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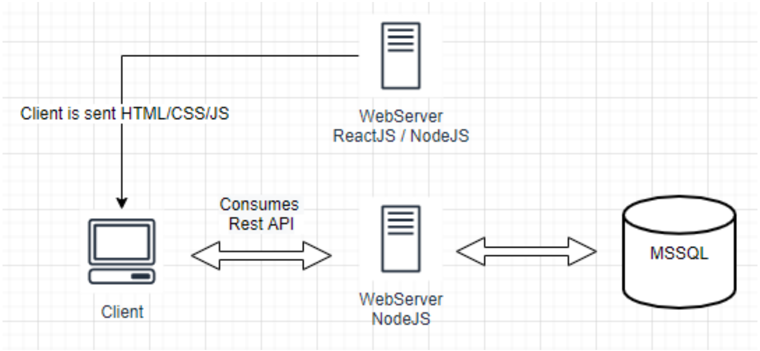
SWDV 691-1

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. Post 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
}
```

e. 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.

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

  i. Deletes a single

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

```
{
 LoanID: Number
 Result: Boolean
}
```

g. 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. Post-Body

```
{
 PlanName: Number
}
```

   iii. Returns the same structure as GET

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

   i. Updates an existing Payment Plans metadata

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

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

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

```
{
 PaymentPlanID: Number
 Result: Boolean
}
```

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

i. Creates a new payment for an existing payment plan

ii. Post-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
}
```

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

i. Deletes an existing payment associated with a PaymentPlanID

ii. Returned Data

```
{
 PaymentPlanID: Number
 Result: Boolean
}
```

m. 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
}
```

n. 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
        }, {…}, {…}
]
}, {…}, {…}]
```