CONCLUSION

In this thesis, an attempt has been made to provide an analogous translation of the notion of intersection graphs to directed graphs. While we have restricted ourselves mainly to two kinds of digraphs, interval digraphs and circular-arc digraphs and their characterizations, it is hoped that the theory of intersection digraphs will in future come up with other ramifications. It may also so happen that the attempt will fail at a certain stage. Then the query will shift to finding the factors behind the impediments that differentiates a digraph from an undirected graph. It is also hoped that the subject apart from being of theoretical interest, would widen the scope of its application to other disciplines.

Leaving aside a host of related problems, we mention below only a few which arise immediately from our work and on which further research may be carried out in future.

1. In chapter - II, we obtained some characterizations of an interval digraphs in terms of certain associated matrices. The problem remains to find out a characterization of an interval digraph in terms of diasteroidal triple along the line of the work by

Lekkerkerker and Boland [1962] for interval graphs and by Prisner [1989] for interval catch digraphs.

2. In chapter - III, we introduced the notion of interior edges with reference to a decomposition of a digraph into two Ferrers digraphs and obtained a necessary but not sufficient condition for the digraph of Ferrers dimension 2 to be an interval digraph. So the problem of characterizing an interval digraph in terms of interior edges still remains open.

3. The natural complexity question arising is : Given a digraph, what is the complexity of testing whether it is an interval digraph or not ?

4. A complete list of forbidden submatrices of the adjacency matrix of an interval digraph may be obtained. A special feature for directed graphs is that if a digraph is not found to be an interval digraph then other non-interval digraphs can be obtained by a permutation of the rows or columns only. So the interest in this case shifts to finding the forbidden submatrices rather than finding the forbidden subgraphs as in the case of interval graphs.

5. In chapter - IV, we have studied the problem of characterizations of circular-arc digraphs. Similarly to the problems of interval digraphs, the forbidden submatrices and the complexity question are the two important unexplored area of study for circular-arc digraphs.

6. While some work has been done on proper interval digraphs (Sen and Sanyal [1989]) it is hoped this area as in the case of proper interval digraphs may find its application to utility theory.

7. One may try to define boxicity, cubicity and other higher dimensional analogues for directed graphs. This inter-related area is still to be explored and interesting results may be obtained.