PrimeGrid's
Twin Prime Search

On 25 Jul 2009 22:13:46 UTC, PrimeGrid, in collaboration with the Twin Prime Search, found World Record Twin Primes:

$$65516468355*2^{333333} \pm 1$$

The Twin Primes are 100355 digits long surpassing the previous record of 58771 digits, which by the way, was found by PrimeGrid and TPS on January 15, 2007. It will enter Chris Caldwell's "The Largest Known Primes Database" (http://primes.utm.edu/primes) ranked 1st for twins.

The discovery was made by SunGard Availability Services of the United States using an Intel Core2 Duo E8400 @ 3.00GHz with 2 GB RAM running Windows XP Professional x86. This computer took 5 minutes 26 seconds to complete the primality test.

The prime was verified 6 hours later by Keith Klahn of the United States using an Intel Core2 Quad Q9400 @ 2.66GHz with 8 GB RAM running Windows Vista Ultimate x64.   KE7AAR is a member of the BOINC Synergy team.

The credits for the discovery are as follows:

1. SunGard Availability Services (USA), discoverer
2. Peter Kaiser (Germany), top siever
3. Keith Klahn (USA), top producer by M tested and by single primes found
4. TPS, et al.
5. PrimeGrid, et al.
6. LLR, primality program developed by Jean Penné
7. NewPGen, sieving program developed by Paul Jobling
8. tpsieve, sieving program developed by Geoff Reynolds

Entry in "The Largest Know Primes Database" can be found here:
http://primes.utm.edu/primes/page.php?id=89536

Twin Primes are pairs of primes which differ by two. The first twin primes are {3,5}, {5,7}, {11,13} and {17,19}. It has been conjectured (but never proven) that there are infinitely many twin primes.

The search took almost 2 ½ years. Just over 30.7 million tests were completed by 18,661 users. A total of 6053 single primes were found...over 3200 of these were added to the Top 5000 list. 66.872G was completed out of the 100G sieved. The test range was sieved to a depth of 8P for most of the search and then to 25P the last 6 weeks.

The search effort would have taken almost two centuries on a fast single core PC. So this timely discovery would not have been possible without the thousands of volunteers who contributed their spare CPU cycles. A special thanks to everyone who contributed their advice and/or computing power to the search - especially all the sievers who work behind the scenes to make a find like this possible.

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About Twin Prime Search

Michael Kwok created the Twin Prime Search (TPS) project on April 13, 2006, to search for the largest known twin primes; more specifically, twin primes of the form $k*2^n - 1$ and $k*2^n + 1$. Soon after Andrea Pacini created and maintained a website for the project. The project was run manually through the mersenneforum.org forum and the Twin Internet Prime Search web site.

For several months, it remained at relatively low participation rates. On November 26, 2006, PrimeGrid joined the effort and brought TPS to the BOINC community. This greatly increased the visibility of TPS. By automating the testing process, PG made it easier for a greater number of users to participate.

TPS is interested in all twin primes, not just record ones. Recently, a small side project is underway to find low k values that give a twin for n<100000.

For more information about the Twin Prime Search and its projects, please visit their forum: http://www.mersenneforum.org/forumdisplay.php?f=65

About PrimeGrid

PrimeGrid is a distributed computing project, developed by Rytis Slatkevičius, which utilizes BOINC and PRPNet to search for primes. PrimeGrid's primary goal is to bring the excitement of prime finding to the "everyday" computer user. Simply download the software and let your computer do the rest. Participants can choose from a variety of prime forms to search. With a little patience, you may find a large or even record breaking prime.

BOINC

The Berkeley Open Infrastructure for Network Computing (BOINC) is a software platform for distributed computing using volunteered computer resources. It allows users to participate in multiple distributed computing projects through a single program. Currently BOINC is being developed by a team based at the University of California, Berkeley led by David Anderson.

This platform currently supports projects from biology to math to astronomy. For more information, please visit BOINC: http://boinc.berkeley.edu

PRPNet

PRPNet is a distributed Client/Server application, developed by Mark Rodenkirch, which can be used to manage and perform primality and probable prime tests on a list of candidate numbers. The PRPNet Client uses LLR, Phrot, or PFGW to perform these tests.

For more information, please visit PrimeGrid's PRPNet forum thread: http://www.primegrid.com/forum_thread.php?id=1215

For more information about PrimeGrid and a complete list of available prime search projects, please visit: http://www.primegrid.com