PLTW | Computer Science

1.2.9 Annuity Free Response Question

An annuity (sometimes called a reverse mortgage) is a financial account that produces a fixed payment to the account's owner every year until the funds in the account are gone. The present value of an annuity is calculated using the amount of the fixed payment, the interest earned, and the number of payments that will be made.

Specifically, the present value (PV) of an annuity at the time it is created can be determined with the following formula.

$$\text{PV} = \text{pmt}\left[\frac{1-(1+i)^{-n}}{i}\right]$$

Where: `pmt` is the payment amount
`i` is the interest rate
n is the number of payments to be made

An incomplete `Annuity` class is provided.

```
public class Annuity
{
  /**
   * Returns the present value of the annuity
   */
  public double getPresentValue(int pmt, int i, int n)
  {
    /* to be implemented */
  }

  // there may be instance variables, constructors, and methods not shown
}
```

Using the method header below, write the method `getPresentValue`. You must convert the given interest value `i` to an interest rate percentage.

```
  public double getPresentValue(int pmt, int i, int n)
  {
```