many possible ways to retrieve this information from three relations. Nine possible combinations of queries are provided to ant colony algorithm, which returns the query execution time of all nine queries. To obtain more query execution plans these nine queries are provided as input to genetic algorithm, that cross overs these nine queries and generates eighty-one queries with query execution time of each. Now to retrieve the same information, there are eighty-one options available. Among these eighty-one options the query with least time is most efficient query.

6. Analysis

To retrieve the same information from three relations in distributed database environment, if only ant colony algorithm is used then there are limited query execution plans available and not possible to get query with the least time.

If only genetic algorithm is used then it takes time to generate population and cross over. And still there are less option compared to hybridized ant colony algorithm.

For the same information the query with least execution time is different in all the three algorithms with different time, but the least time is obtained through hybridized ant colony algorithm as shown in the following graph.

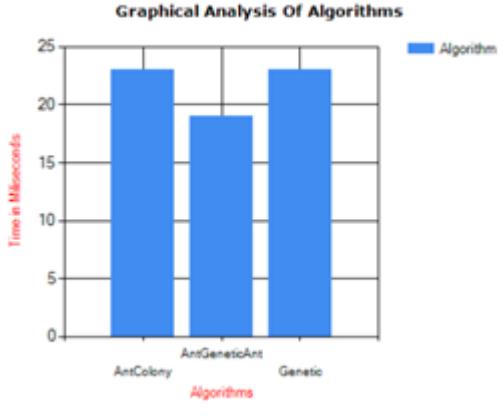

Fig 5: Analysis of Ant Colony algorithm, Genetic algorithm and Hybrid Ant Colony algorithm

7. Conclusion

From Hybridized Ant colony system, more possible query execution plans have been obtained and the query with least execution time is obtained with combination of ant colony and genetic algorithm.

As the experiment is done on three relations and it is static, this hybridized ant colony algorithm can be extended to optimized queries dynamically in distributed database environment. Ant the same hybridized at colony algorithm can also be extended to heterogeneous databases.

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