

## MEAN TIME TO FAILURE BOUNDS OF TRIANGLE MIN AND COMPARISON WITH QUAD TREE NETWORK

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### Abstract

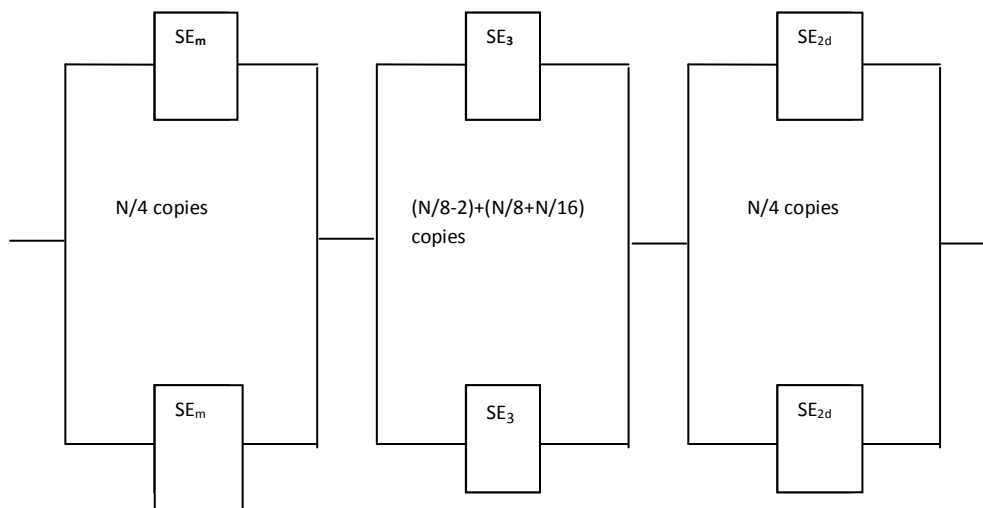
This paper calculates the MTTF Bounds Upper and Lower and compares the values with MTTF Bounds of Quad Tree Network.

### Keywords

Upper Bound Reliability , Lower Bound Reliability, MTTF Expression, THN, Quad Tree MIN

### Reliability Analysis

In the Triangle Network, each source is connected to two multiplexers in both the groups. Thus Triangle Network is in operation, as long as one of the two multiplexers attached to the source in any of the groups is operational. Reliability block diagram has been shown in Fig 1



**Fig 1:Upper Bound Reliability diagram of Triangle Network**

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The equations of Upper Bound Reliability analysis of the Triangle Network are

$$f1 = [1 - \{1 - e^{-\lambda_m t}\}^2]^{N/4}$$

$$f2 = [1 - \{1 - e^{-\lambda_3 t}\}^2]^{(N/8-2)+(N/8+N/16)}$$

$$f3 = [1 - \{1 - e^{-\lambda_{2d} t}\}^2]^{N/4}$$

The Upper Bound reliability is calculated as

$$R_{UB-Triangle} = \int_0^{\infty} f1 * f2 * f3 (t) dt$$

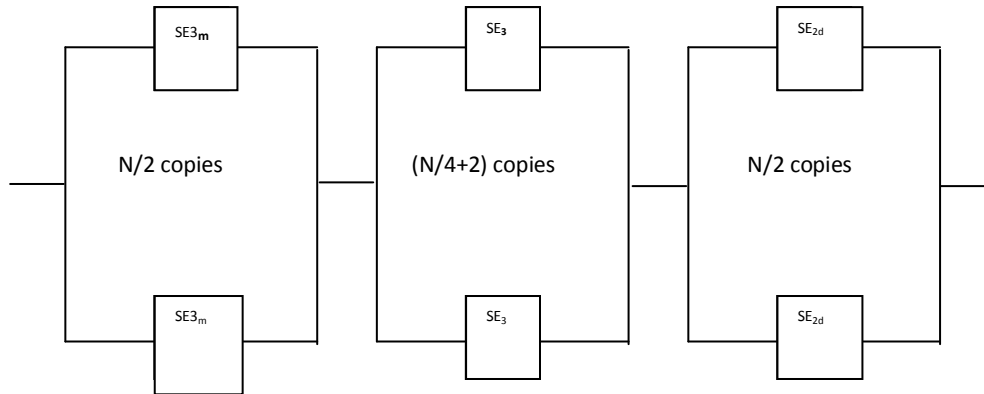
The Table 1 shows the values of the MTTF Upper Bound of Triangle Network

**Table 1: MTTF Upper Bound of Triangle Network**

Size N*N	Upper Bound
16*16	190591.34
32*32	117404.91
64*64	77106.12
128*128	52251.53
256*256	36252.73
512*512	27335.08
1024*1024	25111.5

**Lower Bound Analysis**

If two multiplexers are grouped with each switch in the source and considered as a series system, then Lower Bound estimate of the reliability can be depicted as in Fig 2



**Fig 2: Lower Bound Reliability diagram of Triangle Network**

The functions of the stages in the network are given below

$$f1 = [1 - \{1 - e^{-\lambda_{3m} t}\}^2]^{N/2}$$

$$f2 = [1 - \{1 - e^{-\lambda_3 t}\}^2]^{(N/4+2)}$$

$$f3 = [1 - \{1 - e^{-\lambda_{2d} t}\}^2]^{N/2}$$

The MTTF expression of the Lower Bound is calculated as

$$R_{LB-Triangle} = \int_0^{\infty} f1 * f2 * f3 (t) dt$$

Table 4.8, shows the values of the MTTF Lower Bound of Triangle Network.

**Table 2: MTTF Lower Bound of Triangle Network**

Size N*N	Lower Bound
16*16	98440.49
32*32	69120.2
64*64	48386.57
128*128	34253.58
256*256	26713.97
512*512	25060.09
1024*1024	25000.07

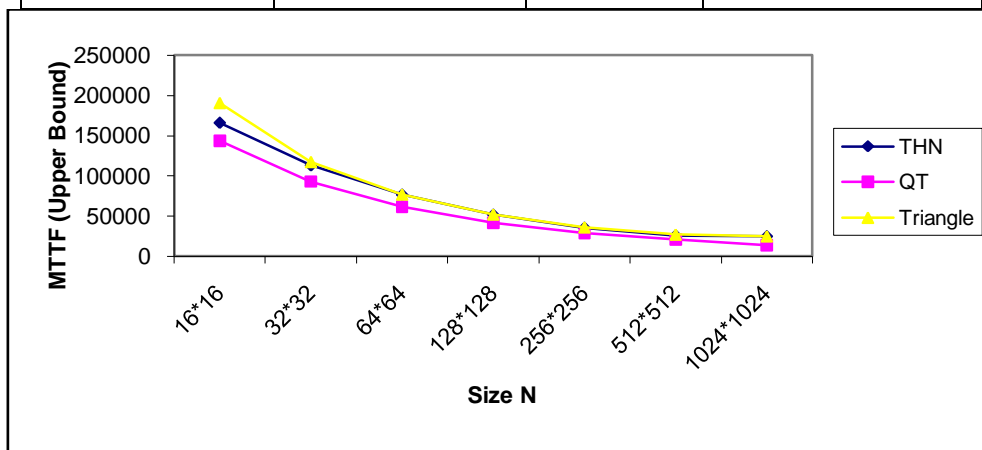
**Table 3: Upper Bound (UB) MTTF values**

Network Size ↓	THN	QT	Triangle
	<b>Upper Bound</b>		
16*16	166068.22	143302	190591.34
32*32	113172.62	92715	117404.91
64*64	76755.91	61667	77106.12
128*128	51832.64	41680	52251.53
256*256	35661.25	28567	36252.73
512*512	26071.68	20744	27335.08
1024*1024	25108.95	13724	25111.50

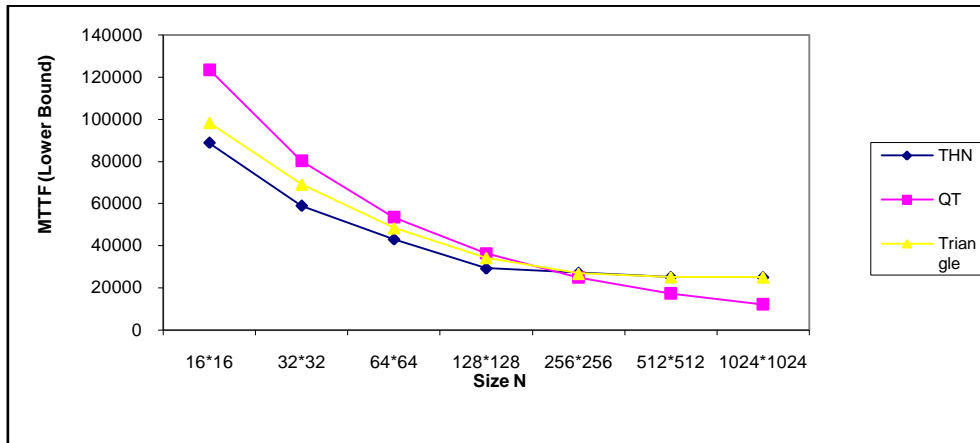
Table 4.17 shows the comparison of the discussed networks for Lower Bound MTTF for different sizes of networks.

**Table 4: Lower Bound (LB) MTTF values**

Network → Size ↓	THN	QT	Triangle
	<b>Lower Bound</b>		
16*16	88837.43	123710	98440.49
32*32	58957.14	80347	69120.20
64*64	43021.05	53604	48386.57
128*128	29182.36	36341	34253.58
256*256	27071.58	24955	26713.97
512*512	25098.63	17277	25060.09
1024*1024	25001.09	12113	25000.07



**Fig 3: Comparison of Upper Bound MTTF of Triangle MIN with THN, QT Networks**



**Fig 4: Comparison of Lower Bound MTTT of Triangle MIN with THN, QT Networks**

### Conclusion

Fig 3 depicts that the proposed Triangle Network has higher values of MTTT Upper Bound for smaller size network. The values are comparable with the other compared networks for high values of N.

Fig 4 compares the Lower Bound MTTT values of the proposed network with THN and QT networks. The Triangle Network is more reliable as compared to Theta Network for smaller size of the network and the reliability of the proposed network is comparable as the size of network grows. The proposed Triangle Network is less reliable as compared to QT Network for smaller size but has more reliability as compared to QT when the size of the network grows, because of less number of SEs being used in Triangle MIN.

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She focuses on how parenting is responsible for the future behaviour of her protagonists. Both neglect and overprotection on the part of the parents are bad for the psychological health of their children. Besides relationship between husband and wife, she is concerned about how the relationship between parent and children work in shaping the characters and personalities of its protagonists, especially women protagonists. Anita delineates women having repugnant relationships.

Anita views overprotection, negligence and maternal deprivation as the cause of discordant relationships of children later in their lives. Her protagonists suffer from emotional disorder which consequently affects their whole life. They knit a fabric of imagination encircling them, and keep themselves aloof from any positivity. Sometimes they develop unknown prejudices against their parents. Often girls are married without seeking their consent to the persons imposed by their parents. Most of her heroines are subjected to either overprotection or excess of love or total neglect. As a result, they all pass through mental stress of various kinds. Going through her novels, it is easily discernible that her focus is mainly on the psychology of her women characters in the context of their filial relationships.

In her novels we find glimpses of different relationships – relationship between mothers and daughters; fathers and daughters; sons and mothers and so on. Various stages of having such relationships have been realistically portrayed by her and show how her characters feel pressurized under these relationships. How frustration grips them when they are denied of their natural rights finds a true account in her novels. She also reflects how gender inequality is practiced and how male domination is preferred in Indian social panorama. This is the major cause of women being treated as subordinate citizen. They are generally not treated at

par with the other sex in the Indian society. They are always made aware of their duties and never of their rights. They live as per their family norms having no norms of their own. They are always under the fear of losing their identity, if something happens otherwise. They live with a constant fear of isolation, if they do not come to terms with the dictates of the family. Their fear of loneliness and isolation keeps them tied to abusive relationships. The absence of a protective support system composed of family, friends and neighbors increases women's social isolation. In most of the cases, their financial dependence is responsible for their suppression. Within the four walls, they are kept aloof with the outside world, hence, they fall easy prey to their circumstances. All these factors play a great role in designing and re-designing of various relationships. And these relationships, in turn, play roles in molding and shaping of the characters.

Maya, Sita, Uma, Monisha and Bimla are a few characters that suffer either directly from patriarchy or through its impact during their growing years. In *Cry the Peacock*, Maya is a child "born in an old orthodox family, Maya enjoyed life which provided her love and pleasure along with discipline in her father's house. Overprotection and care have developed her into a pampered daughter. Much concerned about her well-being, her father becomes over indulgent. them. "Due to over caring nature of her father and the absence of any other woman in the family, she remains deprived of the sort of training she should have received to meet the challenges of life where pain and pleasure co-exist. The fairy world of her father's house makes her unable to face the realities of life after marriage"(Sharma 198).

The novel *Where Shall We Go This Summer?* throws light on how childhood experiences affect the mind setup and how parents' neglect create havoc in the children's lives. A deep impression of childhood days is left on the protagonist Sita's personality. She was brought up without the maternal care or affection. Her mother had already left her father and the family. Her father was too busy to spare time for her and for other children. He was glorified and revered by the society and as a result he ignored his own children. She found herself helpless in getting any emotional support from her father. The neglect towards her was further worsened by the extra attention caught by her sister Rekha. The partial behavior of her father also had a deep impression on her immature mind. Her odd experiences of life left a deep scar on her personality. "Sita thus harbours a deep distrust and fear of the male in her unconscious mind" (Pathania 128). She assumed an aggressive and defiant attitude.



*Fasting,Feasting* depicts how parental alienation affects and shapes the child's approach towards life. The novel throws light on how the parents who are ambitious often neglect their children. They are too busy to spare time for their children. They are relatively unconcerned about them. They share a very superficial relationship with them. They don't feel accountable to their roles and responsibilities as parents, and leave their children to starve. They are more interested in their own well being and self interests and least interested in the affairs of their children, their lives, their expectations and their concerns. Such parents limit their concerns to their own whims and social status. They are least interested in their traditional roles of parenthood. They prefer to enjoy life rather than mentoring their children to lead them to settle in their carrier. In fact, in order to achieve new heights and raise their standard in society, parents are influenced by new social forces which demand more and more efforts to further prosper. They have become self-centered. They are more concerned about being recognized as an affluent social being than as successful parents. Modern parents are very different from the traditional parents in temperament, in actions, in habits and in ideology. In a parent-child relationship, where there is no room for dichotomy, the modern parents are at loss with their preferences in life. However, the problem lies not in their becoming progressive and earning money, the problem lies in their negligent attitude towards their children. Is it justified to sideline household responsibilities for the sake of materialistic prosperity? If the attention is not paid to the household responsibilities, and the house is shattered, what would be the structure of society then? Is such a freedom worth the sacrifice? Can it be enjoyed at the cost of depriving children of their rights?

The novel *Voices in the City* is mainly concerned about middle class city life and filial relationships. The study of the novel reveals the fact that only pleasant and attuned atmosphere of the family can bring positive results while discordance and negligence bring negative results. Some elements of proper conduct - mutual respect, care, trust and cooperation are required to lead harmonious life. Without these elements, no cordial relations can be maintained.

In the novel *Clear Light of Day*, different shades of parental bonds have been presented which are viewed from different angles. It is evident that the parents are least involved in family affairs and responsibilities. Such irresponsible attitude of the parents brings much defacement in the emerging generation of the family. We see all the four children, "always waiting...superficially for their parents to come home from the club"(CD 28 ). But, they wait

in vain, as they are never able to attract attention of their parents. As the parents come back from the club, they are thoroughly exhausted to give any attention to the children. "They were still unfulfilled, still waiting" (CD 29 ). Their irresponsible behavior casts its shadow on the built up of children's personalities, depending on how children take it up. Generally such things cause negative impact.

Thus Desai, from different viewpoints, lays stress on the significance of pleasant filial relationships. The filial relationship, like any other, requires reciprocity. Parents expect obedience while children need love, affection, and security. Children see themselves secured with their parents. Honest, frank and affectionate communication between children and parents is necessary for a happy domestic life. The concept of 'sweet home' stands for homes where mutual respect for values is observed. According to the psychologists, the growth of children into excellent personalities capable of leading meaningful lives depends largely on an atmosphere of domestic happiness. According to Anita the peace lies in "home." It lies in harmonious mutual bonding.

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