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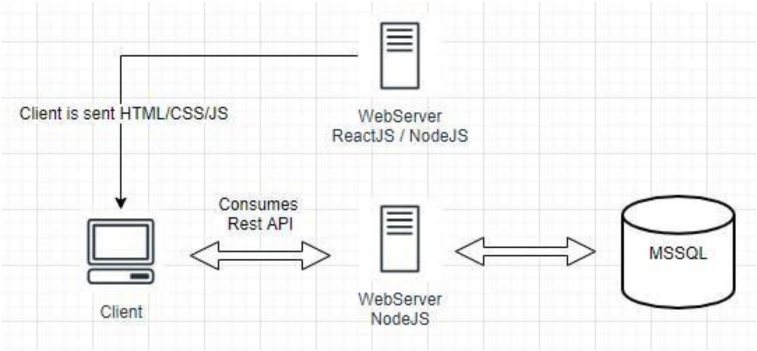
SWDV 691-1

Service Layer Design

I. Technology

The Student Loan Calculator will consume a REST based API built on NodeJS with the ExpressJS framework. Users must first pass a username and password through /login in order to obtain a JSON web token to authenticate on subsequent requests. Most of the POST, PUT, and DELETE methods below will directly affect the analytics and charts on the page.



II. Error Response

The Service Layer will send appropriate HTTP Status Codes depending on the error that occurred. While the application will have client-side validation, alert messages will be triggered depending on the returned Status Code.

Forbidden - 403

Resource Not Found – 404

Invalid Input – 422

Too many requests – 429

III. Endpoints

a. POST /login

i. Request Body

```
{
userName: String
password: String
}
```

ii. Returns a JSON web Token that should be used by all requests for authentication.

```
{
 accessToken: String
}
```

b. GET /me

i. There are not many major use-cases for this endpoint but can be used for user-experience type message.

ii. Returns basic information on the currently logged in user.

```
{
 UserID: Number
 UserName: String
 Email: String
 LastLogin: String
 DateCreated: String
}
```

c. GET /me/student-loans

i. Used for displaying a list of all of the user's student loans and needed for a user to interact with them.

ii. Returns an array of all user's student loans currently not deleted

```
[{
 LoanID: Number
 LoanName: String
 PaymentStart: String
 LoanTerm: String
 StartingPrinciple: Float
 CurrentPrinciple: Float
 AccruedInterest: Float
InterestRate: Float

MinimumPayment: Float

StatusID: Number

IsDeleted: Boolean

}, {…}, {…}]
```

d. POST /me/student-loans

i. Create a new student-loan. This will affect the analytics and charts on the page.

ii. Post Body

```
{

 LoanName: String

 PaymentStart: String

 LoanTerm: String

 StartingPrinciple: Float

 CurrentPrinciple: Float

 AccruedInterest: Float

 InterestRate: Float

 MinimumPayment: Float

 StatusID: Number

}
```

iii. The newly created student-loan is returned

```
{

 LoanID: Number

 LoanName: String

 PaymentStart: String

 LoanTerm: String

 StartingPrinciple: Float

 CurrentPrinciple: Float

 AccruedInterest: Float
 InterestRate: Float

 MinimumPayment: Float

 StatusID: Number

 IsDeleted: Boolean

}
```

f. PUT /me/student-loan/:LoanID

  i. Update an existing student loan.

  ii. The Post Body and returned entity is the same as the POST request.

g. DELETE /me/student-loans/:LoanID

  i. Deletes a single Loan

  ii. Returns a Boolean of whether or not the loan was deleted

```
{

 LoanID: Number

 Result: Boolean

}
```

h. GET /me/student-loans/payment-plans

  i. Returns all the payment-plans created by a user.

```
{

 PaymentPlanID: Number

 PlanName: String

 IsCurrent: Boolean

 IsDeleted: Boolean

 Payments: [

            {

            PaymentID: Number

            PaymentDate: String

            PaymentAmount: Float

            AllocationMethodID: Number

            IsRecurring: Boolean
            IsDeleted: Boolean

            }, {…}, {…}

     ]

    }
```

h. POST /me/student-loans/payment-plans

  i. Creates an empty payment-plan.

  ii. Request Body

```
{

 PaymentPlanID: Number

 PlanName: String

}
```

  iii. Returns the same as the GET request

h. PUT /me/student-loans/payment-plans/:PaymentPlanID

  i. Updates an existing Payment Plans metadata

  ii. Returns basic information on the currently logged in user.

i. DELETE /me/student-loans/payment-plans/:PaymentPlanID

  i. Deletes a payment plan and all payments associated with the plan.

```
{

 PaymentPlanID: Number

 Result: Boolean

}
```

j. POST /me/student-loans/payment-plans/:PaymentPlanID/Payment

  i. Creates a new payment for an existing payment plan

  ii. Request-Data

```
{

 PaymentID: Number

 PaymentDate: String
 PaymentAmount: Float

 AllocationMethodID: Number

 IsRecurring: Boolean

}
```

iii. Returned data

```
{

PaymentID: Number

PaymentDate: String

PaymentAmount: Float

AllocationMethodID: Number

IsRecurring: Boolean

IsDeleted: Boolean

}
```

k. PUT /me/student-loans/payment-plans/:PaymentPlanID/Payment/:PaymentID

   i. Deletes an existing payment associated with a PaymentPlanID

   ii. Response Data

```
{

 PaymentPlanID: Number

 Result: Boolean

}
```

l. GET /me/student-loans/aggregate-analytics

   i. Returns basic statistics calculated from a user's student-loans. These are aggregate stats that change depending on the current plan selected

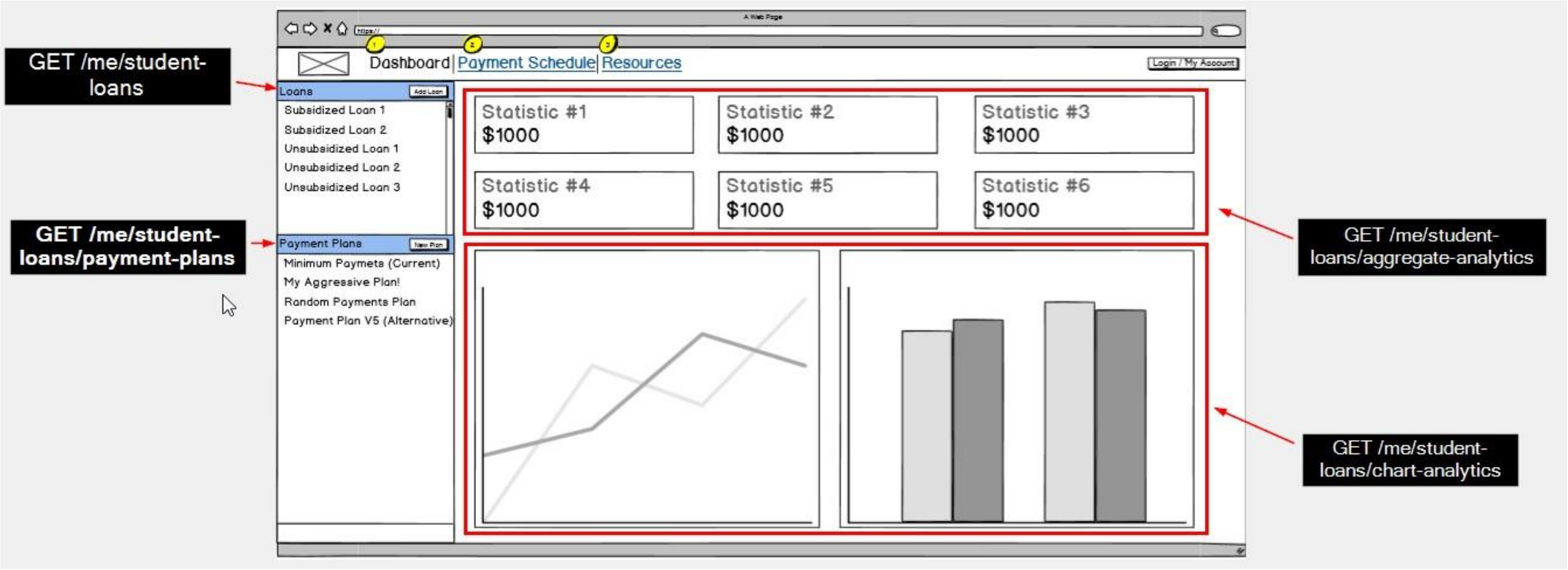
```
{

 minimumPayOffDate: String  estimatedPayoffDate:

String  currentPrincipalAmount: Float

totalInterestPaidCurrent: Float

totalInterestPaidExpected: Float

averageInterestAccured: Float
}
```

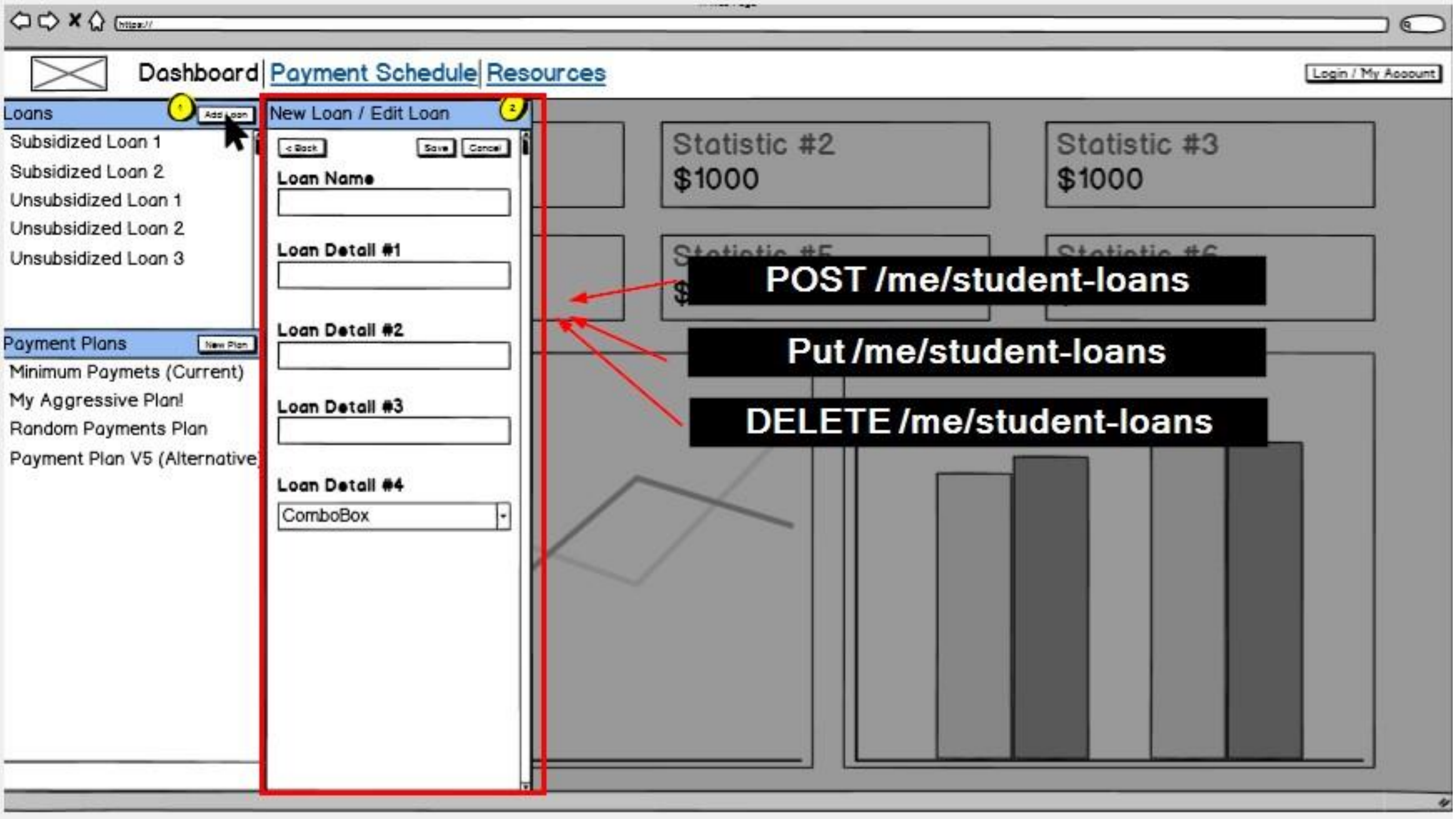
m. GET /me/student-loans/chart-analytics

i. Returns an array of data that will power the charts. Calculated from student-loans and current plan selected.

```
[{

Date: String

ExpectedTotalBalance: Float

Loans: [

        {

         LoanID: Number

         LoanName: String

         ExpectedBalance: Number

        }, {…}, {…}

]

}, {…}, {…}]
```

IV. Endpoint Use Cases

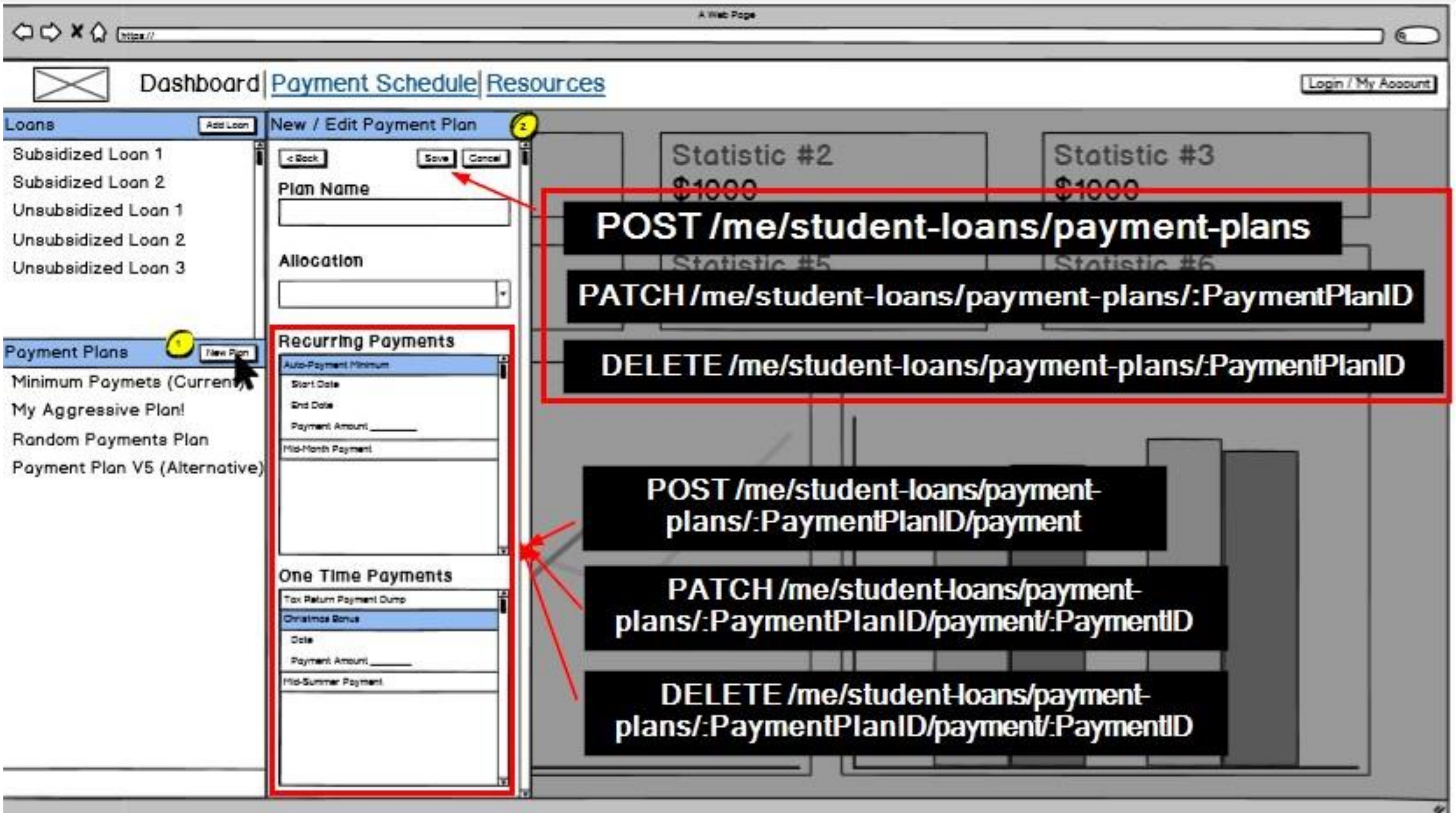




POST /me/student-loans

Put /me/student-loans

DELETE /me/student-loans



POST /me/student-loans/payment-plans

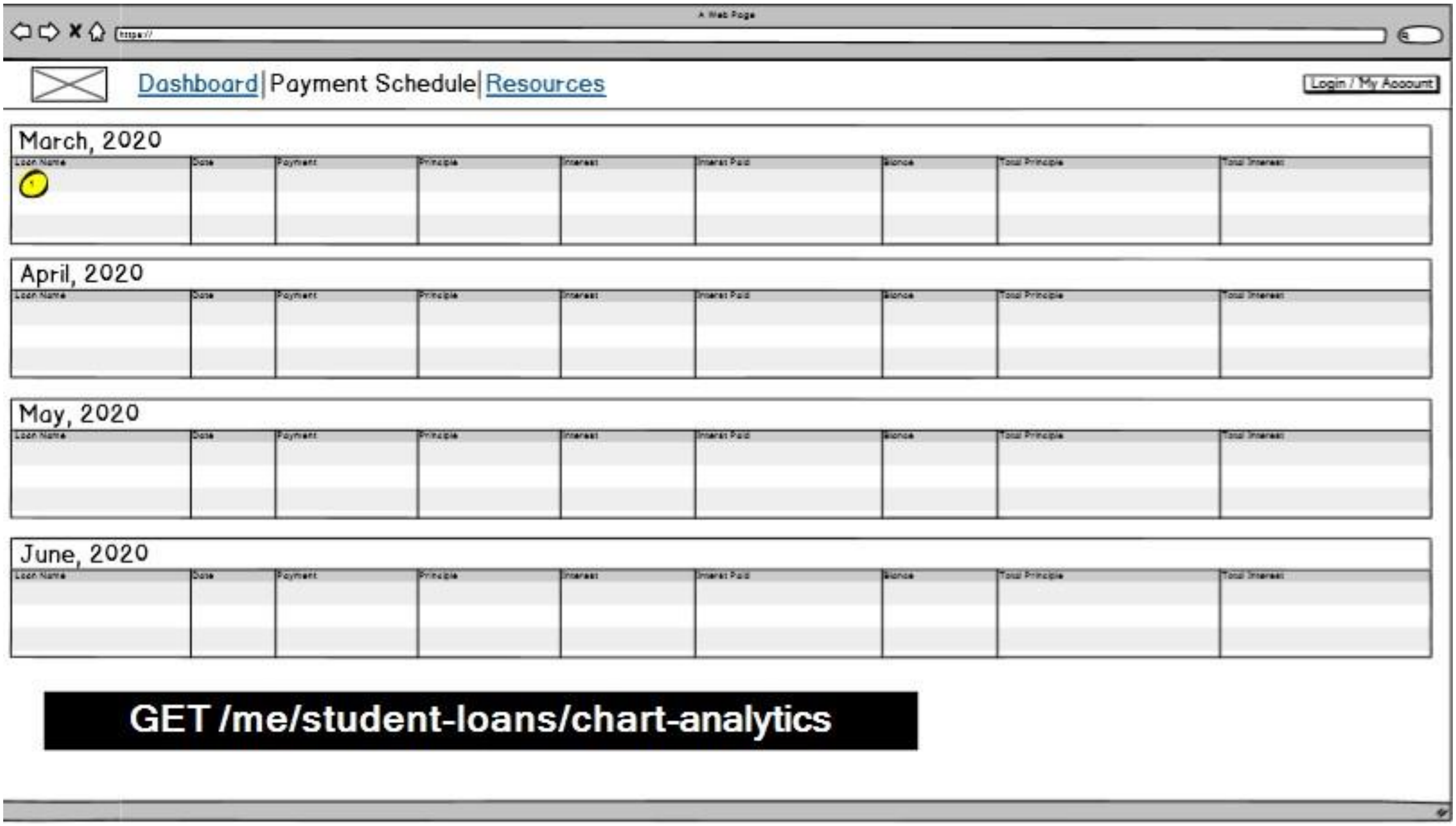
PATCH /me/student-loans/payment-plans/:PaymentPlanID

DELETE /me/student-loans/payment-plans/:PaymentPlanID

POST /me/student-loans/payment-plans/:PaymentPlanID/payment

PATCH /me/student-loans/payment-plans/:PaymentPlanID/payment/:PaymentID

DELETE /me/student-loans/payment-plans/:PaymentPlanID/payment/:PaymentID



March, 2020

Loan Name	Date	Payment	Principle	Interest	Interest Paid	Balance	Total Principle	Total Interest
1								

April, 2020

Loan Name	Date	Payment	Principle	Interest	Interest Paid	Balance	Total Principle	Total Interest

May, 2020

Loan Name	Date	Payment	Principle	Interest	Interest Paid	Balance	Total Principle	Total Interest

June, 2020

Loan Name	Date	Payment	Principle	Interest	Interest Paid	Balance	Total Principle	Total Interest

GET /me/student-loans/chart-analytics