The Singularity Random Number Generator: Bridging Determinism and Unpredictability to Redefine Randomness, Secure Systems, and Adaptive Intelligence

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Abstract

The Singularity Random Number Generator (SRNG) represents a groundbreaking advancement in the generation of random numbers by integrating two key properties - computational irreducibility and seed independence - into a deterministic algorithm. Unlike conventional pseudorandom number generators (PRNGs) whose randomness is intrinsically linked to seed quality or chaotic sensitivity, SRNG transforms even low-entropy seeds into complex, unpredictable outputs. SRNG demonstrates high-quality randomness can emerge independently of seed entropy or size. This paper explores how SRNG not only challenges classical paradigms of predictability in deterministic systems but also offers transformative applications in cryptography, artificial intelligence (AI), and interdisciplinary research. Furthermore, by drawing parallels with cognitive variability research - such as insights from the Forbes article "Why A 'Productively Distracted' Brain Is A Superpower" - we discuss how the emergent unpredictability of SRNG may contribute to enhanced adaptive learning and decision-making processes in AI systems. Ultimately, SRNG is presented as a model that bridges the realms of science and mystery, inviting a new understanding of randomness and the limits of scientific inquiry, thereby expanding the frontiers of interdisciplinary research.

Keywords*: Singularity Random Number Generator (SRNG), Computational Irreducibility, Seed Independence, Deterministic Randomness, Unpredictability, Cryptography, AI, Interdisciplinary Research*

1. Introduction

For decades, randomness in both natural and engineered systems has been traditionally explained through chaos theory or quantum indeterminacy. However, these explanations often imply that unpredictability arises either from sensitive dependence on initial conditions or from fundamental probabilistic laws of nature. The Singularity Random Number Generator (SRNG) challenges these paradigms by demonstrating that a deterministic system can yield outputs that are not only statistically random but also computationally irreducible and seed independent. In other words, even with full knowledge of the seed and the algorithm, the only way to determine the output is to execute the entire process - no shortcuts exist.

This paper examines the SRNG's underlying principles, discusses its implications for secure systems and adaptive AI, and explores its role as a bridge between the knowable (scientific determinism) and the unknowable (emergent complexity and mystery). Moreover, we draw connections to cognitive variability research - illustrated in the Forbes article "Why A 'Productively Distracted' Brain Is A Superpower" - to underscore how inherent unpredictability can foster improved decision-making and creative problem solving.

2. Background and Related Work

2.1 Computational Irreducibility

Stephen Wolfram's work in A New Kind of Science (2002) introduced the idea that certain deterministic systems cannot be "short-circuited" by any algorithmic shortcut - their outcomes can only be determined by full simulation. Similarly, Chaitin (1987) formalized algorithmic randomness through the concept of Kolmogorov complexity, positing that some sequences cannot be compressed into a shorter description than the sequence itself. SRNG leverages these concepts by designing a deterministic process that is inherently irreducible, ensuring that every output bit is the result of executing a full, non-compressible computation.

2.2 Seed Independence

Conventional PRNGs, including hash-based methods (e.g., SHA-256), often tie output randomness quality to the entropy and size of the input seed (Eastlake & Jones, 2001). In contrast, SRNG decouples the output's statistical quality from the seed's initial randomness. The seed in SRNG merely serves as an initialization parameter, while the emergent complexity and unpredictability derive solely from the algorithm's irreversible internal dynamics. This property not only addresses weaknesses found in traditional PRNGs but also sets SRNG apart in terms of robustness against seed-based attacks (Knuth, 1997; NIST SP800-90B).

2.3 Interdisciplinary Implications

The SRNG's design has profound implications beyond cryptography. In AI and machine learning, for instance, the incorporation of high-quality randomness is crucial for avoiding overfitting and enhancing model generalization (Goodfellow et al., 2016). Furthermore, the unpredictability emerging from computational irreducibility resonates with recent cognitive research, such as the Forbes article "Why A 'Productively Distracted' Brain Is A Superpower" (Mark, 2025), which posits that cognitive variability can lead to more creative and adaptive decision-making. These interdisciplinary insights suggest that SRNG could foster new paradigms not only in secure computation but also in adaptive, robust AI systems.

3. The SRNG: Design and Key Properties

The SRNG is implemented as a deterministic algorithm that integrates two principal properties:

1. Computational Irreducibility and
2. Seed Independence.

3.1. Computational Irreducibility

SRNG's design is grounded in a deterministic algorithm that is computationally irreducible. This means that, in practice, there is no analytic shortcut to predict the output of the SRNG without performing the entire computation. Each bit of output is generated through a non-linear process that "loses" intermediate information, ensuring that any attempt to compress or simplify the process fails (Wolfram, 2002). This property is fundamental for cryptographic security since it prevents attackers from predicting future outputs even with knowledge of the algorithm and seed.

3.2. Seed Independence

Another defining feature of SRNG is its seed independence. Unlike conventional PRNGs where output quality degrades with poor seed entropy, SRNG employs a mechanism that “washes out” deficiencies in the seed. Whether a one-byte seed or a multi-byte low-entropy / high-entropy seed is used, the output exhibits uniformly high-quality randomness. This is achieved through an irreversible transformation process that effectively decouples the seed’s characteristics from the resulting bitstream.

To validate these properties, SRNG outputs underwent a rigorous suite of statistical tests (e.g., NIST SP800-22) and achieved high pass rates across multiple randomness metrics. These results confirm that the output distribution is uniform and devoid of exploitable patterns, a critical requirement for secure cryptographic and simulation applications. For detailed results, please refer to Annexures 1 and 2 of the NIST Statistical Test Results.

4. Implications and Applications

4.1 Bridging Determinism and Unpredictability

SRNG challenges traditional notions by embodying “deterministic non-determinism.” Although its operation is fully deterministic (i.e., reproducible given the exact same seed and algorithm), the computational irreducibility property makes predicting its output computationally infeasible without executing the entire process. This dual nature-determinism in design, unpredictability in output-creates a paradigm where scientific predictability is inherently limited. In doing so, SRNG provides a computational bridge between the knowable laws of science and the inherent mystery of emergent complexity.

4.2. Cryptography and Quantum Resistance

For cryptographic applications, SRNG's unpredictability offers quantum-resistant security advantages. Since the algorithm's output cannot be deduced from its seed or internal state without full simulation, it inherently resists both classical and quantum attacks (Shor, 1997; Grover, 1996).

4.3. Artificial Intelligence and Machine Learning

In the realm of AI and machine learning, integrating SRNG-generated randomness into training datasets can prevent overfitting and enhance model generalization and exploration across vast solution spaces. The emergent complexity mimics cognitive variability - akin to the "Endogenous fluctuations" by Benjamin, C., et al. (2019) and "productive distraction" described by Mark (2025) - which is believed to be beneficial for creative problem-solving and adaptive learning.

4.4. Complexity Science and Interdisciplinary Research

SRNG challenges established paradigms by demonstrating that deterministic systems can exhibit emergent randomness. This insight has profound implications for complexity science and epistemology, suggesting that unpredictability is not solely a product of external noise but can arise intrinsically from the dynamics of deterministic systems. It encourages a more holistic approach to scientific inquiry that embraces both the knowable and the unknowable (Chaitin, 1987; Wolfram, 2002).

4.5. Philosophical and Epistemological Insights

SRNG's properties compel us to reconsider the boundaries of scientific knowledge. Its ability to produce outputs that are both reproducible (given the same seed) and unpredictably emergent suggests that even fully deterministic systems can harbor a level of mystery traditionally reserved for stochastic or quantum phenomena. This resonates with philosophical inquiries into the nature of randomness and creation, suggesting that the universe may indeed be governed by principles that merge order with inherent unpredictability. This invites interdisciplinary dialogue among scientists, philosophers, and theologians regarding the nature of knowledge and reality.

4.6. Practical Applications

In addition to its theoretical significance, SRNG holds promise for numerous practical applications, including:

- **Quantum-Safe Cryptography**: Enabling Secure Key Generation and Symmetric Encryption that can withstand quantum attacks.

- **AI & ML Data Generation**: Providing high-entropy, unbiased random data for training robust models.

- **Simulation and Modeling**: Offering repeatable, high-quality randomness for accurate simulations.

- **Blockchain and Cybersecurity**: Enhancing decentralized systems and data protection mechanisms.

5. Discussion

The SRNG stands apart from conventional PRNGs and theoretical constructs, like Universal Turing Machines, the Halting Problem, or Chaitin's Omega, by combining practical implementation with properties that challenge the core assumptions of deterministic predictability. While the Halting Problem and Omega highlight limits on algorithmic prediction, SRNG translates these theoretical boundaries into a tangible, secure system. Its unique properties have the potential to redefine secure randomness generation, inspire new interdisciplinary research, and broaden our understanding of emergent complexity. In doing so, the SRNG serves as both a technological innovation and a profound philosophical insight into the nature of determinism and unpredictability.

6. Conclusion

The Singularity Random Number Generator (SRNG) epitomizes a revolutionary approach to randomness generation by unifying the principles of computational irreducibility and seed independence. Its deterministic framework produces outputs that are computationally unpredictable and statistically robust regardless of seed quality. Its implications span multiple disciplines - from providing quantum-resistant cryptographic security and enhancing AI training to challenging the epistemological limits of scientific predictability. As a tangible bridge between the realms of science and mystery of complex natural phenomena, this synthesis of science and mystery opens new frontiers for research, with profound implications for cryptography, AI, complexity theory, and philosophical inquiry and inspire new technological innovations.

References

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Annexure -1:

SRNG, when generating a single 2-Gb sequence using seed 233, passes all the individual NIST tests included in the suite. The reported bin counts show that each test produced a p-value that falls within an acceptable range (as indicated by a “pass” result of 1/1).

RESULTS FOR THE UNIFORMITY OF P-VALUES AND THE PROPORTION OF PASSING SEQUENCES

Generator is <F:\SRNG\SRNG-V9-23-03-2025\I-O-Files\28-SRNG-Ver-9-V2-C-AB-DS0-DI-1000-Sq-1-I-1000000-St-233.txt>

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	P-VALUE	PROPORTION	STATISTICAL TEST
0	0	0	0	0	0	0	1	0	0	----	1/1	Frequency
0	1	0	0	0	0	0	0	0	0	----	1/1	BlockFrequency
0	0	0	0	0	0	0	0	1	0	----	1/1	CumulativeSums
0	0	0	0	0	0	1	0	0	0	----	1/1	CumulativeSums
0	0	0	0	1	0	0	0	0	0	----	1/1	Runs
0	0	0	0	0	0	0	0	0	1	----	1/1	LongestRun
0	0	0	0	0	0	0	0	0	1	----	1/1	Rank
0	0	0	0	0	0	0	0	0	1	----	1/1	FFT
0	0	0	0	0	0	0	0	1	0	----	1/1	NonOverlappingTemplate
0	0	1	0	0	0	0	0	0	0	----	1/1	NonOverlappingTemplate
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1	0	0	0	0	0	0	0	0	0	----	1/1	OverlappingTemplate
0	0	0	1	0	0	0	0	0	0	----	1/1	Universal
0	0	1	0	0	0	0	0	0	0	----	1/1	ApproximateEntropy
0	0	0	0	0	0	0	0	0	1	----	1/1	RandomExcursions
0	0	0	0	0	0	0	0	1	0	----	1/1	RandomExcursions
0	1	0	0	0	0	0	0	0	0	----	1/1	RandomExcursions
0	0	0	1	0	0	0	0	0	0	----	1/1	RandomExcursions
0	0	0	0	0	0	1	0	0	0	----	1/1	RandomExcursions
0	0	0	1	0	0	0	0	0	0	----	1/1	RandomExcursions
0	0	0	1	0	0	0	0	0	0	----	1/1	RandomExcursions
0	1	0	0	0	0	0	0	0	0	----	1/1	RandomExcursions
0	0	0	0	0	0	1	0	0	0	----	1/1	RandomExcursionsVariant
0	0	0	0	0	0	0	0	0	1	----	1/1	RandomExcursionsVariant
0	0	0	0	0	0	0	0	0	1	----	1/1	RandomExcursionsVariant
0	0	0	0	0	0	0	1	0	0	----	1/1	RandomExcursionsVariant
0	0	0	0	0	0	1	0	0	0	----	1/1	RandomExcursionsVariant

0	0	0	0	0	0	0	0	0	1	----	1/1	RandomExcursionsVariant
0	0	0	0	0	0	0	0	0	1	----	1/1	RandomExcursionsVariant
0	0	0	0	0	0	0	0	1	0	----	1/1	RandomExcursionsVariant
0	0	0	0	0	0	0	1	0	0	----	1/1	RandomExcursionsVariant
0	0	0	0	0	0	0	0	1	0	----	1/1	RandomExcursionsVariant
0	0	0	0	0	0	1	0	0	0	----	1/1	RandomExcursionsVariant
0	0	0	0	0	1	0	0	0	0	----	1/1	RandomExcursionsVariant
0	0	0	0	0	0	0	0	1	0	----	1/1	RandomExcursionsVariant
0	0	0	0	0	0	0	0	0	1	----	1/1	RandomExcursionsVariant
0	0	0	0	0	0	0	0	1	0	----	1/1	RandomExcursionsVariant
0	0	0	0	0	1	0	0	0	0	----	1/1	RandomExcursionsVariant
0	0	0	0	0	1	0	0	0	0	----	1/1	RandomExcursionsVariant
0	0	0	0	1	0	0	0	0	0	----	1/1	RandomExcursionsVariant
0	0	0	0	1	0	0	0	0	0	----	1/1	Serial
0	0	0	0	0	1	0	0	0	0	----	1/1	Serial
0	0	0	0	0	0	1	0	0	0	----	1/1	LinearComplexity

- -

The minimum pass rate for each statistical test with the exception of the random excursion (variant) test is approximately = 0 for a sample size = 1 binary sequences.

The minimum pass rate for the random excursion (variant) test is approximately = 0 for a sample size = 1 binary sequences.

For further guidelines construct a probability table using the MAPLE program provided in the addendum section of the documentation.

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Annexure-2:

The comprehensive NIST test results for SRNG, based on 1000 sequences of 1 Mb each and using a mix of two-byte and three-byte seeds, indicate that the generator produces highly random sequences. All tests meet or exceed the minimum pass criteria, and the uniformity of p-values is consistent with what is expected from a truly random source. Overall, the SRNG robust, with only minor isolated deviations that are well within acceptable statistical variation.

RESULTS FOR THE UNIFORMITY OF P-VALUES AND THE PROPORTION OF PASSING SEQUENCES

Generator is <F:\SRNG\SRNG-V9-23-03-2025\I-O-Files\39-SRNG-Ver-9-V2-C-AB-DS0-DI-1000-Sq-1000-I-500-St-243.txt>

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	P-VALUE	PROPORTION	STATISTICAL TEST
102	88	112	112	85	110	89	101	95	106	0.397688	990/1000	Frequency
117	102	100	105	114	91	104	89	83	95	0.314544	982/1000	BlockFrequency
99	90	95	111	106	114	101	89	85	110	0.413628	988/1000	CumulativeSums
101	117	97	81	115	107	112	84	98	88	0.096000	989/1000	CumulativeSums
110	103	89	95	98	108	92	99	88	118	0.478839	988/1000	Runs
97	96	120	106	92	98	111	101	89	90	0.463512	994/1000	LongestRun
102	93	103	114	97	94	102	99	99	97	0.956729	992/1000	Rank
109	111	114	75	98	113	98	105	90	87	0.092597	990/1000	FFT
112	112	90	101	105	105	83	111	89	92	0.323668	985/1000	NonOverlappingTemplate
106	101	101	93	92	85	106	93	110	113	0.605916	986/1000	NonOverlappingTemplate
103	100	115	109	96	90	111	93	89	94	0.576961	989/1000	NonOverlappingTemplate
104	94	112	103	113	99	98	91	99	87	0.709558	987/1000	NonOverlappingTemplate
101	90	106	113	95	105	107	99	83	101	0.641284	988/1000	NonOverlappingTemplate

102	120	100	91	106	89	111	107	77	97	0.141256	995/1000	NonOverlappingTemplate
95	94	112	110	96	100	106	96	85	106	0.705466	989/1000	NonOverlappingTemplate
95	97	107	120	97	115	78	94	96	101	0.184549	995/1000	NonOverlappingTemplate
84	94	96	115	115	116	94	98	104	84	0.151190	993/1000	NonOverlappingTemplate
103	95	102	100	102	103	101	103	99	92	0.998567	990/1000	NonOverlappingTemplate
91	115	101	88	105	97	121	95	98	89	0.292519	989/1000	NonOverlappingTemplate
93	95	94	109	85	96	103	112	106	107	0.668321	992/1000	NonOverlappingTemplate
103	95	92	108	103	101	107	96	104	91	0.949278	986/1000	NonOverlappingTemplate
81	101	87	109	124	112	95	97	117	77	0.009400	991/1000	NonOverlappingTemplate
108	97	88	112	106	100	92	113	91	93	0.574903	991/1000	NonOverlappingTemplate
90	99	96	90	109	110	101	101	100	104	0.900569	993/1000	NonOverlappingTemplate
93	94	94	89	100	84	113	97	122	114	0.138860	998/1000	NonOverlappingTemplate
119	84	92	111	91	98	104	102	97	102	0.419021	984/1000	NonOverlappingTemplate
110	97	106	103	101	99	73	105	103	103	0.411840	992/1000	NonOverlappingTemplate
101	102	109	113	86	83	107	98	106	95	0.480771	993/1000	NonOverlappingTemplate
87	91	87	111	117	100	109	103	102	93	0.373625	988/1000	NonOverlappingTemplate
98	106	98	96	92	108	123	101	81	97	0.284024	996/1000	NonOverlappingTemplate
101	107	91	98	120	94	91	103	90	105	0.548314	992/1000	NonOverlappingTemplate
115	108	86	106	93	88	97	104	111	92	0.415422	988/1000	NonOverlappingTemplate
101	101	87	98	119	110	89	90	114	91	0.253122	993/1000	NonOverlappingTemplate
109	107	107	78	90	97	91	93	113	115	0.164425	989/1000	NonOverlappingTemplate
115	98	107	89	105	93	125	91	85	92	0.100109	991/1000	NonOverlappingTemplate
108	93	91	124	96	86	110	107	97	88	0.169981	992/1000	NonOverlappingTemplate
98	89	91	123	102	105	99	104	91	98	0.469232	990/1000	NonOverlappingTemplate
98	102	105	119	116	88	90	84	100	98	0.240501	991/1000	NonOverlappingTemplate
92	98	122	93	88	99	107	81	117	103	0.104371	985/1000	NonOverlappingTemplate
92	109	115	93	104	101	89	120	89	88	0.201189	988/1000	NonOverlappingTemplate
96	87	84	101	109	116	104	104	102	97	0.510153	993/1000	NonOverlappingTemplate
118	112	99	105	97	94	88	101	89	97	0.520102	996/1000	NonOverlappingTemplate
122	88	96	99	107	86	112	92	89	109	0.162606	991/1000	NonOverlappingTemplate
115	101	94	97	95	99	108	103	85	103	0.735908	989/1000	NonOverlappingTemplate

99	96	99	97	89	95	110	110	115	90	0.639202	989/1000	NonOverlappingTemplate
98	100	106	99	104	100	80	106	99	108	0.781106	987/1000	NonOverlappingTemplate
75	93	113	104	112	105	84	106	88	120	0.028434	990/1000	NonOverlappingTemplate
109	114	119	82	82	101	105	100	99	89	0.110734	991/1000	NonOverlappingTemplate
109	104	98	97	99	110	97	93	92	101	0.949278	989/1000	NonOverlappingTemplate
88	109	99	94	114	100	108	82	109	97	0.404728	984/1000	NonOverlappingTemplate
96	96	104	93	95	109	101	100	112	94	0.921624	991/1000	NonOverlappingTemplate
94	94	115	78	79	116	113	114	94	103	0.026233	986/1000	NonOverlappingTemplate
92	116	108	94	105	95	101	95	99	95	0.814724	989/1000	NonOverlappingTemplate
105	92	94	94	99	86	120	116	92	102	0.288249	991/1000	NonOverlappingTemplate
87	103	89	107	92	102	92	114	105	109	0.552383	994/1000	NonOverlappingTemplate
88	84	101	108	90	100	114	89	101	125	0.088762	989/1000	NonOverlappingTemplate
108	100	105	102	88	110	97	92	107	91	0.798139	990/1000	NonOverlappingTemplate
103	106	102	88	111	111	86	109	95	89	0.476911	988/1000	NonOverlappingTemplate
94	79	92	107	127	102	103	95	91	110	0.081013	988/1000	NonOverlappingTemplate
104	116	101	80	95	93	110	99	95	107	0.417219	987/1000	NonOverlappingTemplate
104	95	92	104	103	102	101	113	92	94	0.908760	987/1000	NonOverlappingTemplate
91	90	106	100	108	100	96	107	103	99	0.937919	994/1000	NonOverlappingTemplate
101	120	96	105	105	105	91	86	110	81	0.196920	986/1000	NonOverlappingTemplate
74	93	101	107	106	110	88	93	109	119	0.079051	994/1000	NonOverlappingTemplate
110	122	91	88	103	93	90	98	99	106	0.344048	989/1000	NonOverlappingTemplate
89	103	89	99	101	119	99	91	113	97	0.461612	991/1000	NonOverlappingTemplate
85	103	102	113	91	105	119	88	93	101	0.298282	987/1000	NonOverlappingTemplate
105	103	92	115	92	107	94	113	85	94	0.435430	987/1000	NonOverlappingTemplate
92	105	86	92	104	108	102	101	110	100	0.803720	990/1000	NonOverlappingTemplate
107	91	96	100	92	99	98	100	109	108	0.935716	988/1000	NonOverlappingTemplate
96	108	86	113	103	90	96	116	102	90	0.410055	990/1000	NonOverlappingTemplate
106	106	90	96	100	109	113	86	92	102	0.635037	995/1000	NonOverlappingTemplate
108	97	113	97	96	90	102	124	90	83	0.146982	988/1000	NonOverlappingTemplate
103	130	98	84	110	108	96	93	103	75	0.016037	993/1000	NonOverlappingTemplate
96	113	96	88	106	96	88	114	94	109	0.480771	987/1000	NonOverlappingTemplate

102	93	95	98	109	100	99	106	102	96	0.987896	989/1000	NonOverlappingTemplate
99	86	100	104	103	100	105	92	92	119	0.599693	990/1000	NonOverlappingTemplate
109	102	93	96	107	73	97	107	101	115	0.206629	991/1000	NonOverlappingTemplate
101	102	93	105	98	113	94	90	101	103	0.912724	990/1000	NonOverlappingTemplate
106	89	96	103	91	110	107	90	113	95	0.630872	990/1000	NonOverlappingTemplate
114	84	90	110	85	105	112	111	93	96	0.195864	988/1000	NonOverlappingTemplate
108	102	105	102	96	99	86	104	99	99	0.952152	989/1000	NonOverlappingTemplate
112	112	90	101	105	105	83	111	90	91	0.326749	985/1000	NonOverlappingTemplate
100	111	108	97	81	90	108	108	93	104	0.486588	988/1000	NonOverlappingTemplate
96	113	88	108	99	97	106	113	110	70	0.065230	994/1000	NonOverlappingTemplate
103	101	102	92	98	103	119	86	84	112	0.313041	986/1000	NonOverlappingTemplate
103	98	102	89	107	85	102	113	112	89	0.484646	991/1000	NonOverlappingTemplate
92	105	97	109	116	85	77	110	97	112	0.108150	992/1000	NonOverlappingTemplate
93	119	96	89	103	98	108	98	99	97	0.701366	993/1000	NonOverlappingTemplate
110	76	102	110	85	103	105	106	102	101	0.289667	993/1000	NonOverlappingTemplate
90	87	104	122	105	102	88	119	96	87	0.094285	993/1000	NonOverlappingTemplate
101	110	96	111	97	93	96	102	93	101	0.932333	990/1000	NonOverlappingTemplate
119	121	95	103	107	83	98	82	98	94	0.080027	983/1000	NonOverlappingTemplate
113	83	98	85	123	108	93	101	100	96	0.142872	989/1000	NonOverlappingTemplate
98	87	104	96	114	93	105	120	100	83	0.234373	989/1000	NonOverlappingTemplate
101	91	108	114	87	97	87	104	112	99	0.484646	986/1000	NonOverlappingTemplate
111	114	113	87	92	106	100	87	98	92	0.357000	993/1000	NonOverlappingTemplate
93	107	113	95	103	109	82	100	99	99	0.628790	987/1000	NonOverlappingTemplate
98	114	89	97	100	94	100	105	101	102	0.914025	995/1000	NonOverlappingTemplate
114	95	102	79	110	85	104	107	117	87	0.087162	991/1000	NonOverlappingTemplate
86	91	85	92	96	108	124	98	104	116	0.091487	994/1000	NonOverlappingTemplate
96	109	91	94	93	114	108	86	107	102	0.562591	988/1000	NonOverlappingTemplate
106	94	96	105	98	88	109	107	96	101	0.906069	987/1000	NonOverlappingTemplate
96	86	97	99	114	105	94	94	112	103	0.670396	992/1000	NonOverlappingTemplate
104	96	94	104	104	96	95	104	105	98	0.993493	992/1000	NonOverlappingTemplate
101	106	117	91	92	90	74	113	109	107	0.079051	990/1000	NonOverlappingTemplate

95	95	94	104	107	99	92	86	111	117	0.512137	990/1000	NonOverlappingTemplate
91	123	100	97	100	92	95	102	112	88	0.350485	991/1000	NonOverlappingTemplate
118	111	97	88	104	96	86	106	97	97	0.455937	989/1000	NonOverlappingTemplate
96	105	95	115	98	101	103	92	99	96	0.920383	990/1000	NonOverlappingTemplate
86	108	84	92	109	94	115	93	114	105	0.217857	993/1000	NonOverlappingTemplate
106	102	69	104	110	114	96	102	95	102	0.136499	986/1000	NonOverlappingTemplate
87	108	95	104	116	97	78	100	107	108	0.251837	993/1000	NonOverlappingTemplate
111	117	110	103	97	97	89	81	105	90	0.246750	988/1000	NonOverlappingTemplate
99	96	98	109	121	102	85	113	92	85	0.196920	990/1000	NonOverlappingTemplate
106	84	94	93	93	109	107	110	109	95	0.572847	990/1000	NonOverlappingTemplate
103	117	78	92	115	107	89	99	102	98	0.186566	994/1000	NonOverlappingTemplate
88	102	107	109	101	95	92	114	93	99	0.725829	990/1000	NonOverlappingTemplate
102	95	90	106	108	90	106	95	109	99	0.858002	993/1000	NonOverlappingTemplate
94	103	105	85	111	91	93	84	121	113	0.118120	992/1000	NonOverlappingTemplate
106	105	96	106	90	85	92	121	114	85	0.135720	996/1000	NonOverlappingTemplate
108	99	103	98	101	101	97	99	107	87	0.961039	990/1000	NonOverlappingTemplate
85	90	107	97	108	100	110	97	94	112	0.599693	992/1000	NonOverlappingTemplate
91	99	103	95	93	103	120	113	109	74	0.090936	993/1000	NonOverlappingTemplate
105	80	103	92	97	84	98	113	120	108	0.122325	993/1000	NonOverlappingTemplate
110	98	93	87	99	101	81	118	108	105	0.277082	996/1000	NonOverlappingTemplate
112	95	118	88	102	107	92	99	94	93	0.494392	990/1000	NonOverlappingTemplate
104	84	90	108	106	98	99	109	107	95	0.707513	990/1000	NonOverlappingTemplate
107	105	113	100	100	111	97	90	89	88	0.597620	989/1000	NonOverlappingTemplate
101	99	80	104	87	109	113	100	108	99	0.435430	993/1000	NonOverlappingTemplate
93	107	111	103	105	103	105	90	85	98	0.723804	991/1000	NonOverlappingTemplate
101	93	101	80	102	107	103	90	90	133	0.034942	989/1000	NonOverlappingTemplate
99	110	120	106	98	97	84	94	82	110	0.178604	990/1000	NonOverlappingTemplate
91	101	113	114	96	87	104	100	104	90	0.570792	987/1000	NonOverlappingTemplate
85	104	123	99	115	83	94	104	80	113	0.024688	994/1000	NonOverlappingTemplate
106	98	115	103	89	98	104	97	96	94	0.854708	990/1000	NonOverlappingTemplate
101	89	100	115	104	94	98	99	80	120	0.211064	989/1000	NonOverlappingTemplate

104	112	102	93	100	92	118	94	90	95	0.572847	993/1000	NonOverlappingTemplate
100	80	105	96	104	97	100	111	112	95	0.579021	990/1000	NonOverlappingTemplate
99	91	113	117	110	99	100	85	91	95	0.373625	985/1000	NonOverlappingTemplate
115	106	118	89	102	94	102	81	118	75	0.014550	990/1000	NonOverlappingTemplate
104	110	101	121	86	84	98	97	111	88	0.168112	991/1000	NonOverlappingTemplate
98	106	93	91	110	95	104	92	109	102	0.867692	991/1000	NonOverlappingTemplate
107	99	110	104	99	96	97	97	96	95	0.982958	986/1000	NonOverlappingTemplate
98	92	99	103	102	112	82	102	107	103	0.727851	996/1000	NonOverlappingTemplate
108	102	102	99	108	79	96	103	97	106	0.691081	988/1000	NonOverlappingTemplate
92	117	108	109	96	104	77	93	104	100	0.259616	987/1000	NonOverlappingTemplate
126	100	86	95	107	91	90	105	102	98	0.236810	989/1000	NonOverlappingTemplate
124	111	100	102	96	94	97	91	88	97	0.353733	991/1000	NonOverlappingTemplate
89	100	97	94	101	101	98	116	103	101	0.884671	987/1000	NonOverlappingTemplate
97	104	93	99	96	90	100	104	115	102	0.886162	991/1000	NonOverlappingTemplate
110	108	109	98	85	116	96	95	94	89	0.411840	984/1000	NonOverlappingTemplate
103	97	104	107	102	87	100	101	95	104	0.965083	986/1000	NonOverlappingTemplate
103	108	97	105	90	100	109	89	110	89	0.709558	996/1000	NonOverlappingTemplate
97	89	100	114	101	96	104	112	101	86	0.637119	993/1000	NonOverlappingTemplate
108	101	105	102	96	100	86	105	98	99	0.948298	989/1000	NonOverlappingTemplate
96	100	95	79	109	105	108	98	115	95	0.431754	988/1000	OverlappingTemplate
108	84	113	114	110	105	80	112	93	81	0.039587	989/1000	Universal
76	108	99	102	105	107	101	95	101	106	0.552383	992/1000	ApproximateEntropy
48	69	65	68	60	55	66	67	54	64	0.591138	610/616	RandomExcursions
66	61	54	64	51	65	68	63	68	56	0.803325	608/616	RandomExcursions
57	72	45	64	76	63	51	53	70	65	0.101827	612/616	RandomExcursions
76	56	62	54	51	64	64	57	64	68	0.527552	611/616	RandomExcursions
60	61	61	60	37	64	56	71	82	64	0.024778	614/616	RandomExcursions
55	63	47	74	48	56	66	54	60	93	0.001016	611/616	RandomExcursions
47	57	63	59	58	65	72	64	68	63	0.635413	614/616	RandomExcursions
55	61	57	59	68	62	58	69	66	61	0.949070	612/616	RandomExcursions
69	61	67	62	58	62	70	59	54	54	0.849736	608/616	RandomExcursionsVariant

66	77	65	57	48	70	55	57	63	58	0.327129	611/616	RandomExcursionsVariant
72	76	53	59	51	60	59	57	58	71	0.307272	612/616	RandomExcursionsVariant
69	58	60	68	50	70	59	60	56	66	0.716747	612/616	RandomExcursionsVariant
56	50	68	69	63	52	63	77	49	69	0.149011	611/616	RandomExcursionsVariant
60	51	59	57	63	67	66	65	63	65	0.933509	611/616	RandomExcursionsVariant
56	54	52	56	71	68	65	66	67	61	0.672912	609/616	RandomExcursionsVariant
48	54	60	71	58	59	62	72	66	66	0.507945	612/616	RandomExcursionsVariant
44	59	71	58	71	57	60	52	68	76	0.111131	610/616	RandomExcursionsVariant
55	58	56	53	71	65	54	76	57	71	0.312156	613/616	RandomExcursionsVariant
52	62	52	56	67	59	68	80	54	66	0.232430	611/616	RandomExcursionsVariant
52	53	56	65	67	74	64	60	60	65	0.652477	613/616	RandomExcursionsVariant
56	50	55	61	71	66	70	61	52	74	0.314618	614/616	RandomExcursionsVariant
56	61	56	71	59	69	55	62	66	61	0.868473	614/616	RandomExcursionsVariant
52	63	63	55	58	70	54	69	63	69	0.689864	615/616	RandomExcursionsVariant
52	65	56	55	56	66	65	63	66	72	0.726724	613/616	RandomExcursionsVariant
60	62	57	55	57	63	54	69	71	68	0.787951	613/616	RandomExcursionsVariant
53	63	62	55	57	73	64	58	68	63	0.787951	612/616	RandomExcursionsVariant
92	106	106	95	101	95	104	98	101	102	0.989425	988/1000	Serial
111	87	103	104	90	101	100	95	111	98	0.773405	986/1000	Serial
101	93	91	105	94	103	101	105	109	98	0.959347	990/1000	LinearComplexity

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The minimum pass rate for each statistical test with the exception of the random excursion (variant) test is approximately = 980 for a sample size = 1000 binary sequences.

The minimum pass rate for the random excursion (variant) test is approximately = 602 for a sample size = 616 binary sequences.

For further guidelines construct a probability table using the MAPLE program provided in the addendum section of the documentation.

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