PrimeGrid's
Primorial Prime Search

On 28 February 2012, PrimeGrid's Primorial Prime Search project, through PRPNet, found the largest known Primorial prime:

$$1098133\#-1$$

The prime is 476,311 digits long and will enter Chris Caldwell's "The Largest Known Primes Database" (http://primes.utm.edu/primes) ranked 1st for Primorial primes and 253rd overall.

The discovery was made by James P. Burt of the Cayman Islands using an AMD Phenom 9750 Quad-Core @ 2.4GHz with 4 GB RAM running Windows 7 Professional x64. This computer took 6 days 10 hours 44 minutes to complete the primality test using pfgw64. James is a member of the Aggie The Pew team.

The prp was verified on 28 February 2012, by an Intel i5 @ 2.8 GHz with 4 GB RAM, running Max OS X. This computer took a little over 2 hours 55 minutes to complete the prp test using pfgw x64. The prp was confirmed prime on 1 March 2012, by an Intel Core i7 2600k @3.4Ghz with 8 GB RAM, running Windows 7 x64. This computer took 41 hours 42 minutes to complete the primality test using pfgw x64 AVX.

Credits for the discovery are as follows:

1. James P. Burt (Cayman Islands), discoverer
2. PrimeGrid, et al.
3. fsieve/psieve/fpsieve, sieve programs developed by Mark Rodenkirch and Geoff Reynolds
4. OpenPFGW, a primality program developed by Chris Nash & Jim Fougeron with maintenance and improvements by Mark Rodenkirch

Entry in "The Largest Know Primes Database" can be found here:
http://primes.utm.edu/primes/page.php?id=105273

This is only the 20th known p#-1 Primorial prime and the 2nd discovered in the last 20 years. p#-1 (p primorial minus one) is the product of the primes less than or equal to p. For example, 13# = 2*3*5*7*11*13. By itself, this cannot be prime so that is why a +1 or -1 is added to the form.

Using a single PC would have taken years to find this prime. So this timely discovery would not have been possible without the hundreds of volunteers who contributed their spare CPU cycles. A special thanks to everyone who offered their advice and/or computing power to the search - especially Mark Rodenkirch and Geoff Reynolds who were major forces in moving the project forward. Also, thank you to all the sievers and PRPNet'ers who contributed to this effort.

The Primorial Prime Search will continue to seek even larger primes. To join the search please visit PrimeGrid: http://www.primegrid.com

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About PrimeGrid

PrimeGrid is a distributed computing project, developed by Rytis Slatkevičius, Lennart Vogel, and John Blazek, 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 client/server application written by Mark Rodenkirch that is specifically designed to help find prime numbers of various forms. It is easily ported between various OS/hardware combinations. PRPNet does not run each PRP test itself, but relies on helper programs, such as LLR, PFGW, phrot, wwww, and genefer to do the work.

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