Assignment 1

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March 29, 2022

Problem Statement:

Jaya borrowed ₹50,000 for 2 years. The rates of interest for two successive years are 12% and 15% respectively. She repays ₹33,000 at the end of the first year. Find the amount she must pay at the end of the second year to clear her debt.

Solution:

For the 1^{st} year
Principal amount(P) = ₹50,000
Rate of interest (R) = 12% p.a

$$\begin{aligned}\text{Amount due at the end of } 1^{st} \text{ year } &= P\left(1+\frac{R}{100}\right)\\ &= 50000\left(1+\frac{12}{100}\right)\\ &= 50000\times\frac{112}{100} = ₹56{,}000\end{aligned}$$

Amount paid at the end of 1^{st} year = ₹33,000
$\Rightarrow$ Principal for the 2^{nd} year = ₹56,000 - ₹33,000 = ₹23,000

For the 2^{nd} year,
Principal amount(P) = ₹23,000
Rate of interest (R) = 15% p.a

$$\begin{aligned}\text{Amount to be paid at the end of } 2^{nd} \text{ year } &= P\left(1+\frac{R}{100}\right)\\ &= 23000\left(1+\frac{15}{100}\right)\\ &= 23000\times\frac{115}{100} = ₹26{,}450\end{aligned}$$

Therefore, Jaya must pay ₹26,450 at the end of second year to clear her debt.