

Mortgage Calculator using AppInventor

Setup

The first thing you want to do when you set up your project is create a nice format for your calculator.

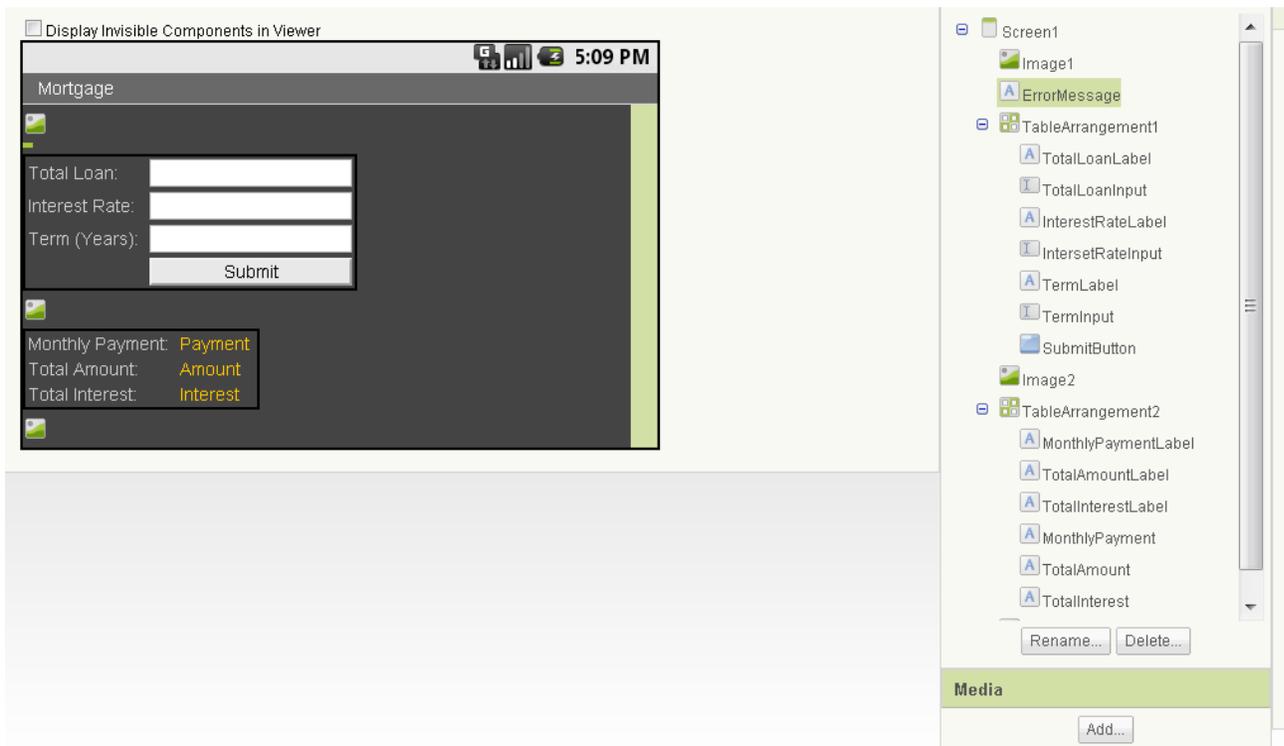
For a mortgage calculator, you will have three input values:

1. Total Loan
2. Interest Rate
3. Term (in years)

For this application, we will have the following outputs:

1. Monthly Payment
2. Total Amount
3. Total Interest

Set up these variables so we can create functions for them.



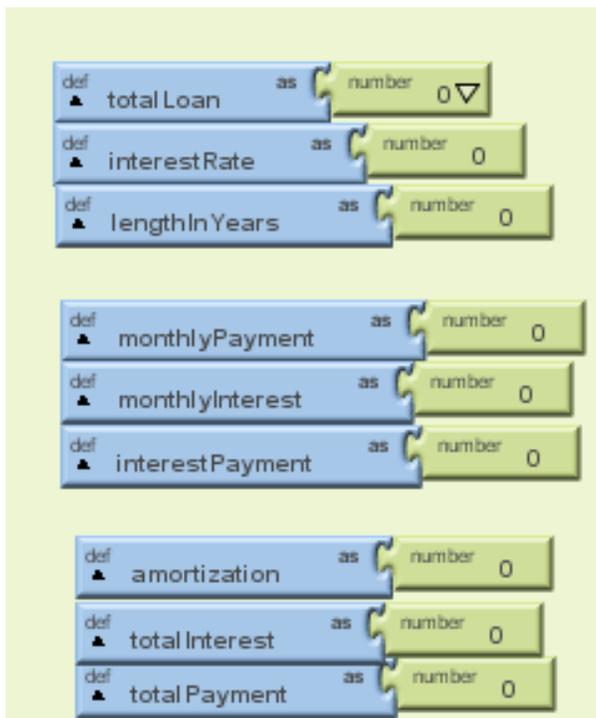
Right now the application is made of:

- 3 image buffers to center the items on the screen
- 1 error message Label to be used later.
- 2 TableArrangements that are 2x4 and 2x3 which contain Labels and TextBoxes, as well as a button
- 1 button to submit the user's input data

Building Functionality

Now the application will look decent, we can add functionality using the Blocks Editor.

1. Variables



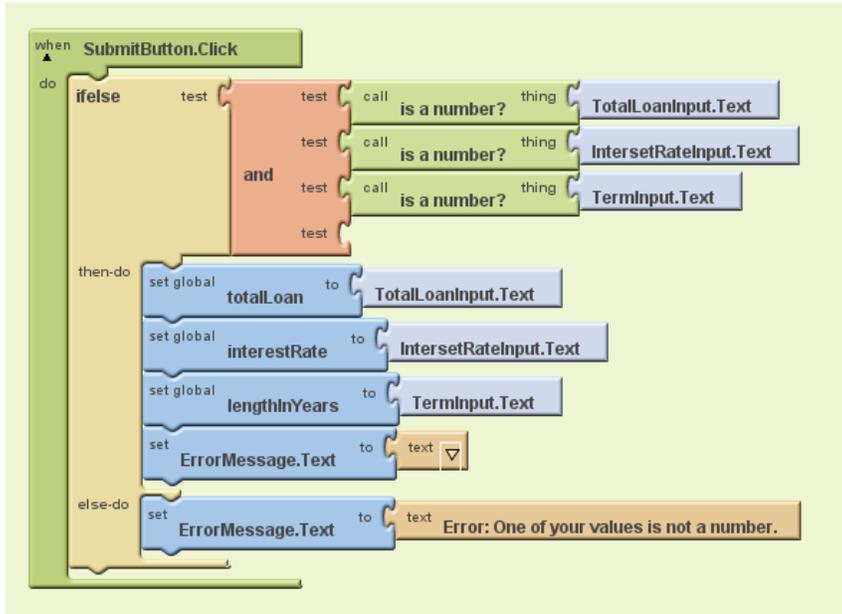
Create all necessary variables to be used in calculations and output display.

- TotalLoan – Input from user, total loan amount.
- interestRate – Input from user, yearly interest rate.
- lengthInYears- Input from user, total length of the loan.
- monthlyPayment – Your equations find this constant monthly payment.
- monthlyIntesest – The monthly interest rate, as opposed to yearly.
- interestPayment – The amount of the monthly payment that goes toward interest.
- amortization – The amount of monthly payment that goes toward paying off the loan.
- totalInterest – The total interest paid over the length of the loan

- totalPayment – The total amount paid over the length of the loan

2. User Input

For now, we just take input from the text boxes and check if they are numbers. If they are not numbers, we will throw an error message.



3. Calculate and Display Monthly Payment

The monthly interest is simply the yearly interest rate divided by the number of payments per year; in this case it is 12.

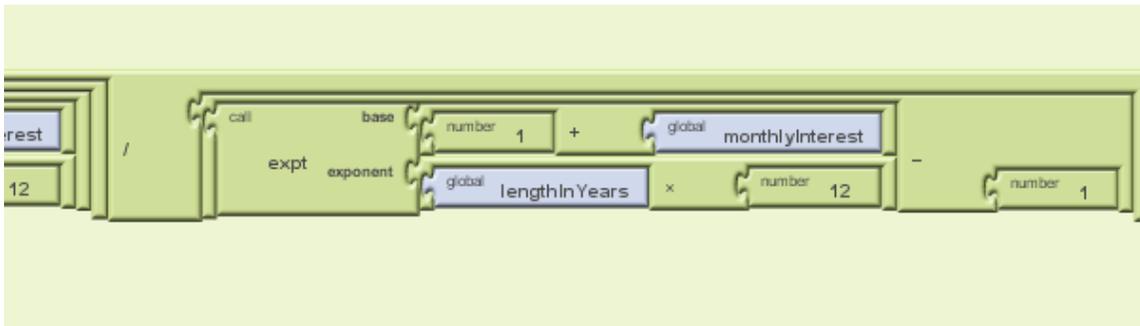
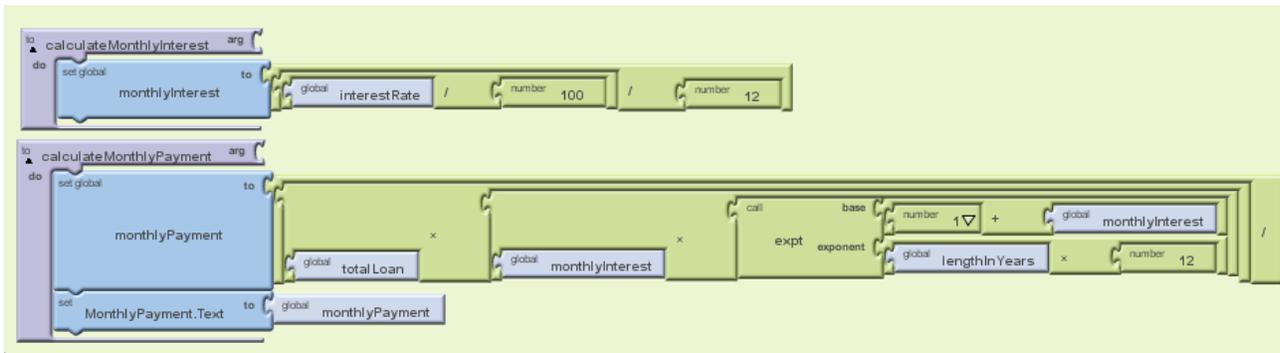
The formula to calculate the constant monthly payment of a mortgage is:

Total Loan = L

Monthly Interest Rate = M

Length of loan (in months) = N

Payment = $L * [M (1 + M)^N] / [(1 + M)^N - 1]$



These are the equations for finding the monthly interest rate as well as the fixed monthly payment.

The second image is a continuation of the monthly payment equation from the first image.

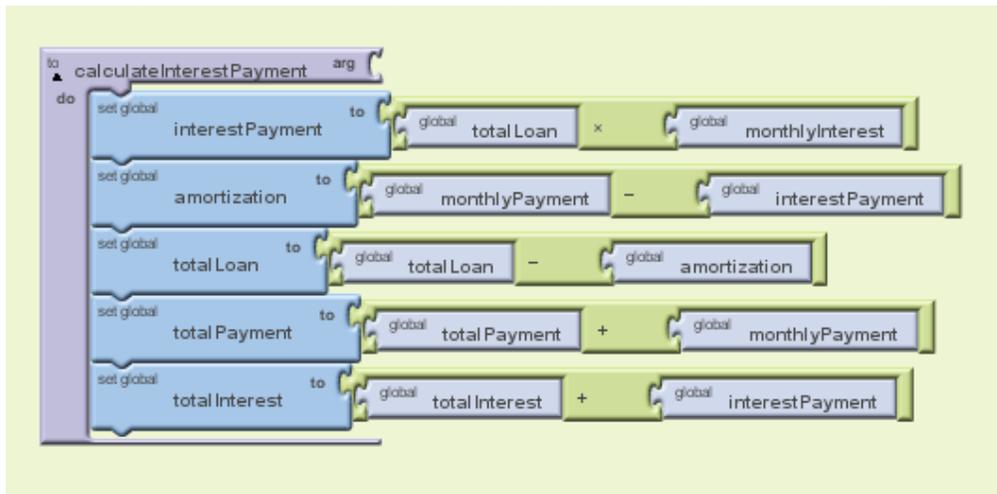
4. Calculate and Display Total Amount and Total Interest

For this portion of the program, you have to use the constant monthly payment, the interest payment, and amortization payments to find the next month's total amount owed. You repeat this process until the final values are calculated.

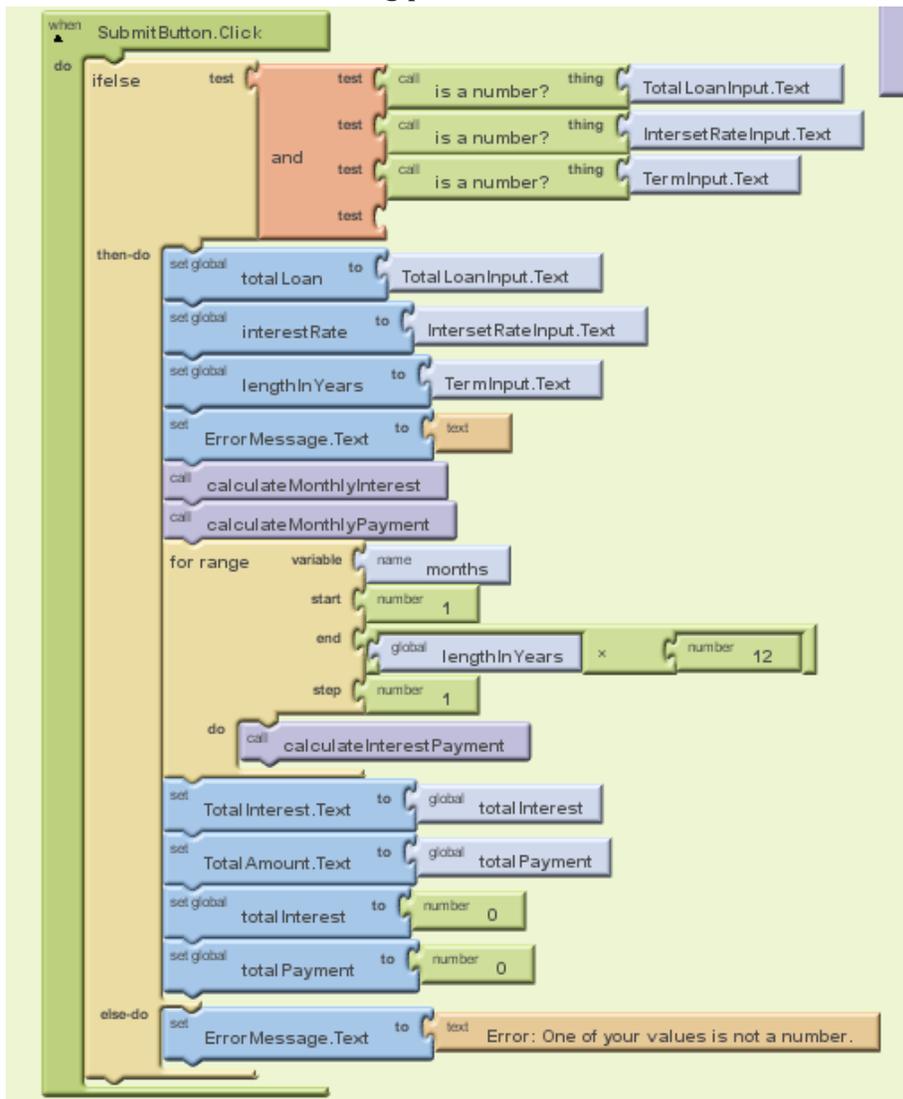
Each time you make a payment, the total amount owed decreases, so the total interest payment decreases, and the percentage of your monthly payment that goes toward paying off the loan increases.

Each step, you also update the total payment and the total interest variables.

The equations are self-explanatory by observing the necessary blocks:



You can add the following pieces to the Submit Button block.



This finishes the basics of the program. You may add any other items you would like to the program, such as radio buttons, custom colors, or a different format. Here is a glimpse of what the finished application can look like with added features:

The screenshot shows a mobile application interface for a mortgage calculator. The title bar at the top reads "Mortgage". Below the title bar, there is a status bar with icons for signal strength, Wi-Fi, and battery, and the time "10:27 AM".

The main content area is divided into two sections by a vertical yellow line. The left section contains the following text and input fields:

- "Paying extra per month goes directly toward amortization."
- "Total Loan:" followed by a text input field containing "125000".
- "Interest Rate:" followed by a text input field containing "6".
- "Term (Years):" followed by a text input field containing "15".
- Two radio buttons: "Yes" (checked) and "No" (unchecked), followed by a text input field containing "50".
- A "Submit" button.

The right section displays the calculated results in yellow text:

- "Monthly Payment: **\$1104.82**"
- "Total Amount: **\$184750.69**"
- "Total Interest: **\$59750.69**"
- "Total Years: **13.92**"

At the bottom of the screen, there is a virtual keyboard with the following keys:

- Row 1: 1, 2, 3, 4, 5, 6, 7, 8, 9, 0
- Row 2: @, #, \$, %, &, *, -, +, (,)
- Row 3: ALT, !, ", ' , : , ; , / , ? , <X>
- Row 4: ABC, , , _ , . , Done