Chapter 2  PROGRAMMING EXERCISE

Creating a Sawtooth Wave in Java

Create a sawtooth wave that looks similar to the figure below, where each red pixel represents a sample.

![Sawtooth Wave Image]

You can base your Java program on the formula for a sawtooth wave, which describes its frequency components. The summation becomes a loop in the program. Of course you can’t loop infinitely. Just choose a number of iterations sufficient to create the sawtooth shape.

Let \( f \) be a fundamental frequency. Then a sawtooth wave created from this fundamental frequency is defined by the infinite summation

\[
\frac{2}{\pi} \sum_{n=1}^{\infty} \frac{\sin(2\pi f t)}{n}
\]

You're welcome to use the piece of code from the previous program to listen to and to paint the sawtooth wave.