Summary and Conclusion

The literature indicates that there are many ways to generalize the closed sets in topological spaces.

In this thesis, the concept of $\delta g^*_s$-closed sets has been established, which is stronger than $g^*_{hs}$-closed sets but weaker than $\delta$-semi closed sets. Many important concepts such as interior, closure, separation axioms, continuity, irresolute, homeomorphisms and locally closedness using $\delta g^*_s$-closed sets are developed.

The comparative study of $\delta g^*_s$-closedness with various existing closed sets has been conducted in all the concepts stated above. Throughout the thesis, the reverse implications which do not hold good are substantiated by counter examples. The characterizations of $\delta g^*_s$-closed sets in semi weakly Hausdorff space, semi regular space, almost weakly Hausdorff space, $R_1$-topological space and $T_{1/2}$-spaces are also derived.

As an application of $\delta g^*_s$-closed sets, seven new spaces are constructed and their interrelations with existing various spaces are analyzed.

It is shown that the compositions of two $\delta g^*_s$-continuous functions, $\delta g^*_s$-closed functions and $\delta g^*_s$-homeomorphisms are not preserved. But after modifying the conditions in different ways the composition of function is preserved. Also several results are obtained under $\delta g^*_s$-locally closed sets.

Various types of somewhat functions related to somewhat $\delta g^*_s$-continuity, somewhat almost $\delta g^*_s$-continuity, somewhat $\delta g^*_s$-irresoluteness, somewhat $\delta g^*_s$-openness and somewhat almost $\delta g^*_s$-openness are defined. Many properties and characterizations of newly defined somewhat functions are obtained.

The collection of various open sets and closed sets for the topological spaces of three elements and four elements which are used to construct counter examples are tabulated in Appendix I and Appendix II.
Summary and Conclusion

The following problems are suggested for further study:

1. $\delta sg^*$-closed set concepts can be extended to bitopological spaces and fuzzy topological spaces.

2. Weaker form of $\delta sg^*$-closed ($w\delta sg^*$-closed) sets and stronger form of $\delta sg^*$-closed ($s\delta sg^*$-closed) sets can be defined and studied.

3. The concepts of $\delta sg^*$($w\delta sg^*$ and $s\delta sg^*$) closed sets can be defined for biminimal structures, ideal topological spaces, supra topological spaces, nano topological spaces and their applications may be obtained.

4. The characterization of $\delta sg^*$-closed sets can be studied in Urysohn space and Alexandroff space.

5. Various types of somewhat continuous functions can be studied for separation axioms, homeomorphisms in topological spaces.