UPPSALA UNIVERSITET

Distributed computations using JavaScript

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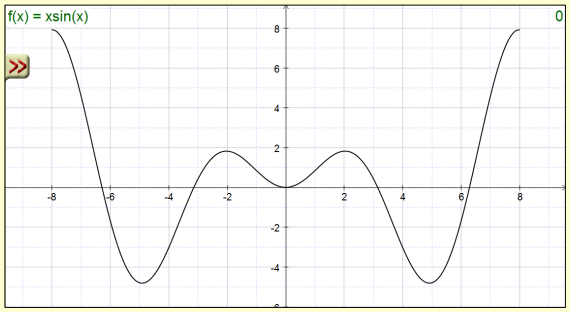
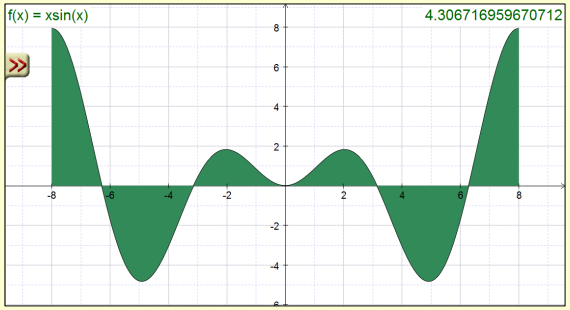
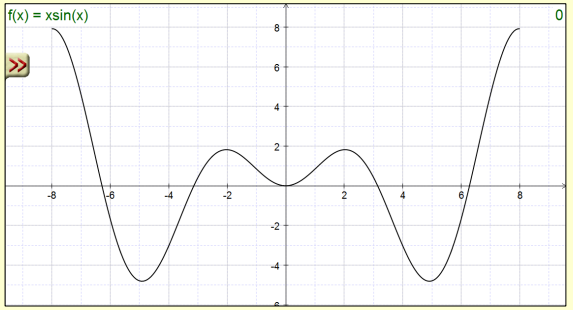
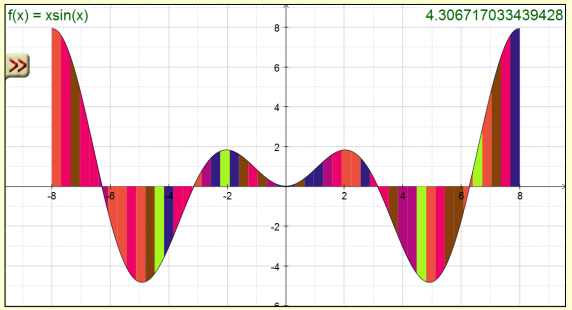




Single computation client

SLOW





Distributed computations

FAST

The idea is simple!

A server splits a large problem into smaller pieces and keeps track of who is currently computing a certain piece, using a MySQL database.

Clients request pieces to solve from the server. When they are done with one piece, they submit the answer and are given a new one to solve. This is repeated until there are no unsolved pieces left.

Anyone can use it!

The contributing clients can be any devices with an Internet connection, running JavaScript.

This will include virtually any computer or mobile device.

None of the following matter:

- Geographical location
- Device type
- Operating system
- Browser

… and it really works!

Tests were performed where identical computers calculated the integral shown in the graphs to the left. For every computer that was added, the process speeded up significantly. The speedup eventually halted when there were too many simultaneous requests to the server.

Solving integrals is just one example of the use cases of this method. To prove this, the code was translated into cracking a SHA-1 encrypted password, and that implementation worked just as well as solving integrals did.