**CONTENTS**

**Topic Page No**

**1. INTRODUCTION 1**

1.1 OVERVIEW 1

1.2 PROBLEM STATEMENT 2

1.3 LITERATURE SURVEY 2

1.4 APPLICATION 3

**2. CHALLENGES IN PARALLEL-PROGRAMMING 4**

2.1 OVERVIEW 4

2.2 PROFILING SEQUENTIAL CODE 5

2.3 PARALLELIZING 6

**3. PARLLELIZATION 7**

3.1 OVERVIEW 7

3.2 DEPENDENCIES 10

3.3 RACE CONDITIONS 10

3.4 MEMORY AND COMMUNICATION 12

3.5 PARALLEL PROGRAMMING LANGUAGES 14

**4. PROPOSED MODEL 15**

4.1 OVERVIEW 15

4.2 PRE-PARALLELIZATION STEPS 15

4.3 STEPS INVOLVED 16

4.4 APPLICATIONS 18

**5. IMPLEMENTATION 19**

5.1 BUILDING A LOCAL COPY OF GCC 19

5.2 GOAL OF MODIFYING GCC 24

5.3 MODIFYING GCC 25

5.3.1 INVOIKING GCC 25

5.3.2 PROCESSING FLAGS 27

5.3.3 SYNTAX CHECKING 27

5.3.4 PARALLEL PROCESSING 27

5.3.5 PROCESSING OF FOR LOOPS 30

5.3.6 INTERACTIVE FOR LOOP TREE 33

**6. WORKING WITH EXTENDED GCC 35**

6.1 fparallel FLAG 35

6.2 fnested FLAG 36

6.3 GRAPHICAL USEE INTERFACE 37

6.4 MODIFIYING SUGGESTED OpenMP PRAGMAS 40

6.5 SET NUMBER OF THREADS 41

6.6 NON-PARALLELIZABLE FOR LOOPS 42

6.7 USER ERGONOMICS 45

**7. RESULTS AND ANALYSYS 46**

7.1 GENERATING SUBSETS 46

7.2 ARRAY SUM CALCULATION 47

7.3 PRIME NUMBER GENERATION 48

7.4 MATRIX MULTIPLICATION 49

7.5FRACTAL GENERATION 50

7.6 INTER-FLOCK CROSSOVER 52

**8. CONCLUSION 53**

**9. REFERENCES**  **54**