Universal Recursive Scheme To Generate The Sequence Of Primes Of Any Order

(See, R^n) Space

December 21st 2015 Anno Domini

Author: Ramesh Chandra Bagadi

Founder, Owner, Co-Director And Advising Scientist In Principal
Ramesh Bagadi Consulting LLC, Madison, Wisconsin-53715, United States Of America.
Email: rameshcbagadi@netscape.net

White Paper One {TRL 59}
of
Ramesh Bagadi Consulting LLC, Advanced Concepts & Think-Tank,
Technology Assistance & Innovation Center, Madison, Wisconsin-53715,
United States Of America
Abstract

In this research manuscript, the author has detailed a ‘Universal Recursive Scheme To Generate The Sequence Of Primes Of Any Order {Say, \( R^{th} \) Space’.

Theory

Firstly, we present some Definition,

**Definition 1**

The First Prime of any \( R^{th} \) Order Space Sequence Of Primes can be Computed by simply considering Consecutively (R-1) Number of Primes of 2\(^{nd}\) Order Space Sequence Of Primes, starting from the First Prime of 2\(^{nd}\) Order Space Sequence Of Primes, i.e., 2 and Forming a Product Term of the Form

\[
\{2 \times 3 \times 5 \times 7 \times \ldots \times \{p_{(R-3)}\} \times \{p_{(R-2)}\} \times \{p_{(R-1)}\}\}
\]

which becomes the First Prime of any \( R^{th} \) Order Space Sequence Of Primes as it cannot be factored in terms of R Number of Unique Factors. We Label this Number as \( R\, \!p_1 \).

We also note that the above denoted \( p_{(R-i)} \) is an \((R-i)^{th}\) Prime of Sequence Of Primes of 2\(^{nd}\) Order Space.

**Definition 2**

The Second Prime of any \( R^{th} \) Order Space Sequence Of Primes can be Computed by simply considering Consecutively (R-1) Number of Primes of 2\(^{nd}\) Order Space Sequence Of Primes, starting from the First Prime of 2\(^{nd}\) Order Space Sequence Of Primes, i.e., 2 and Forming a Product Term of the Form

\[
\{2 \times 3 \times 5 \times 7 \times \ldots \times \{p_{(R-3)}\} \times \{p_{(R-2)}\} \times \{p_{(R-1)}\}\}
\]

which becomes the Second Prime of any \( R^{th} \) Order Space Sequence Of Primes as it cannot be factored in terms of R Number of Unique Factors. We Label this Number as \( R\, \!p_2 \).

We also note that the above denoted \( p_{(R-i)} \) is an \((R-i)^{th}\) Prime of Sequence Of Primes of 2\(^{nd}\) Order Space.
Definition 3

The Third Prime of any R<sup>th</sup> Order Space Sequence Of Primes can be Computed by simply considering Consecutively (R-1) Number of Primes of 2<sup>nd</sup> Order Space Sequence Of Primes, starting from the First Prime of 2<sup>nd</sup> Order Space Sequence Of Primes, i.e., 2 and Forming a Product Term of the Form

\[ \{2 \times 3 \times 5 \times 7 \times \ldots \times \{p_{(R-3)}\} \times \{p_{(R-2)}\} \times \{p_{(R-1)}\}\} \]

which becomes the Second Prime of any R<sup>th</sup> Order Space Sequence Of Primes as it cannot be factored in terms of R Number of Unique Factors. We Label this Number as \( R_{\bar{p}_3} \).

We also note that the above denoted \( p_{(R-i)} \) is an \( (R-i)^{th} \) Prime of Sequence Of Primes of 2<sup>nd</sup> Order Space.

We now consider the thusly computed First Three Consecutive Primes of R<sup>th</sup> Order Space Sequence Of Primes, i.e., \( R_{p_1} \), \( R_{p_2} \), and \( R_{p_3} \) and Follow Author’s ‘Universal Recursive Algorithmic Scheme To Generate The Sequence Of Primes {Of Second (2<sup>nd</sup>) Order Space}’[24], to Generate the Complete Sequence Of Primes Of R<sup>th</sup> Order Space, Up To Any Desired Limit.

Conclusion

One can note that the Elements Belonging to the above type of Computed Sequences Of Primes Of Higher Order Space(s) have Significance in Forming and/or Understanding Higher Order Dimensional Manifestations that can be Envisioned and/or Modeled by using these elements to form our Primality Set, i.e., Hyper-Primality Set of Any Aspect of concern Spanning its Manifestations Through Higher Order Space(s) as well.

Moral

A Hungry Man Knows Best About Where And How To Find Food.

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**Acknowledgements**

The author would like to express his deepest gratitude to all the members of his loving family, respectable teachers, en-dear-able friends, inspiring Social Figures, highly esteemed Professors, reverence deserving Deities that have deeply contributed in the formation of the necessary scientific temperament and the social and personal outlook of the author that has resulted in the conception, preparation and authoring of this research manuscript document.

**Tribute**

The author pays his sincere tribute to all those dedicated and sincere folk of academia, industry and elsewhere who have sacrificed a lot of their structured leisure time and have painstakingly authored treatises on Science, Engineering, Mathematics, Art and Philosophy covering all the developments from time immemorial until then, in their supreme works. It is standing on such treasure of foundation of knowledge, aided with an iota of personal god-gifted creativity that the author bases his foray of wild excursions into the understanding of natural phenomenon and forms new premises and scientifically surmises plausible laws. The author strongly reiterates his sense of gratitude and infinite indebtedness to all such ‘Philosophical Statesmen’ that are evergreen personal librarians of Science, Art, Mathematics and Philosophy.