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Riecoin breaks world record for largest prime sextuplet, twice

November 26, 2014 – Last week, Riecoin – a project that doubles as decentralized virtual currency and a distributed computing system - quietly broke the record for the largest prime number sextuplet. This happened on November 17, 2014 at 19:50 GMT and the calculation took only 70 minutes using the massive distributed computing power of its network. This week the feat was outdone and the project beat its own record on November 24, 2014 at 20:28 GMT achieving numbers 654 digits long, 21 more than its previous record.

Since the rise of Bitcoin as the largest computing system in the world some have expressed concerns about the expanding energy consumption being used to keep the currency running. Bitcoin calculations consist of computing "hash" functions required to keep the transactions secure. With this in mind innovators in the field of cryptography and virtual currencies have delved into the concept of systems that could secure their transactions by using some more interesting computations than just hash functions. Riecoin is one such endeavor, and it produces one prime sextuplet every two and a half minutes.

A prime sextuplet consists of six prime numbers packed together as tightly as possible. For sextuplets, "as tightly as possible" means that the largest is 16 plus the smallest of the numbers. The distribution of prime numbers is not completely understood and -while it's widely believed to be so- it's not known if there are infinitely many of these prime sextuplet structures; thus these results are interesting to researchers of number theory and other applied fields.

The tests that Riecoin performs to check whether the numbers are actually prime are probabilistic; this means that there was a tiny possibility that not all the record numbers were prime. This possibility was tiny, remote, and not expected to actually matter, however mathematicians won't settle with this and demand actual proof of primality. For this reason the numbers were independently tested using deterministic software.

Recently, Riecoin performed an update of their software that allowed the participants of its network to focus computing resources on a single sextuplet for longer than the usual two and a half minutes. This allowed them to work on larger numbers and reach the record breaking 633 and later 654 digits. This will be performed once per week, potentially generating new records each time. The first two instances were successful in finding new records.

The records are independently verified and kept here:
<http://anthony.d.forbes.googlepages.com/ktuplets.htm>



You can follow Riecoin's news on twitter @riecoin and see its project websites riecoin.org and riecoinfoundation.org.

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The record sextuplet is $\langle N, N+4, N+6, N+10, N+12, N+16 \rangle$ where

N =

689702036532655186685581028503873005405874329363269153979622096014346785019088707220301256048568366498602811
964467654774670820091972463194208186476882699386082393716593309811371422836387527549653095824492750394092045
532275098135652952423078356472379653908988713872759020566218763497459878106775183203857648413997381256598543
877696056491021898353604500233203798629403923570165634119564742536549584121471881689569379964364152289494693
118199337926886001843460903637314310532482306798517536171711379098711480663572269535063407688377687623951196
977582998449120940358830276897328119483620011984713125859631603652231485340570118364685553782567043880668996
080767