

Using Modules

In this unit, you create a module that exposes the business logic related to a mortgage, and you build the application using Webpack.

Step 1: Create the Module

1. Create a new file named `mortgage.js` in the `js` directory.
2. Copy the `calculateMonthlyPayment` and `calculateAmortization` functions from `main.js` into `mortgage.js`.
3. Add the `export` keyword in front of both functions to make them available as part of the module public API. `mortgage.js` should now look like this:

```
4. export let calculateMonthlyPayment = (principal, years, rate) => {
    let monthlyRate = 0;
    if (rate) {
        monthlyRate = rate / 100 / 12;
    }
    let monthlyPayment = principal * monthlyRate / (1 - (Math.pow(1/(1 +
monthlyRate),
        years * 12)));
    return {principal, years, rate, monthlyPayment, monthlyRate};
};

export let calculateAmortization = (principal, years, rate) => {
    let {monthlyRate, monthlyPayment} = calculateMonthlyPayment(principal,
years, rate);
    let balance = principal;
    let amortization = [];
    for (let y=0; y<years; y++) {
        let interestY = 0; //Interest payment for year y
        let principalY = 0; //Principal payment for year y
        for (let m=0; m<12; m++) {
            let interestM = balance * monthlyRate; //Interest payment
for month m
            let principalM = monthlyPayment - interestM; //Principal payment
for month m
            interestY = interestY + interestM;
            principalY = principalY + principalM;
```

```

        balance = balance - principalM;
    }
    amortization.push({principalY, interestY, balance});
}
return {monthlyPayment, monthlyRate, amortization};
};

```

Step 2: Use the Module

1. In `main.js`, remove the `calculateMonthlyPayment` and `calculateAmortization` functions.
2. Add the following `import` statement as the first line in `main.js` to import the mortgage module:
3. `import * as mortgage from './mortgage';`
4. In the `calcBtn` click event handler, modify the call to the `calculateAmortization` function as follows:
5. `let {monthlyPayment, monthlyRate, amortization} = mortgage.calculateAmortization(principal, years, rate);`

Step 3: Build and Run

1. On the command line, type the following command to rebuild the application:
2. `npm run webpack`
3. Open a browser, access <http://localhost:8080>, and click the **Calculate** button.