

Unit Four Assignment One:

Write a Java project (Applet) with two classes. In the `init()` method of the driver class, use a sentinel controlled loop to enter binary numbers via Input Dialog boxes. (When a value of -1 is entered, you should exit the loop)

In the `init()` method, you should also declare a variable to be of type `Binary`. Inside the while loop, you should invoke the `convert` method of the `Binary` class. This method converts the binary number you entered, into a base 10 number. These base 10 numbers should be counted and accumulated.

$$\begin{aligned} 1101 &= 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 \\ &= 8 + 4 + 0 + 1 \\ &= 13 \end{aligned}$$

Each binary number and its converted base 10 number should be appended to a `JTextArea`. The value of the counter, the value of the accumulator, and the mean of the base 10 numbers should also be appended to the `JTextArea`. The `JTextArea` should be attached to a `Container`.

In the `Binary` class, there should be one instance field of type `String`. The parametric constructor accepts a `String` argument (the binary number) and assigns it to the instance field. The parametric constructor is the only constructor needed. The `convert` method uses the instance field to determine and return an integer (the base 10 number). Inside this method, a *while* loop should be used to convert the binary to decimal, one digit at a time.

All input and output should be pasted to a Word document and turned in with your code. This Word document should look like the one on the back of this page.