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SWDV 691-1

<center>Database Re-Design: Loan Payoff Calculator</center>

I.   Preface

This documentation has been updated with changes detailed in the "Design Feedback Response" document. These changes include adding "DateCreated", "DateUpdated", and "DateDeleted" to all database models. The User's table will now include "CreationMethod", "FacebookID", and "GoogleID" to allow for account creation through these social media OAuth methods. The Loan model will also no longer have a foreign key for "PaymentPlanID". The Payments table will relate directly to a user rather than through their Loans. My justification for MSSQL has not changed since I feel that relationships between each table are very important and MSSQL does an excellent job for this. An image of the new Database design can be found at the end of this document.

II.   Justification

The Loan Payoff Calculator application gives users an analytical view of how making lump sum payments or changing their auto-payment would affect their loan repayment. As a requirement, the user must be able to creation an account and sign-in. This allows for their loans and payments to be related to their user account and persist their data between application visits. The data points driving this application must be related to one another and back to the user. As a result, I will be using the relational database Microsoft SQL Server to store data.

III.   Data Structure

All the data being presented to the User is personal and relevant only to them thus everything needs to link back to their UserID. Careful consideration was put towards not allowing any personally identifiable loan data or PII that could allow a loan to be linked back to a real person. User's can enter any number of Student Loans that they have. Without entering any PaymentPlans, calculations can be made on the Loan Table alone since they are required to enter their minimum payment per month. Thus, we can display their current loan repayment trajectory.

Every Loan is linked to a Payment Plan which has many Payment associated with it. Payment Plans are meant to overwrite or compare with their Minimum payment plan. Each payment has an AllocationMethodID which is how that payment will be applied to the StudentLoan such as going towards the high interest loans or towards the highest balance loan first.

The CodeSet table is for any values that need to be expanded on and group them into categories. All of the possible AllocationMethodID's would be in the codeset table. Each value would have the same CodeSetID (category), but have a different CodeValueID. This CodeSet table will also be used to generate dropdowns and certain texts on the front-end. This will allow most aspects of the site to be data-driven and for changes to be made via the database.

dbo.User

UserID	int IDENTITY		PK
CreationMethod	varchar(50)		
UserName	varchar(50)	NULL	
Password	varchar(MAX)	NULL	
GoogleID	varchar(255)	NULL	
FacebookID	varchar(255)	NULL	
FirstName	varchar(255)	NULL	
LastName	varchar(255)	NULL	
Email	varchar(255)	NULL	
LastLogin	datetime2(7)	NULL	
DateCreated	datetime2(7)		
DateUpdated	datetime2(7)	NULL	
DateDeleted	datetime2(7)	NULL	

dbo.PaymentPlans

PaymentPlanID	int IDENTITY		PK
PlanName	varchar(50)		
UserID	int		FK
IsCurrent	bit		
DateCreated	datetime2(7)		
DateUpdated	datetime2(7)	NULL	
DateDeleted	datetime2(7)	NULL	

New Attribute

Users: CreationMethod, GoogleID, FacebookID, DateCreated, DateUpdated, DateDeleted

Loans: DateCreated, DateUpdated, DateDeleted

PaymentPlans: DateCreated, DateUpdated, DateDeleted

Paymenmts: DateCreated, DateUpdated, DateDeleted

dbo.Payment

PaymentID			PK
PaymentPlanID	int		FK
PaymentDate	date		
PaymentAmount	double(18,2)		
AllocationMethodID	UUID		
IsRecurring	bit		
DateCreated	datetime2(7)		
DateUpdated	datetime2(7)	NULL	
DateDeleted	datetime2(7)	NULL	

dbo.Loans

LoanID	int IDENTITY		PK
LoanName	varchar(50)	NULL	
LoanType	datetime		
UserID	int		FK
PaymentStart	date		
LoanTerm	int		
StartingPrinciple	decimal(18,2)		
CurrentPrinciple	decimal(18,2)		
AccruedInterest	decimal(18,2)		
InterestRate	decimal(18,2)		
MinimumPayment	decimal(18,2)		
StatusID	UUID		
DateCreated	datetime2(7)		
DateUpdated	datetime2(7)	NULL	
DateDeleted	datetime2(7)	NULL	

dbo.CodeSets

CodeSetID	int IDENTITY	PK
CodeSetName	varchar(255)	
CodeSetDescription	varchar(255)	
CodeValueID	UUID	
CodeValueName	varchar(255)	
CodeValueDescription	varchar(255)	