenever an event occurs, the message is sent to event listener. If there is no event listener then the event gets lost. When one of these operations consummates, the kernel tells Node.js so that the opportune callback may be integrated to the poll queue to eventually be executed.

Client-side JavaScript is the most prevalent form of the language. The script include the references by an HTML document for the code that browser will interpret .

It tells that it is not necessary that a web page will be a static HTML, but can include programs that interact with the utilizer, control the browser, and dynamically engender HTML content.

The JavaScript client-side mechanism provides many advantages over traditional CGI server-side scripts. Since most modern kernels are multi-threaded, they can handle multiple operations executing in the background. Event emitter calls the events. And then through event loop event is sent to event handler. Event handler performs the action. Whenever an event occurs, the message is sent to event listener. If there is no event listener then the event

gets lost. When one of these operations consummates, the kernel tells javascript so that the opportune callback may be integrated to the poll queue to eventually be executed.

Platform architecture

Developers can create highly scalable servers without using threading, by using a simplified model of event-driven programming that uses callbacks to signal the completion of a task. Node.js was created because concurrency is difficult in many server-side programming languages, and often leads to poor performance. Node.js connects the ease of a scripting language (JavaScript) with the power of Unix network programming.

Node.js was built on the Google V8 JavaScript engine since it was open-source under the BSD license, prodigiously expeditious, and proficient with internet fundamentals like HTTP, DNS, TCP. Withal, JavaScript was a well-kenned language, making Node.js immediately accessible to the entire web development community. It is an implement which is plenary free and open sourced . It is utilized to handle the MySQL through the avail of user's browser. It is utilized to for the manipulation of databses. For example with the avail of phpMyAdmin we can efface the tables or can make some modifications in table. We can utilize it for modification or getting some data from hte database.It is an implement which is plenary free and open sourced . It is utilized to handle the MySQL through the avail of user's browser. It is utilized to for the manipulation of databses. For example with the avail of phpMyAdmin we can efface the tables or can make some modifications in table. We can utilize it for

modification or getting some data from the database. GoDaddy, Groupon, IBM, LinkedIn, Microsoft, Netflix, Rakuten, SAP, Voxer, Walmart, Yahoo!, and Cisco Systems.

Each phase has a FIFO queue of callbacks to execute. While each phase is special in its own way, generally, when the event loop enters a given phase, it will perform any operations concrete to that phase, then execute callbacks in that phase's queue until the queue has been exhausted or the maximum number of callbacks has executed. Whenever an event occurs, the message is sent to event listener. If there is no event listener then the event gets lost. When one of these operations consummates, the kernel tells Node.js so that the opportune callback may be integrated to the poll queue to eventually be executed. When the queue has been exhausted or the callback inhibition is reached, the event loop will pergrinate to the next phase, and so on. Since any of these operations may schedule more operations and incipient events processed in the poll phase are queued by the kernel, poll events can be queued while polling events are being processed. As a result, long running callbacks can sanction the poll phase to run much longer than a timer's threshold

Node.js is primarily used to build network programs such as Web servers. The most sizably voluminous distinction between Node.js and PHP is that most functions in PHP block until completion (commands execute only after antecedent commands have consummated), while functions in Node.js are designed to be non-blocking (commands execute in parallel, and use callbacks to signal completion or failure).

Industry support

People have built hundreds of open-soure library for Node.js – and among them maximum are hosted on the npm website. The Node.js developer community includes two mailing lists and the IRC channel #node.js on freenode. There is an annual Node.js developer conference, called NodeConf.

The open-source community has developed server frameworks to expedite the development of applications. Such frameworks include Connect, Express.js, Socket.IO, Koa.js, Hapi.js, Sails.js, Meteor, Derby, and many others.

Modern desktop IDEs provide editing and debugging features categorically for Node.js applications. Such IDEs include Atom, Microsoft Studio (with Node.js Implements for Visual Studio, or TypeScript with Node definitions), NetBeans Nodeclipse Enide Studio Brackets, JetBrains WebStorm, Nodeclipse Enide Studio (Eclipse-predicated) and Visual Studio Code. Certain online web-predicated IDEs additionally support Node.js, such as Codeanywhere Codenvy Cloud9 IDE Koding and the visual flow editor in Node-RED.

3.3 MySQL

The first phase deals with storing and maintaining the huge amount of data that's needed to generate the visualizations.

MySQL has been the industry standard for large data management for many years.

It's possible to write fast, efficient and descriptive data extraction queries in MySQL.

The data is stored in different servers and in different databases all with separate access levels and user accounts for security purposes.

Npm creates package.json which keeps all the specifications of projects . Due to this ,anytime when we want to run the project we will run npm install and it will automatically install all the specifications that are used in that project. It will create package.json which keeps all the specifications of projects .

Database management system (DBMS) – Computer software application that interact with

the utilizer, other applications, and the database itself to capture and analyze data.

Commands of TCL are rollback,commit and savepoint.

There are some properties of transaction management known as (ACID) properties:

Atomicity: It includes that while doing transaction every operation will be done or no operation will be undone.

Consistency: When we have the transaction then the data which is updated should be reliable.

Isolation: This means that when two transactions are going on simultaneously then one transaction should not affect the other.

Durability: After the completion of the transaction the data in the store should be permanent.

Most relational databases utilize the

SQL data definition and query language.

Open-source software – computer software with its source code made available with a license in which the copyright holder provides the rights to study, change, and distribute the

software to anyone and for any purport.

3.4 SQL

SQL (pronounced "ess-que-el") stands for Structured Query Language. SQL is utilized to communicate with a database. While Each phase is special in its own way, generally, when the event loop enters a given phase, it will perform any operations concrete to that phase, then execute callbacks in that phase's queue until the queue has been exhausted or the maximum number of callbacks has executed. Whenever an

event occurs, the message is sent to event listener. If there is no event listener then the event gets lost.

When one of these operations consummates, the kernel tells Node.js so that the opportune callback may be integrated to the poll queue to eventually be executed. When the queue has been exhausted or the callback inhibition is reached, the event loop will pergrinate to the next phase, and so on. Since any of these operations may schedule more operations and incipient events processed in the poll phase are queued by the kernel, poll events can be queued while polling events are being processed. As a result, long running callbacks can sanction the poll phase to run much longer than a timer's threshold

SQL commands are of three type :

- DDL
- DML
- DCL
- TCL

DML COMMANDS :

Data Manipulation Language (DML) verbalizations are utilized for managing data in database. DML commands are not auto-committed. It signifies made by DML command are not rolled back perpetual to database, it can be rolled back.

Data manipulation language comprises the DDL data change verbalizations, which modify stored data but not the schema or database objects. Manipulation of sedulous database objects, e.g., tables or stored procedures, via the SQL schema verbal expressions, rather than the data stored within them, is considered to be a component of a separate data definaion language .In DDL these two categories are homogeneous in their detailed syntax, data types, expressions etc., but distinct in their overall function.

DCL

The data processing is done by APIs that are exposed by the server side code for the client side code. The client calls the API endpoints to get a specific type of data along with the filters and their values that they wish to apply. The server side's responsibility is to handle such requests, make a connection to the database, retrieve the necessary data, iterate over it and convert it into a more suitable format and finally return the final data as a response of the API request. Examples of DCL commands include: GRANT to sanction designated users to perform designated tasks.

Example of DCL command is revoke and grant Grant command is used to give

TCL

It is known as Transaction control language. TCL verbalizations sanction you to control and manage transactions to maintain the integrity of data within SQL.

Commands of TCL are rollback,commit and savepoint.

There are some properties of transaction management known as (ACID) properties:

Atomicity: It includes that while doing transaction every operation will be done or no operation will be undone.

Consistency: When we have the transaction then the data which is updated should be reliable.

Isolation: This means that when two transactions are going on simultaneously then one transaction should not affect the other.

Durability: After the completion of the transaction the data in the store should be permanent.

Chapter 4

Data Processing

This phase is also responsible for applying any filters to the data and converting between units and

date/time formats when necessary.

The data processing is done by APIs that are exposed by the server side code for the client side

code. The client calls the API endpoints to get a specific type of data along with the filters and their

values that they wish to apply.

The server side's responsibility is to handle such requests, make a connection to the database, retrieve the necessary data, iterate over it and convert it into a more suitable format and finally return the final data as a response of the API request.

This phase is further divided into different parts:

4.1 Request Handling

The node.js code first of all sets up a server that listens for user requests by the client side code.

The server is setup using the node module called Express.

The server uses the HTTP protocol to communicate over the internet with the client.

The server is also responsible for request routing and response dispatching.

The response from the server is sent in JSON format that is computer readable on the client side.

4.2 Data Access

The server side then creates a connection to the database server.

The connection is made using the node-mysql module.

The module uses the user's credentials to make the connection.

The credentials are stored in the project's file system outside of the project's version control system. This is done to prevent the secret passwords from showing up in version control.

Database connection is a critical part of the entire process. Failure to connection will disable the entire panel. So great care must be taken to ensure the credentials are valid.

4.3 API Endpoints

The primary objective of the server side part of the project is to expose APIs to the client.

The APIs are individual endpoints, each of whom perform a specific task.

Majority of endpoints have the sole purpose of extracting data from the database and manipulating it to fit the client's requirements.

The endpoints have in-built exception handling. They fail gracefully in case of malfunction.

API endpoints have a pre-defined path that is accessible via the internet and can accept a GET/POST/PUT/DELETE HTTP request.

Chapter 5

Rendering

The third phase consists of the rendering of the data graphs. By the time we reach this phase the following things have happened:

1. The data has been loaded and stored in the database.
2. Server side API code has made the connection to the database.
3. The data has been fetched by the API code.
4. The data has also been processed by the API code into a format that the client side code is expecting.

5.1 Login Screen

The login screen allows the user to add their credentials and authenticate with the servers.

The user can also reset their password from this page if they forget it.

The page automatically takes the user to appropriate page depending upon the user's access privileges.

5.2 Menu

The user menu is used to navigate to various parts of the document by the users using the panel.

The menu is dynamically generated based on the user's privileges. Users can only see the menu items that they have access to.

The menu automatically adjusts to different form factors like phones, tablets and desktop PCs.

5.3 Graphs

The main function of the panel is to display the requested data in various visualizations.

Graphs are the primary mode of data visualization in the panel.

- Each data set is represented with a graph pane of its own.
- The same data set is presented with a number of different formats like line graph, bar chart, stacked columns, area chart.
- These graphs can be filtered based on a number of different metrics.
- There are two global filters as well that are applied to the entire page instead of any particular graph. These are city and time range filters.
- User can also download the graph data as CSV.
- Each graph also lists a graph description and description for each column of the data that's being presented in the graph.
- Graphs are written using D3.js JavaScript framework.
- Graphs also automatically adapt to changing screen dimensions, enabling them to be visually consistent on larger as well as smaller screens.
- Each data point on the graph shows a tooltip with additional information when the user moves their mouse over the graph.

5.4 Spatial Maps

Spatial maps allow the user to see geolocated data placed on top of a map. This lets user see various actions performed by the users based on the location of the event.

- The map is generated using Google Maps API.
- User data is organized in latitude / longitude format and then attached on top of the map.
- The user can switch between cities and different metrics that it can track.
- The spatial maps also work on all form factors like phone desktop, laptop, etc.
- The system can handle hundreds of thousands of rows. The data can also be scaled down to more manageable numbers and still keep the overall data representation consistent on the map.
- Different points on the map can be clustered together based on the intensity of the point in any specific data location based on the user's zoom levels.

Conclusion

The project was commenced with a vision of providing on-demand analytic support for key members and decision makers of the organization. The project was in so far prosperous in doing so.

A great many things can be integrated to the project that would provide even more value to the users but the project in it's current state is plenary functional and utilized on a day to day substructure.

Now user is able to view the real live numbers and can change the data according to the filters applied.

User can also view graphs and graphs data can be modified as per monthly or weekly data.

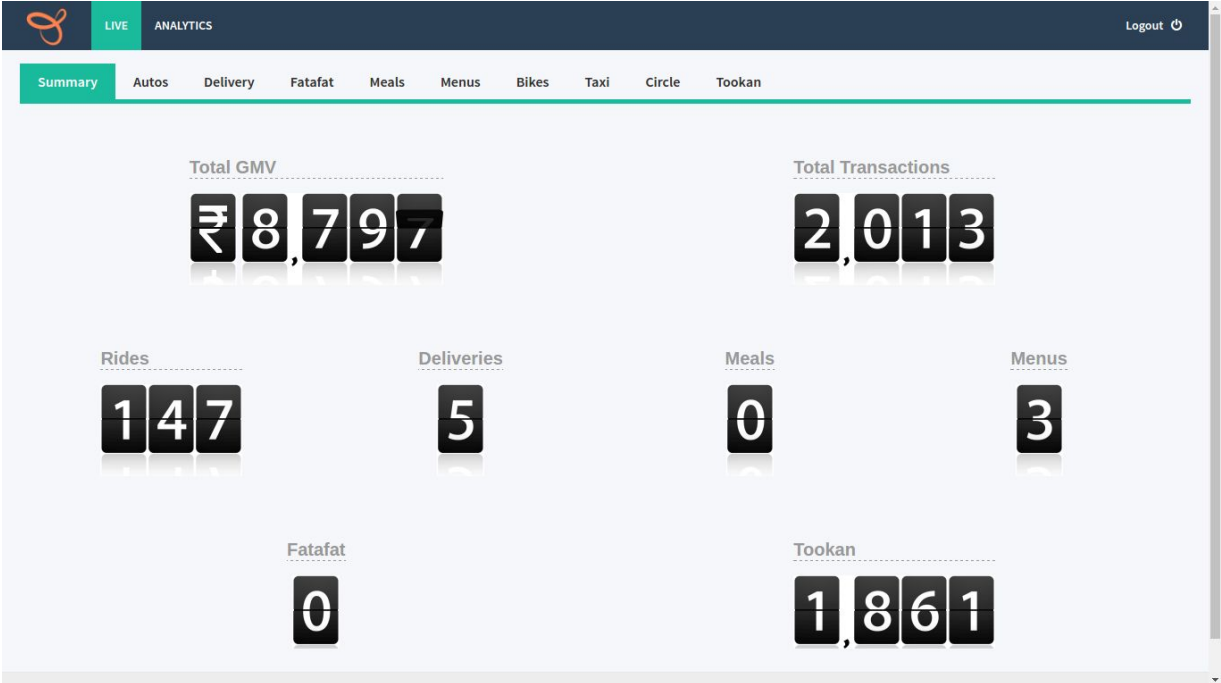
User can view reports according to the dates they have entered.

The wide variety of form factors are indispensable for the users to make apprised decisions. And the capabilities of the panel enable them to do so. Which concludes that the project was adequately prosperous in performing its primary task.

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Appendixes





New Orders

5

66.66%	-83.88%
3	31

Deliveries

5

66.66%	-88.1%
3	42

Pool Requests

0

-100%	0%
1	0

Pool Deliveries

0

-100%	0%
1	0

Fulfillment Deliveries

100%

100%	0%
50	100

Fleet Utilisation

14%

21.51%	-35.69%
11.76	22.22

Pickup SLA Time

-	-
0	0

Unique Merchant Count

3

50%	-50%
2	6

Merchants Enrolled Today

0

0%	-100%
0	1

Total Service Income

₹43

26.16%	-79.79%
24.4	214.7

Unique Driver Count

3

50%	-57.15%
2	7

Driver Enrolled Today

0

0%	0%
0	0



LIVE

ANALYTICS

Logout

Summary Autos Delivery Fatafat **Meals** Menus Bikes Taxi Circle Tookan

Today

Yesterday

Delivery Slot (Overall)

Chandigarh

App Opens

30

20%	-6.25%
25	32

Total Orders

3

-25%	-25%
4	4

Total Items

4

-20%	-33.34%
5	6

Lunch SLA

0%

0%	0%
0	0

Add-ons

0

0%	0%
0	0

First Order

1

-	-
0	0

Repeated Order

2

100%	-33.34%
1	3

Delivery Cost Per Delivery

0

0%	0%
0	0

Avg. Dynamic Delivery Charges

0

0%	0%
0	0

Dynamic Delivery Charged Orders

0

0%	0%
0	0

GMV

281

-30.62%	-39.44%
405	464



Dashboard

Category

- New Orders
- Deliveries
- Pool Requests
- Pool Deliveries
- Fulfillment Deliveries
- Fleet Utilisation
- Pickup SLA Time
- Unique Merchant Count
- Merchants Enrolled Today
- Unique Driver Count
- Driver Enrolled Today
- Live Drivers
- Total Service Income
- Profit Per Delivery
- Deliveries Going On

Deliveries Pending

City	Total Deliveries	Percentage 1	Percentage 2	Count 1	Count 2
Chandigarh	988	48.13%	5.78%	(667)	(934)
Ludhiana	0	NA	NA	(0)	(0)
Jaipur	128	6.67%	-1.54%	(120)	(130)
Gurgaon	618	10.16%	16.38%	(561)	(531)
Indore	179	23.45%	-25.10%	(145)	(239)
Delhi	164	-2.38%	-15.90%	(168)	(195)
Ahmedabad	35	-33.96%	29.63%	(53)	(27)
Nagpur	97	59.02%	-25.95%	(61)	(131)

Fatafat Cohort

CSV Fatafat Cohort Weekly All Cities Description

Week	Cohort Size	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
1-2017	14	100%	7.14%	7.14%	7.14%	7.14%	0%	0%	0%	0%	0%	0%	0%
2-2017	14	100%	14.28%	0%	0%	7.14%	14.28%	0%	14.28%	14.28%	0%	7.14%	0%
3-2017	18	100%	0%	0%	0%	0%	5.55%	5.55%	5.55%	0%	5.55%	0%	11.11%
4-2017	20	95%	5%	10%	5%	0%	10%	5%	0%	0%	5%	0%	0%
5-2017	10	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
6-2017	14	100%	7.14%	14.28%	7.14%	7.14%	0%	0%	14.28%	7.14%	0%	7.14%	7.14%
7-2017	38	100%	2.63%	7.89%	10.52%	5.26%	5.26%	2.63%	5.26%	2.63%	15.78%	2.63%	2.63%
8-2017	27	100%	18.51%	11.11%	11.11%	7.4%	7.4%	7.4%	0%	3.7%	3.7%	0%	3.7%
9-2017	46	100%	6.52%	13.04%	10.86%	4.34%	4.34%	2.17%	6.52%	4.34%	6.52%	2.17%	0%
10-2017	83	98.79%	6.02%	6.02%	4.81%	3.61%	2.4%	4.81%	3.61%	3.61%	3.61%	0%	0%
11-2017	67	100%	4.47%	2.98%	2.98%	1.49%	2.98%	0%	4.47%	0%	0%	0%	0%
12-2017	54	100%	5.55%	5.55%	11.11%	3.7%	7.4%	11.11%	7.4%	0%	0%	0%	0%
13-2017	36	100%	8.33%	5.55%	8.33%	2.77%	5.55%	8.33%	0%	0%	0%	0%	0%
14-2017	52	96.15%	17.3%	1.92%	3.84%	7.69%	9.61%	0%	0%	0%	0%	0%	0%

2 out of 20 ordered again after 5 weeks of their first order.

Total Deliveries of each vendor

Total Deliveries of each vendor

Back Full Text 25 CSV

Start Date: 01/03/2017 End Date: 01/03/2017 Submit Reset

Vendor Id	Business Name	City Name	Total Deliveries	Club
37	Gopal sweets sect.-8	Chandigarh	3	1-club
76	Cookie's Jar	Chandigarh	3	1-club
83	Monica's	Chandigarh	3	1-club
87	Subash Hardware	Chandigarh	3	1-club
89	Midpoint Cafe	Chandigarh	4	1-club
90	Treat Point	Chandigarh	1	1-club
96	BABA DIARY RESTAURANT AND SWEETS	Chandigarh	5	1-club
99	Republic of chicken	Chandigarh	2	1-club
110	Get Desserted	Chandigarh	2	1-club
137	Exo Fresh Solution Pvt. Ltd.	Chandigarh	45	10-club
139	sankalp	Chandigarh	3	1-club

