Administration Portal

sddec24-03
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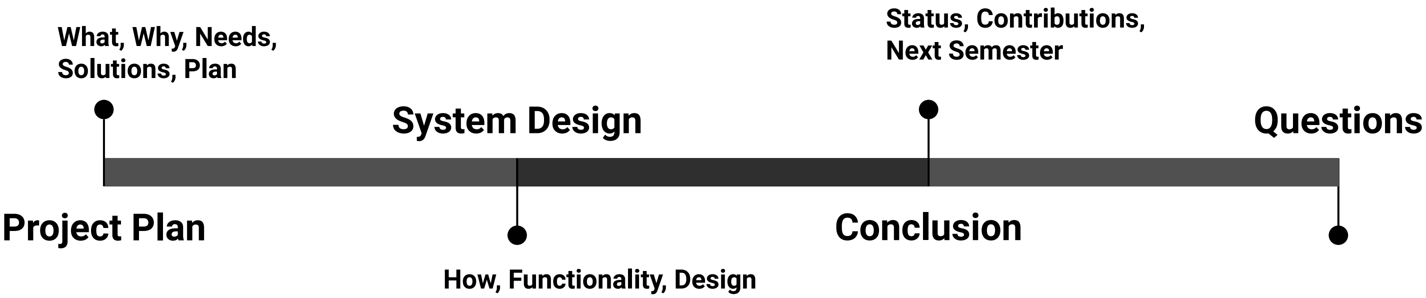
Client: *DigiClips*
Faculty Advisor: Dr. Ashfaq Khokhar

Website: https://sddec24-03.sd.ece.iastate.edu



Project Plan

What, Why, Needs, Solutions, Plan

System Design

How, Functionality, Design

Conclusion

Status, Contributions, Next Semester

Questions

Project Plan

Problem Statement

Who is DigiClips?

DigiClips is a company that...

- Monitors news data from multiple sources.
- Records and transcribes videos, I.e., TV channels
- Provides a searchable format to sift through the data.

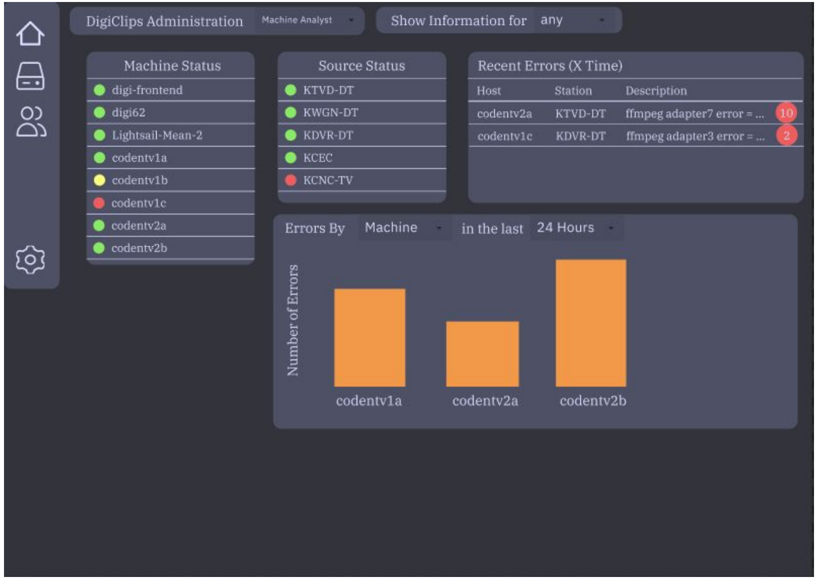
Some common use case examples...

- A lawyer wanting to see if their client is in the news.
- A school district wanting to verify press statements.
- A company wanting to see if their ad ran.

Screenshot of the Digiclips Search Engine

Problem Statement

How can we help?



DigiClips Administration: Machine Analyst

Show Information for: any

Machine Status
🟢 digi-frontend
🟢 digi62
🟢 Lightsail-Mean-2
🟢 codentv1a
🟡 codentv1b
🔴 codentv1c
🟢 codentv2a
🟢 codentv2b

Source Status
🟢 KTVD-DT
🟢 KWGN-DT
🟢 KDVR-DT
🟢 KCEC
🔴 KCNC-TV

Recent Errors (X Time)

Host	Station	Description	
codentv2a	KTVD-DT	ffmpeg adapter7 error = ...	10
codentv1c	KDVR-DT	ffmpeg adapter3 error = ...	2

Errors By: Machine in the last: 24 Hours

Administrative Portal

In order to record and display data, *DigiClips*...

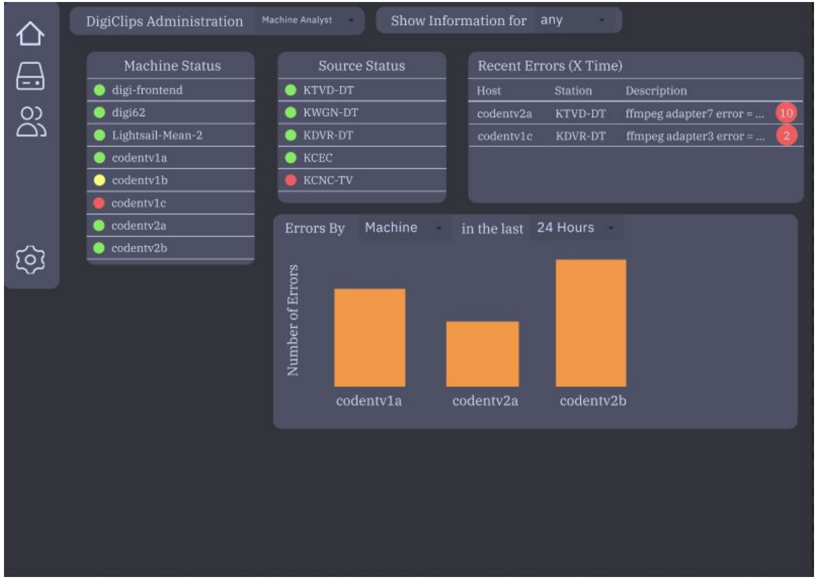
- Use multiple computers running algorithms for...
  - Video Recording
  - Image Transcribing
- Records multiple sources per computer.
- Have multiple servers, i.e., database and search engine server.

We will deliver *Digiclips* with the ability to...

- Monitor their multiple computers.
  - Check if computer is running.
  - Check for errors in the algorithms.
- Modify configuration files on computers.
- Manage search engine users.

User Needs

How can we help?



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Errors By | Machine | in the last | 24 Hours

Administrative Portal

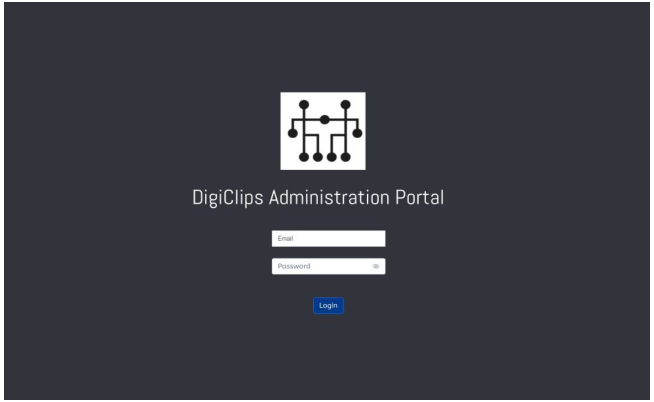
Here are **two examples** of **intended users**...

- Customer Support Representative
  - Server status.
  - State of customers' accounts.
  - Times when machines errored.
- Media Recording Engineer
  - Computers' status and error states.
  - They need in-depth knowledge of the errors occurring in each computer.
  - They need to be able to manage the configurations of each computer remotely.

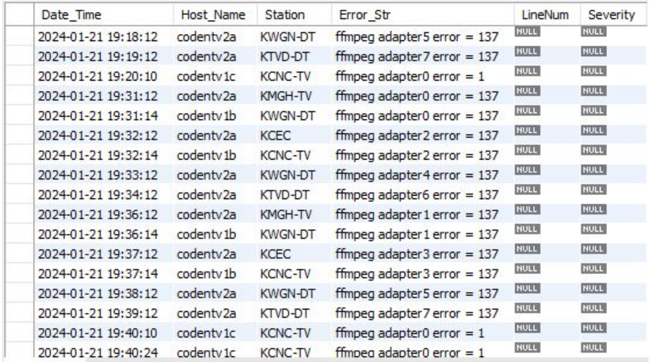
Functional Requirements

After identifying the User Needs, we derived the following functional requirements...

- Error Related Requirements
    - Display all errors from backend machines
    - Display uptime statistics for backend machines
- Security Related Requirements
    - Require login credentials
- Data Modification Requirements
    - Be able to modify backend machines configurations
    - Allow the management of other users



DigiClips Admin Portal Login Page



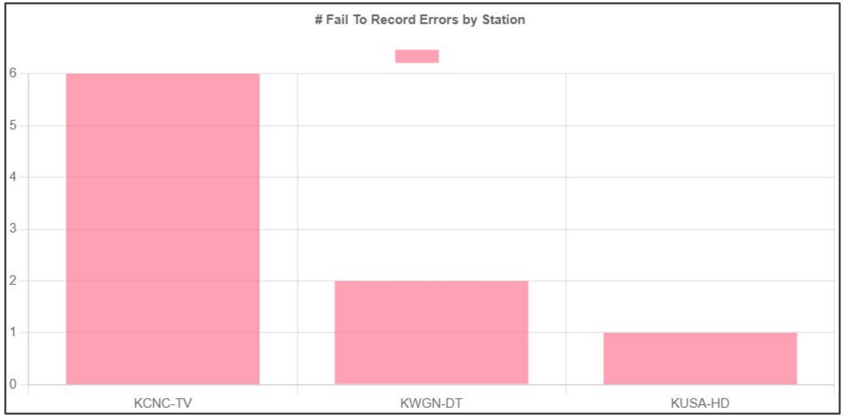
Date_Time	Host_Name	Station	Error_Str	LineNum	Severity
2024-01-21 19:18:12	codentv2a	KWGN-DT	ffmpeg adapter5 error = 137	NULL	NULL
2024-01-21 19:19:12	codentv2a	KTVD-DT	ffmpeg adapter7 error = 137	NULL	NULL
2024-01-21 19:20:10	codentv1c	KCNC-TV	ffmpeg adapter0 error = 1	NULL	NULL
2024-01-21 19:31:12	codentv2a	KMGH-TV	ffmpeg adapter0 error = 137	NULL	NULL
2024-01-21 19:31:14	codentv1b	KWGN-DT	ffmpeg adapter0 error = 137	NULL	NULL
2024-01-21 19:32:12	codentv2a	KCEC	ffmpeg adapter2 error = 137	NULL	NULL
2024-01-21 19:32:14	codentv1b	KCNC-TV	ffmpeg adapter2 error = 137	NULL	NULL
2024-01-21 19:33:12	codentv2a	KWGN-DT	ffmpeg adapter4 error = 137	NULL	NULL
2024-01-21 19:34:12	codentv2a	KTVD-DT	ffmpeg adapter6 error = 137	NULL	NULL
2024-01-21 19:36:12	codentv2a	KMGH-TV	ffmpeg adapter1 error = 137	NULL	NULL
2024-01-21 19:36:14	codentv1b	KWGN-DT	ffmpeg adapter1 error = 137	NULL	NULL
2024-01-21 19:37:12	codentv2a	KCEC	ffmpeg adapter3 error = 137	NULL	NULL
2024-01-21 19:37:14	codentv1b	KCNC-TV	ffmpeg adapter3 error = 137	NULL	NULL
2024-01-21 19:38:12	codentv2a	KWGN-DT	ffmpeg adapter5 error = 137	NULL	NULL
2024-01-21 19:39:12	codentv2a	KTVD-DT	ffmpeg adapter7 error = 137	NULL	NULL
2024-01-21 19:40:10	codentv1c	KCNC-TV	ffmpeg adapter0 error = 1	NULL	NULL
2024-01-21 19:40:24	codentv1c	KCNC-TV	ffmpeg adapter0 error = 1	NULL	NULL

Error database in MySQL

Non-Functional Requirements

Through open discussion with *DigiClips*, we identified some **aesthetic requirements**…

- Clearly labeled and titled graphs
- Interactive graphs
  - Sort data differently
  - Display number value
- Logical and well-structured UI pages
- Visual appealing UI pages.
  - Determined by client (*DigiClips*)



Example of Possible Chart

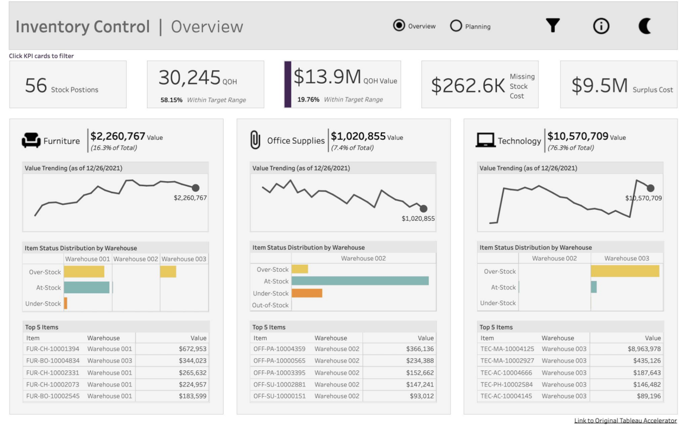
Technical Constraints

The following technical constraints were **gathered through open discussion** with *Digiclips*...

- Each page will be accessible in less than, or equal to, three clicks.
- The portal will run on *Amazon Lightsail* with a 99% uptime.

Market Research

Market Solution	Updatability	Usability	Information Density	Cost	Total
Custom Web App	2	4	5	5	16
Excel	3	3	2	3	11
Tableau	4	4	3	2	13



Inventory Control | Overview

Click KPI cards to filter

56 Stock Postions

30,245 QOH
58.15% *Within Target Range*

$13.9M QOH Value
19.76% *Within Target Range*

$262.6K Missing Stock Cost

$9.5M Surplus Cost

Furniture | $2,260,767 Value
(16.3% of Total)

Value Trending (as of 12/26/2021)

Item Status Distribution by Warehouse

Top 5 Items

Item	Warehouse	Value
FUR-CH-10001394	Warehouse 001	$672,953
FUR-BO-10004834	Warehouse 003	$344,023
FUR-CH-10002331	Warehouse 001	$265,632
FUR-CH-10002073	Warehouse 001	$224,957
FUR-BO-10002545	Warehouse 001	$183,599

Office Supplies | $1,020,855 Value
(7.4% of Total)

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Item	Warehouse	Value
OFF-PA-10004359	Warehouse 002	$366,136
OFF-PA-10000565	Warehouse 002	$234,388
OFF-PA-10003395	Warehouse 002	$152,662
OFF-SU-10002881	Warehouse 002	$147,241
OFF-SU-10000151	Warehouse 002	$93,012

Technology | $10,570,709 Value
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TEC-AC-10004666	Warehouse 003	$187,643
TEC-PH-10002584	Warehouse 003	$146,482
TEC-AC-10004145	Warehouse 003	$89,196

Link to Original Tableau Accelerator

Tableau Example

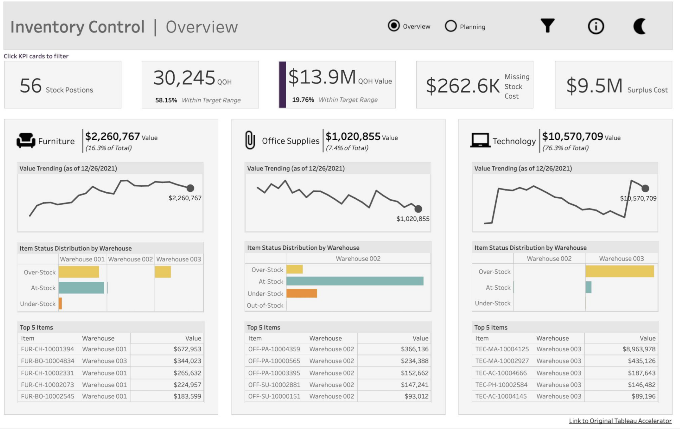
Market Research

Our dashboard website **solves**...

- The cost issues related with most market solutions.
  - Excel subscription: $60-80 Yearly
  - Tableau Subscription: $60 Yearly
  - Amazon LightSail: $42 Yearly
- Usability
  - Low level entry costs for *DigiClips* employees

Market Solutions lack the ability to...

- Access *DigiClips* computers directly
- Access anywhere and at any time



Inventory Control | Overview

● Overview ○ Planning

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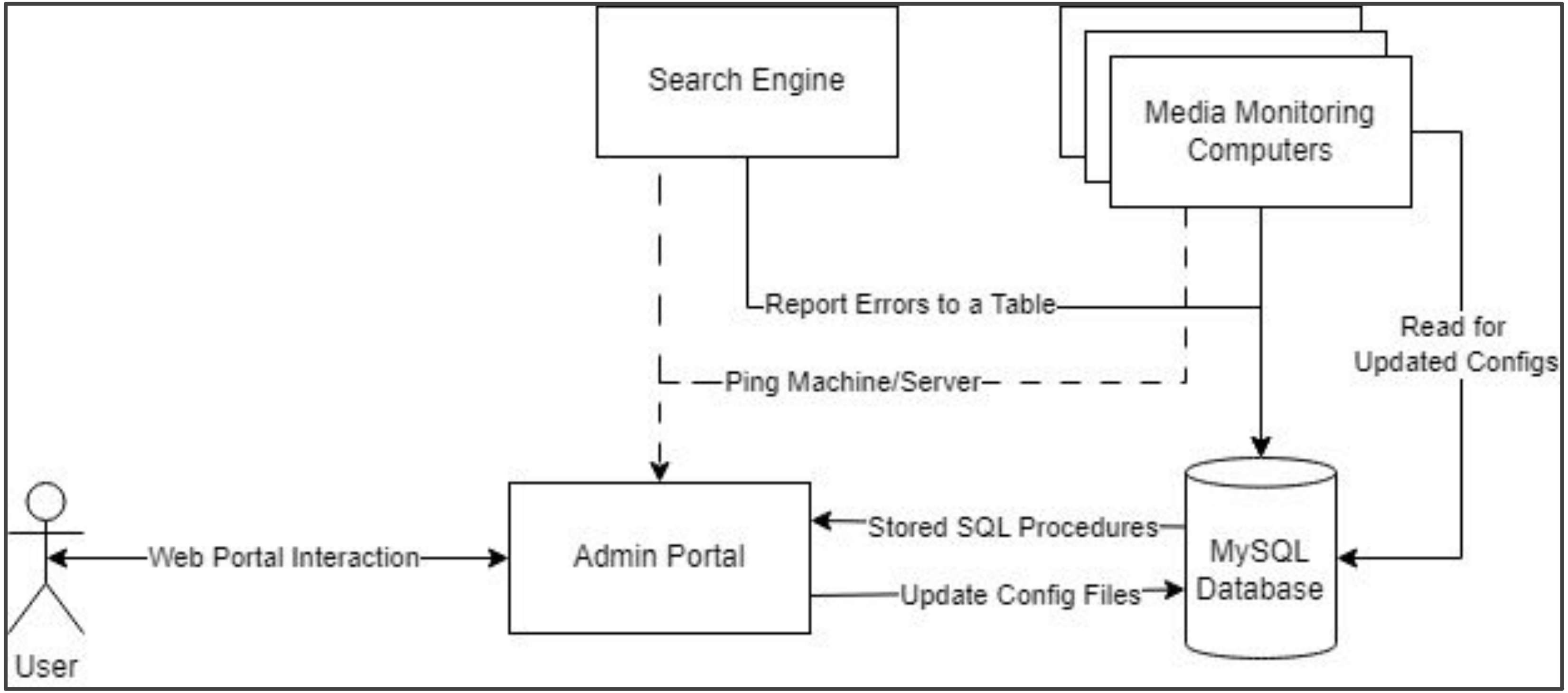
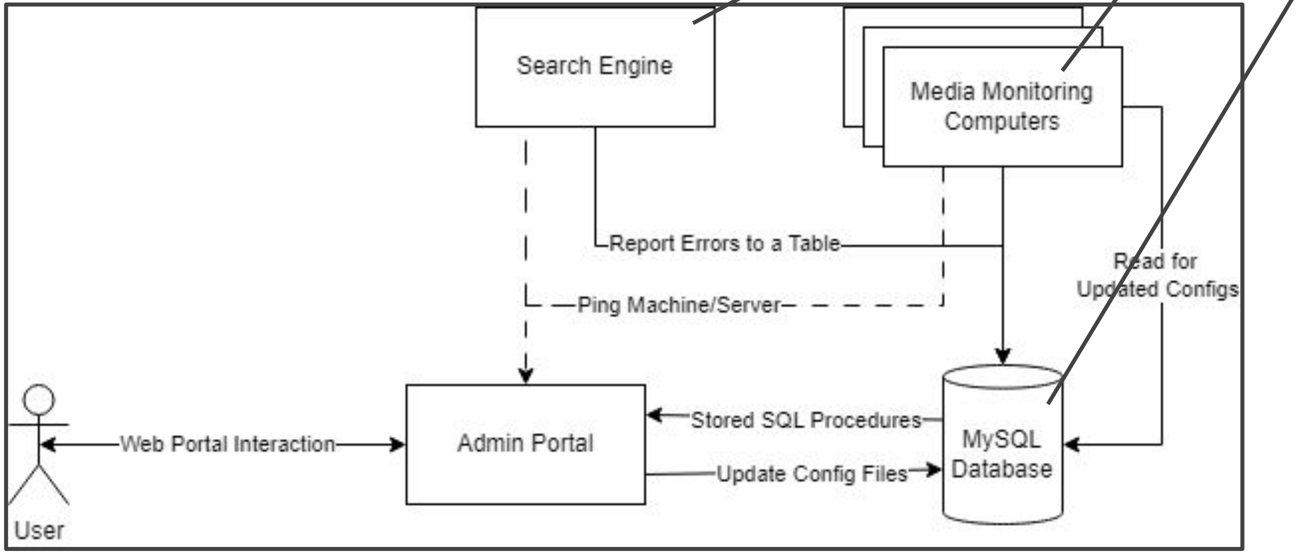
Tableau Example

Concept Design



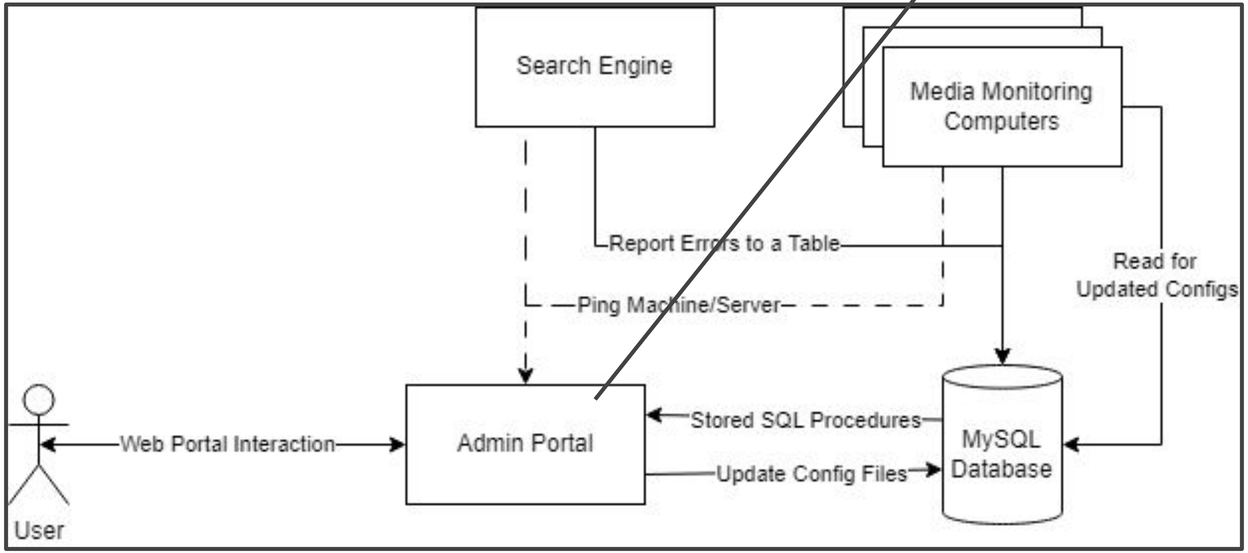
Concept Design

DigiClips servers we are accessing



Concept Design

Web dashboard portal



Potential Risks & Mitigations

Risk	Cause	Mitigation
Failure to identify required components.	New material is needed after design and research phase.	Weekly meetings with *DigiClips* containing weekly demos.
Failure to get client support for designs.	Lack of communication related to design work.	Weekly meetings with *DigiClips* containing weekly demos.
Failure to implement code.	Implementation time is unexpected hours.	Breaking code into modular sections to decrease coupling.
Failure to connect to the database and backend server.	Server/database integration is incomplete or server/database is down/inaccessible.	Develop interfaces that can mock database and server connections and data.

Resource/Cost Estimate

Resource	Use	Cost
Computer environment (Desktop, Laptop, School Computer)	Writing code, running tests, simulating the server	Free, each student already has a computer.
Node.js	Node.js is the JavaScript runtime that we will use to run the backend Express server.	Free to install and develop with.
Express.js and Angular.js	Express.js is the backend framework and Angular.js is the frontend framework.	Free to install and develop with.
Amazon Lightsail	Host the deployed server for web wide access.	$3.50 Per Month

Project Milestones

Research Milestones:

- Identify 90% of the components that need implemented
- Identify 100% of the technologies needed
- Develop a map of current implementation

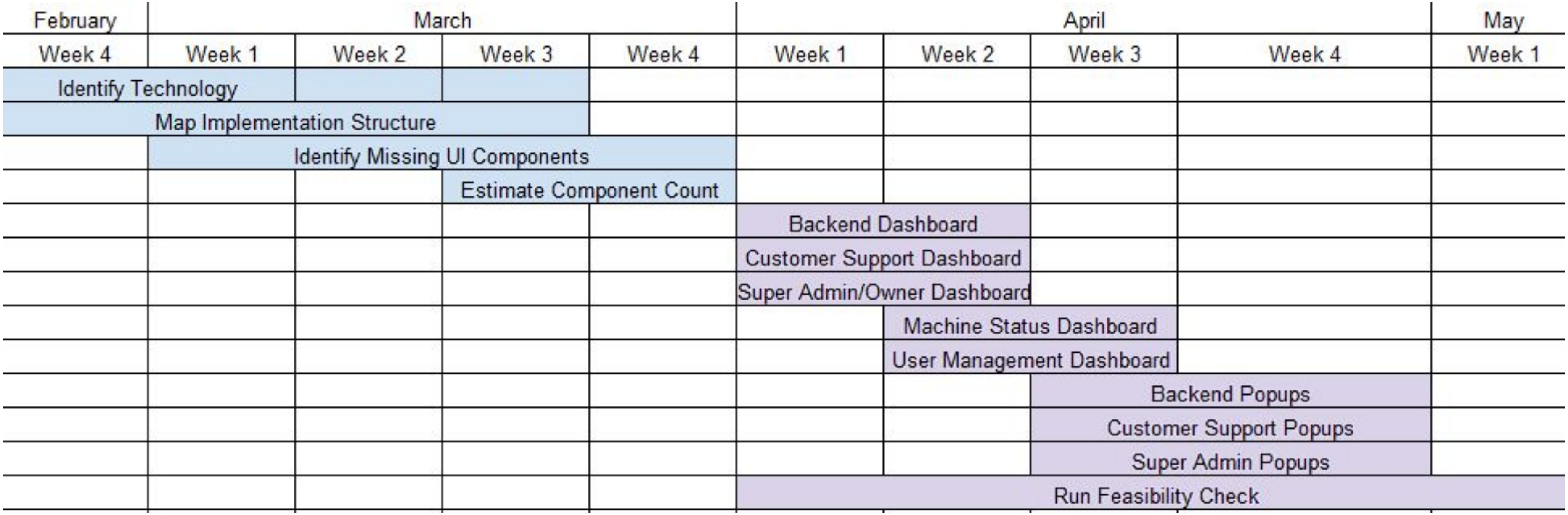
Design Milestones:

- Design 100% of identified components
- Identify 80% of required database relations

Implementation Milestones:

- Implement 100% of identified components
- Test 100% of implemented components

Gantt Chart



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<tr><td>Week 4</td><td>Week 1</td><td>Week 2</td><td>Week 3</td><td>Week 4</td><td>Week 1</td><td>Week 2</td><td>Week 3</td><td>Week 4</td><td>Week 1</td></tr>
<tr><td colspan="4">Identify Technology</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4">Map Implementation Structure</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td colspan="4">Identify Missing UI Components</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td colspan="2">Estimate Component Count</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td colspan="2">Backend Dashboard</td><td></td><td></td><td></td></tr>
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<tr><td></td><td></td><td></td><td></td><td></td><td colspan="2">Super Admin/Owner Dashboard</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td colspan="2">Machine Status Dashboard</td><td></td><td></td></tr>
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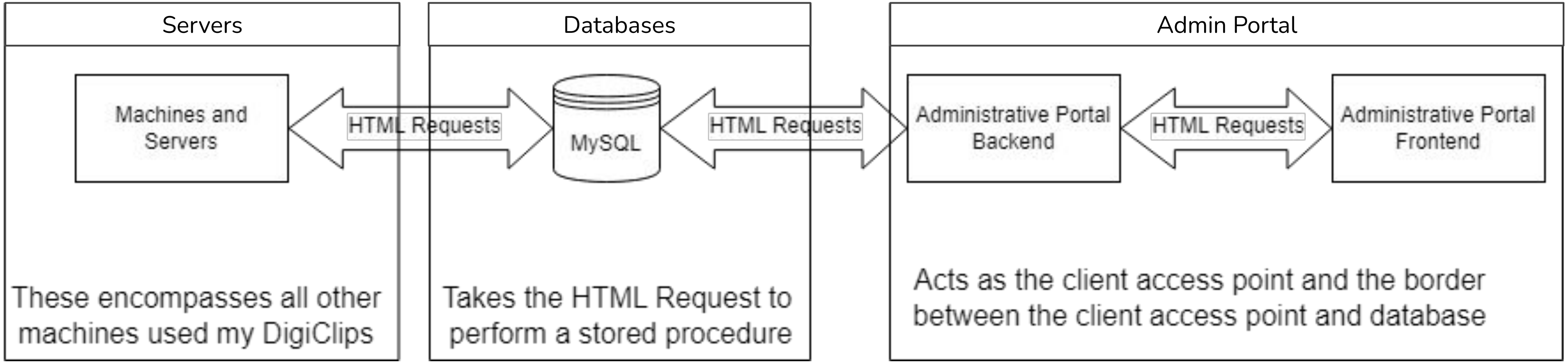
<tr><td></td><td></td><td></td><td></td><td></td><td colspan="5">Run Feasibility Check</td></tr>
</table>

System Design

Functional Decomposition



Servers

Machines and Servers

These encompasses all other machines used my DigiClips

HTML Requests

Databases

MySQL

Takes the HTML Request to perform a stored procedure

HTML Requests

Admin Portal

Administrative Portal Backend

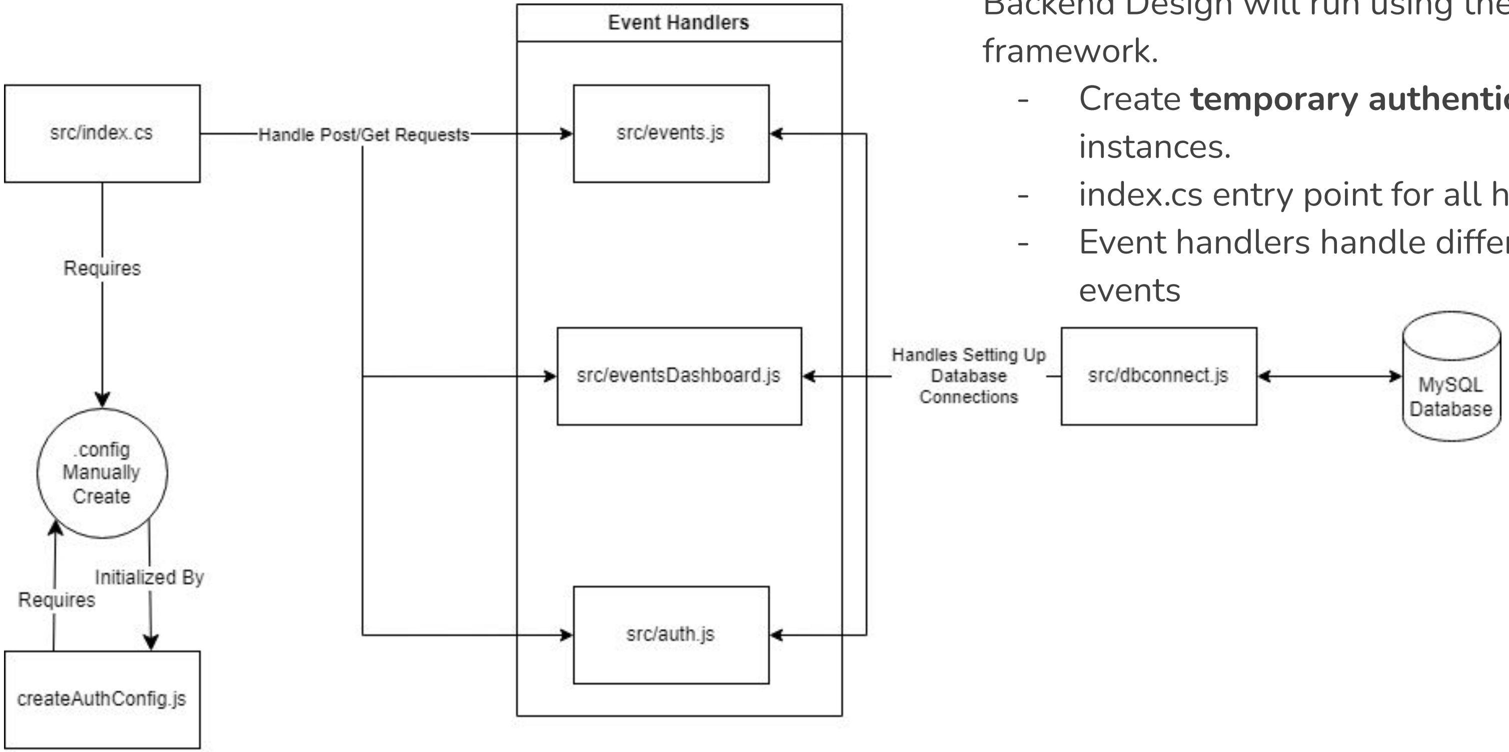
HTML Requests

Administrative Portal Frontend

Acts as the client access point and the border between the client access point and database

Detailed Design

Backend

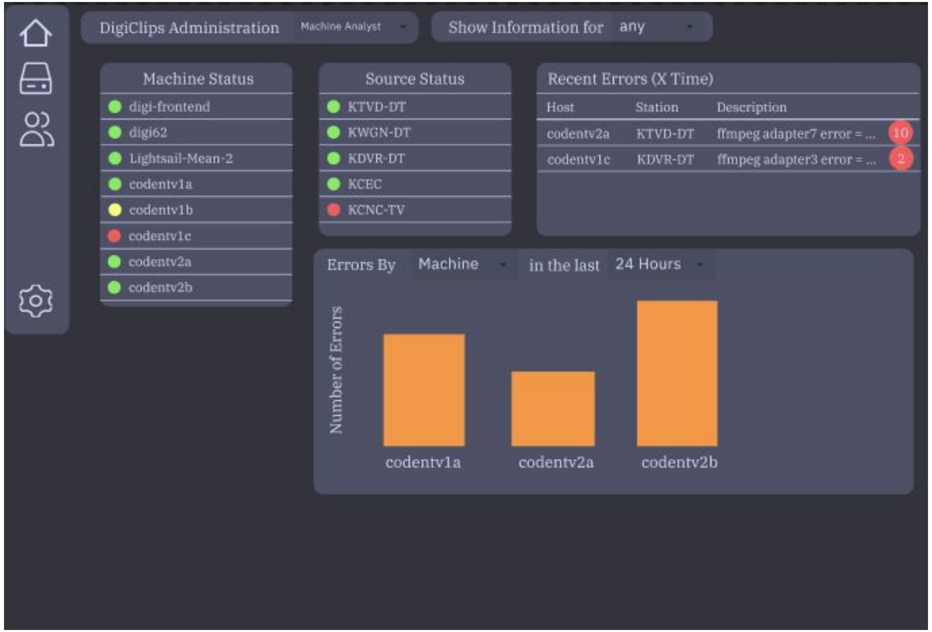


Backend Design will run using the **Express.js** framework.

- Create **temporary authentication** for local instances.
- index.cs entry point for all html requests
- Event handlers handle different software events

Detailed Design

Frontend UI



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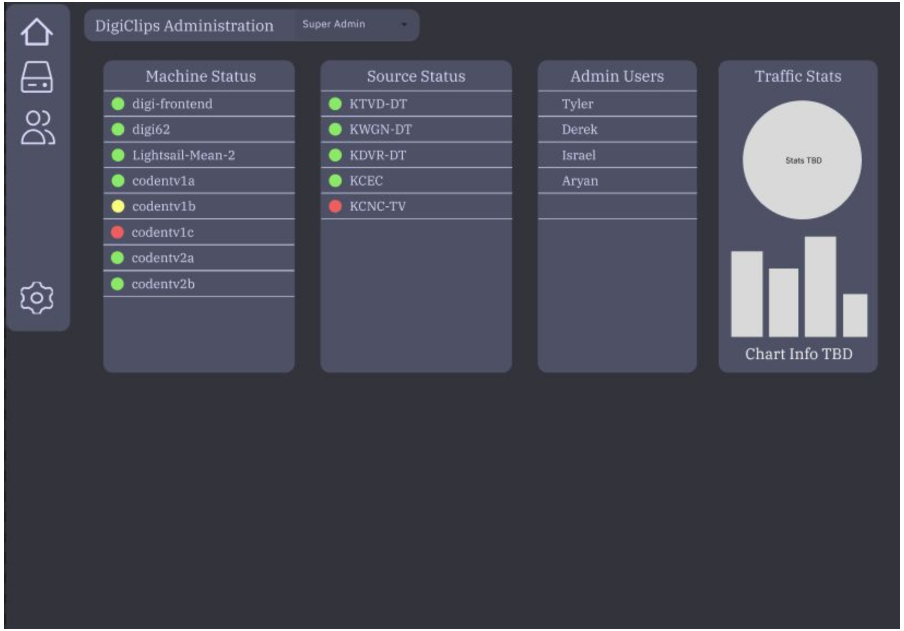

DigiClips Administration | Super Admin

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Admin Users

- Tyler
- Derek
- Israel
- Aryan

Traffic Stats

Test Plan

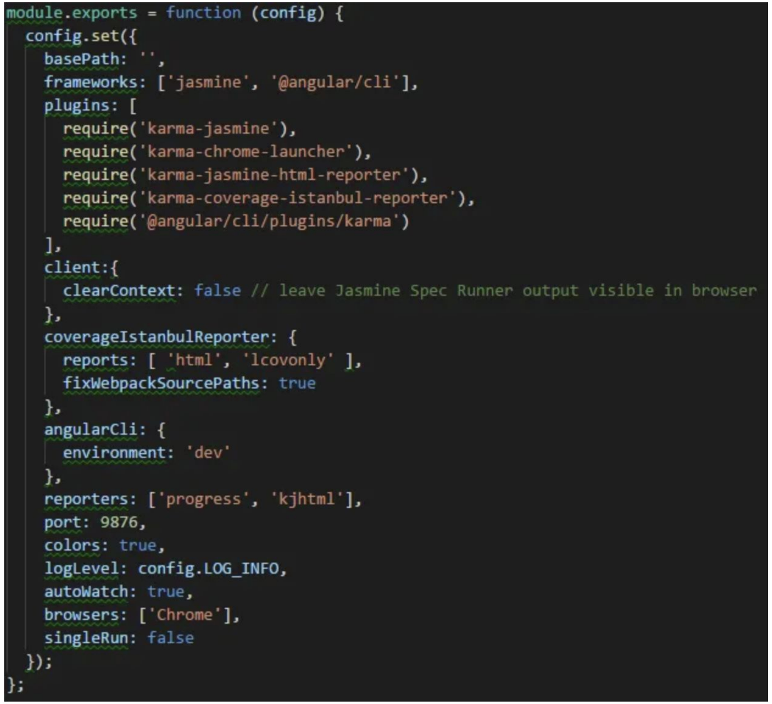
Comprehensive testing strategy tailored to the *DigiClips* project

Early and continuous testing to ensure functionality, reliability, and security

Types of testing:

- Unit Testing: Individual components using Angular.
- Interface Testing: Verifying API contracts and data flow between components
- Integration Testing: Testing interconnected modules and MySQL server integration
- System Testing: Functional, performance, and usability testing
- Regression Testing: Maintaining system integrity with automated test suites
- Acceptance Testing: Iterative design and code reviews with client representatives
- Security Testing: Identifying and mitigating potential vulnerabilities

Example of Angular Testing using Karma and Jasmine



```
module.exports = function (config) {
  config.set({
    basePath: '',
    frameworks: ['jasmine', '@angular/cli'],
    plugins: [
      require('karma-jasmine'),
      require('karma-chrome-launcher'),
      require('karma-jasmine-html-reporter'),
      require('karma-coverage-istanbul-reporter'),
      require('@angular/cli/plugins/karma')
    ],
    client:{
      clearContext: false // leave Jasmine Spec Runner output visible in browser
    },
    coverageIstanbulReporter: {
      reports: [ 'html', 'lcovonly' ],
      fixWebpackSourcePaths: true
    },
    angularCli: {
      environment: 'dev'
    },
    reporters: ['progress', 'kjhtml'],
    port: 9876,
    colors: true,
    logLevel: config.LOG_INFO,
    autoWatch: true,
    browsers: ['Chrome'],
    singleRun: false
  });
};
```

Testing Highlights

Addressing unique challenges: complex media integration and user-friendliness

Leveraging Angular framework and testing tools for efficient unit testing

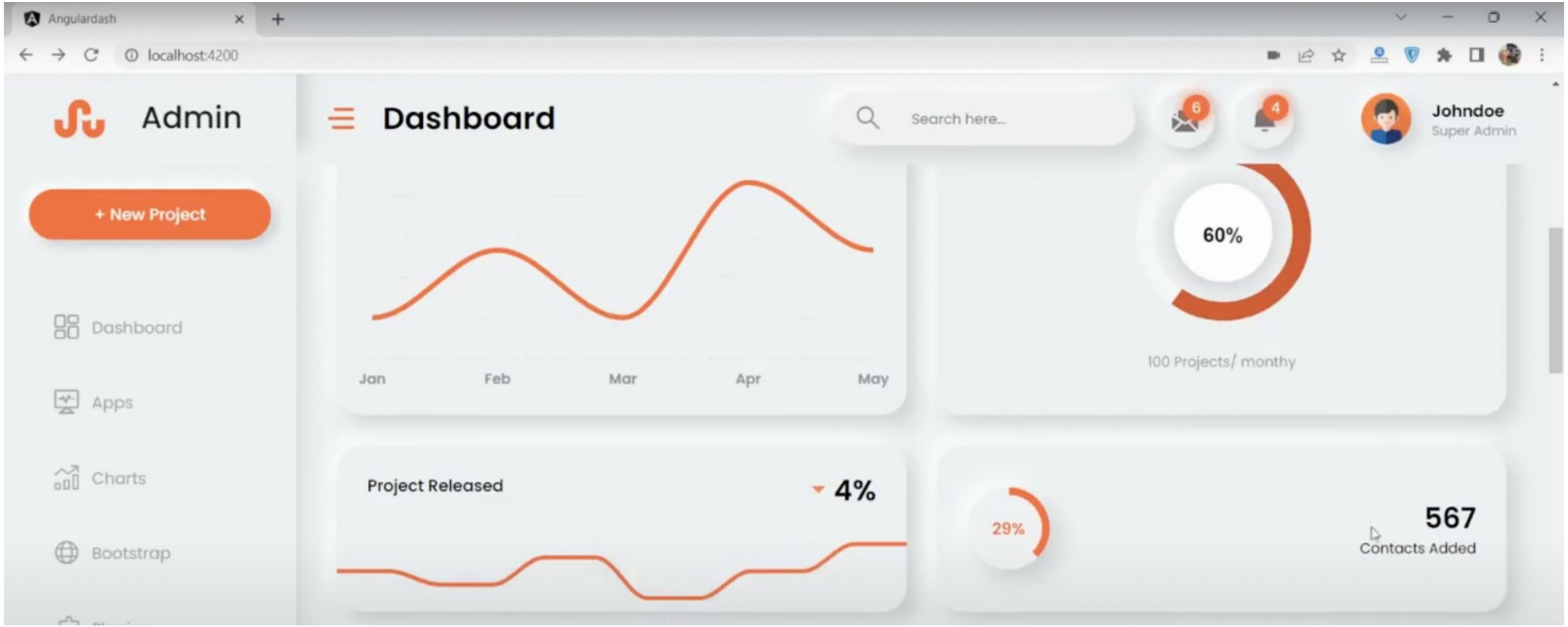
Utilizing Postman, Cypress, and custom scripts for interface and integration testing

Staged approach for system testing, from development to production-like environments

CI/CD pipeline for automated regression testing

Close collaboration with clients for design and code acceptance

Prototype Implementation



Familiarity with Technologies

Frontend

Angular - Aryan

Typescript - Israel and Aryan

Backend

Express.js - Derek, Tyler, and Aryan

MySql - Whole Team

Conclusion

Current Status

Completed

- ✓ Created UI designs for major components.
- ✓ Presented designs to DigiClips for feedback.
- ✓ Obtained approval from *Digiclips*.

Pending Items

- PENDING Review Albany’s changes.

Member Contributions

-Tyler and Derek worked on creating UI Designs

-Israel is the point of contact for *DigiClips* and other university teams working on the same code base.

-Aryan worked on our initial prototype implementation and test plan

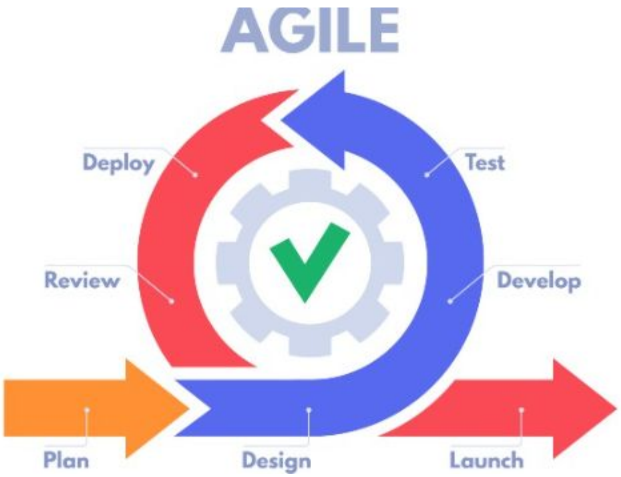
Plan for Next Semester

-Breakdown proposed designs into workable tasks.

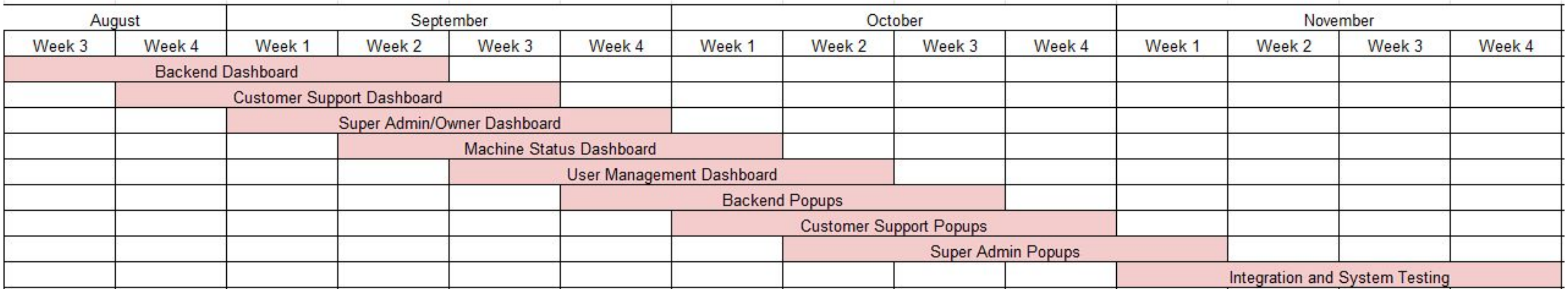
-Start Agile development.

-Present changes to *DigiClips* during the weekly meeting.

-Create a proficient test suite.



Gantt Chart Fall 2024



<table>
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<tr><td></td><td></td><td colspan="4">Super Admin/Owner Dashboard</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
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<tr><td></td><td></td><td></td><td></td><td colspan="4">User Management Dashboard</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td colspan="4">Backend Popups</td><td></td><td></td><td></td><td></td><td></td></tr>
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<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td colspan="4">Integration and System Testing</td></tr>
</table>

Questions?