Recursive Scheme To Find Prime Numbers

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Abstract

In this research investigation, the author has presented an algorithmic ‘Scheme To Generate Prime Numbers’.

Theory

1. The Sequence of Primes \( PS \) can be decomposed into a Union of three distinct sets \( PS_x, PS_y \) and \( PS_z \) where \( PS_x \) is that Sub-Set of the Sequence of Primes \( PS \) which can be thought of to lie on the \( x \) Dimension, \( PS_y \) is that Sub-Set of the Sequence of Primes \( PS \) which can be thought of to lie on the \( y \) Dimension, \( PS_z \) is that Sub-Set of the Sequence of Primes \( PS \) which can be thought of to lie on the \( z \) Dimension,

2. If \( x_i, y_j \) and \( z_k \) are the \( i^{th}, j^{th} \) and \( k^{th} \) Primes respectively of \( PS_x, PS_y \) and \( PS_z \), then the Recursive Relations between the Elements of \( PS_x, PS_y \) and \( PS_z \) is given by

\[
x_i + y_j - z_k = z_{k+r}
\]

Using

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<thead>
<tr>
<th>( i )</th>
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We find all values of \( r \) such that the above equation is true.

Now, we know

\[
\begin{align*}
  j &= f_1(i), f_1(i), \ldots, a_1 f_1(i) \\
  k &= f_2(i), f_2(i), \ldots, a_2 f_2(i) \\
  r &= f_3(i), f_3(i), \ldots, a_3 f_3(i)
\end{align*}
\]
In a similar fashion, we write
\[ z_{k+r} + y_j - x_i = x_{i+r} \]
We now know,
\[ s = t^4(i), \quad t^4(i), \ldots, \alpha f_4(i) \]
And also
\[ z_k + y_j - x_i = x_{i+r} \]
We now know
\[ t = t^5(i), \quad t^5(i), \ldots, \alpha f_5(i) \]
Again, in a similar fashion, we write
\[ y_j + x_i - z_k = z_{k+r} \]
We now know
\[ u = t^6(i), \quad t^6(i), \ldots, \alpha f_6(i) \]
Again, in a similar fashion, we write
\[ y_j + x_i - z_k = z_{k+r} \]
We now know
\[ v = t^7(i), \quad t^7(i), \ldots, \alpha f_7(i) \]
Again, in a similar fashion, we write
\[ y_j + x_i - z_k = z_{k+r} \]
We now know
\[ p = t^8(i), \quad t^8(i), \ldots, \alpha f_8(i) \]
Again, in a similar fashion, we write
\[ y_j + x_i - z_k = z_{k+r} \]
We now know
\[ q = t^9(i), \quad t^9(i), \ldots, \alpha f_9(i) \]
Again, in a similar fashion, we write
\[ y_j + x_i - z_k = z_{k+r} \]
We now know
\[ a = t^{10}(i), \quad t^{10}(i), \ldots, \alpha f_{10}(i) \]
Again, in a similar fashion, we write
\[ y_j + x_i - z_k = z_{k+r} \]
We now know
\[ b = t^{11}(i), \quad t^{11}(i), \ldots, \alpha f_{11}(i) \]
It can be observed that
\[ a_{\xi}(t) f_{\xi}(i) \]
for \( \xi = 1 \) to 11
give us the Recursive Relations for
\[ r = s = t = u = v = p = q = a = b = 1 \text{ and/or } 2 \text{ and/or } -1 \]
From these Recursive Relations, we can recursively find Primes.

**Moral**

*Our Promises Hold The Key To Our Lives.*

**References**

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**Tribute**

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Dedication

All of the aforementioned Research Works, inclusive of this One are Dedicated to Lord Shiva.