**Question**

Write a Java program to input a decimal number and print it’s equivalent binary number

Classname: DtoB

Instance variables:

int dec : to store the decimal number

int bin: to store binary equivalent

Member methods:

DtoB() – Parameterized constructor to initialize the data members with user defined value and bin with default value .

void convert() – convert decimal number into equivalent binary form.

void display() – display the original number and it’s binary form.

Write a main method to create an object of the class and invoke the above methods .

**Algortihm**

1. Start

2. Define a class `DtoB` with two instance variables:

- `dec` of type `int` to store the decimal number.

- `bin` of type `int` to store the binary equivalent.

3. Define a parameterized constructor for the class `DtoB`:

- Accept an integer `decimalNumber` as a parameter.

- Initialize `dec` with `decimalNumber`.

- Initialize `bin` with 0.

4. Define a method `convert()` to convert the decimal number into its binary equivalent:

- Initialize a temporary variable `temp` with the value of `dec`.

- Initialize a variable `place` with 1.

- While `temp` is greater than 0:

- Calculate `remainder` as `temp % 2`.

- Update `bin` by adding `remainder \* place`.

- Divide `temp` by 2 to remove the processed digit.

- Multiply `place` by 10 to move to the next binary place value.

5. Define a method `display()` to display the original decimal number and its binary form:

- Print the decimal number stored in `dec`.

- Print the binary number stored in `bin`.

6. In the main method:

- Create a `Scanner` object to read input from the user.

- Prompt the user to enter a decimal number.

- Read the decimal number into an integer variable `decimalNumber`.

- Create an object of the class `DtoB` with `decimalNumber`.

- Call the `convert()` method on the object to convert the decimal number to binary.

- Call the `display()` method on the object to print the decimal and binary numbers.

- Close the `Scanner` object.

7. End

**Variable Description Table**

|  |  |  |
| --- | --- | --- |
| **Variable Name** | **Data Type** | **Description** |
| dec | int | Stores the decimal number input by the user. |
| bin | int | Stores the binary equivalent of the decimal number. |
| decimalNumber | int | Temporarily stores the decimal number input by the user in the main method. |
| temp | int | Temporary variable used in the convert() method to process the decimal number. |
| place | int | Used in the convert() method to keep track of the binary place value. |
|  | int | Stores the remainder when dividing the decimal number by 2 in the convert() method. |
| scanner | Scanner | Scanner object used to read input from the user in the main method. |