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| --- | --- |
| Money | Notes |
| * dollars: int * cents: int |  |
| + Money()  + Money(dollars: int, cents: int)  + getDollars(): int  + getCents(): int  + setDollars(dollars: int): void  + setCents(cents: int): void  + getValue(): double  + add(dollars: int, cents: int): void  + add(x: Money): void  + subtract(dollars: int, cents: int): void  + subtract(x: Money): void  + multiply(factor: double): void  + divide(factor: double): void  + toString(): String | Init to 0 dollars and 0 cents  Adjust dollars for at or over 100 cents  Adjust dollars for at or over 100 cents  Rounding errors OK  Adjust dollars for at or over 100 cents  Adjust dollars for at or over 100 cents  Borrow from dollars if needed  Borrow from dollars if needed  Formatted as: $999,999.99 |

Part 1:

Prepare a test program that test every method in the class including all aspects of dollar and cents issues.

Part 2:

Problem 2.21 using Money class.

https://www.rocketloans.com/learn/financial-smarts/how-to-calculate-monthly-payment-on-a-loan

The formula for calculating the monthly payment on an amortizing personal loan is:

Monthly Payment = P ((r (1+r)n) ∕ ((1+r)n−1))

Let’s use the previous example, but this time, the personal loan you get is amortizing. The principal (P) is $10,000, the APR is 3.5% and you have a 60-month repayment term (n). With this formula, “r” stands for the annual rate, not the APR. You can use these steps to find the monthly payment:

Divide your APR by 12 months to get your annual interest rate (r). Divide 0.035 by 12 to get 0.002917.

Fill out the formula. You can now plug your loan information into the above equation. You should have $10,000((0.002917(1+0.002917)60) ∕ ((1+0.002917)60−1)).

Solve the equations inside the first set of parentheses. You should end up with $10,000((0.002917 × 1.00291760) ∕ (1.00291760−1).

Solve the exponentials. Calculate 1.00291760 to get 1.190967. The formula is now $10,000((0.002917 × 1.190967) ∕ (1.190967−1)).

Solve the equations in the second set of parentheses. First, multiply 0.002917 by 1.190967 to get 0.003474. Then you can subtract 1 from 1.190967 to get 0.190967 for the other half of the equation. Your formula should look like $10,000(0.003474 ∕ 0.190967).

Divide the numbers in the final set of parentheses. Take 0.003474 divided by 0.190967 to get 0.018192.

Multiply the loan principal by the total. You will then multiply $10,000 by 0.018192 to get your monthly payment, $181.92.