Programming Assignment 1 (Report)

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For each algorithm:

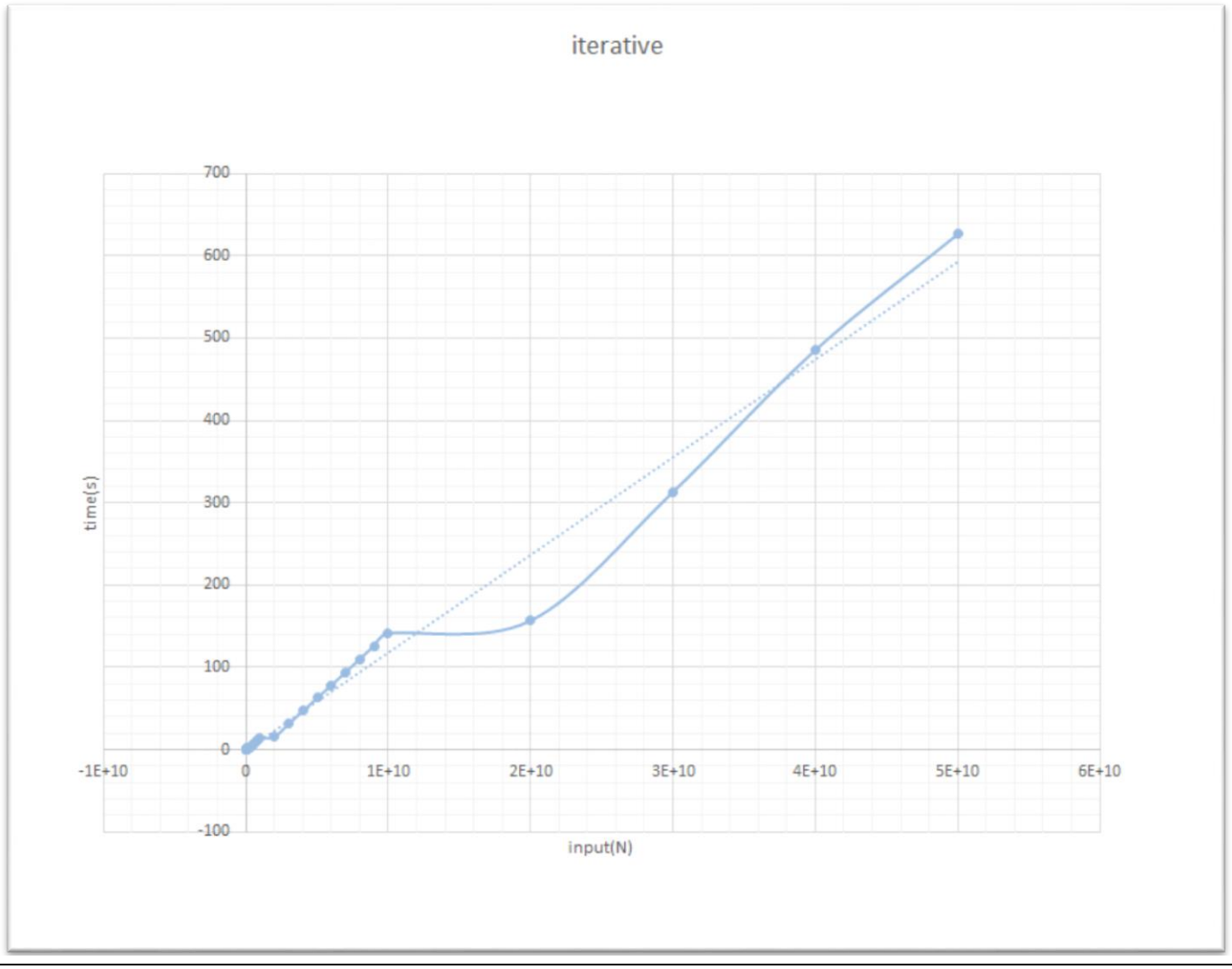
1) Fill up the tables with maximum value of N for which the program gives the output within the time specified in the first row. ( If value of N exceeds 10^18, fill the corresponding entry in table as >10^18)s
2) Plot graph to visualize run time

Computer Specification: ( i7, 1.6x4 GHz, 6 GB RAM)

A) Recursive Fibonacci (RFib):

| Time (in sec) | .001 | .01 | .1 | 1 | 5 | 60 | 600 |
|---|---|---|---|---|---|---|---|
| Max value of N | 20 | 26 | 34 | 39 | 42 | 47 | 52 |

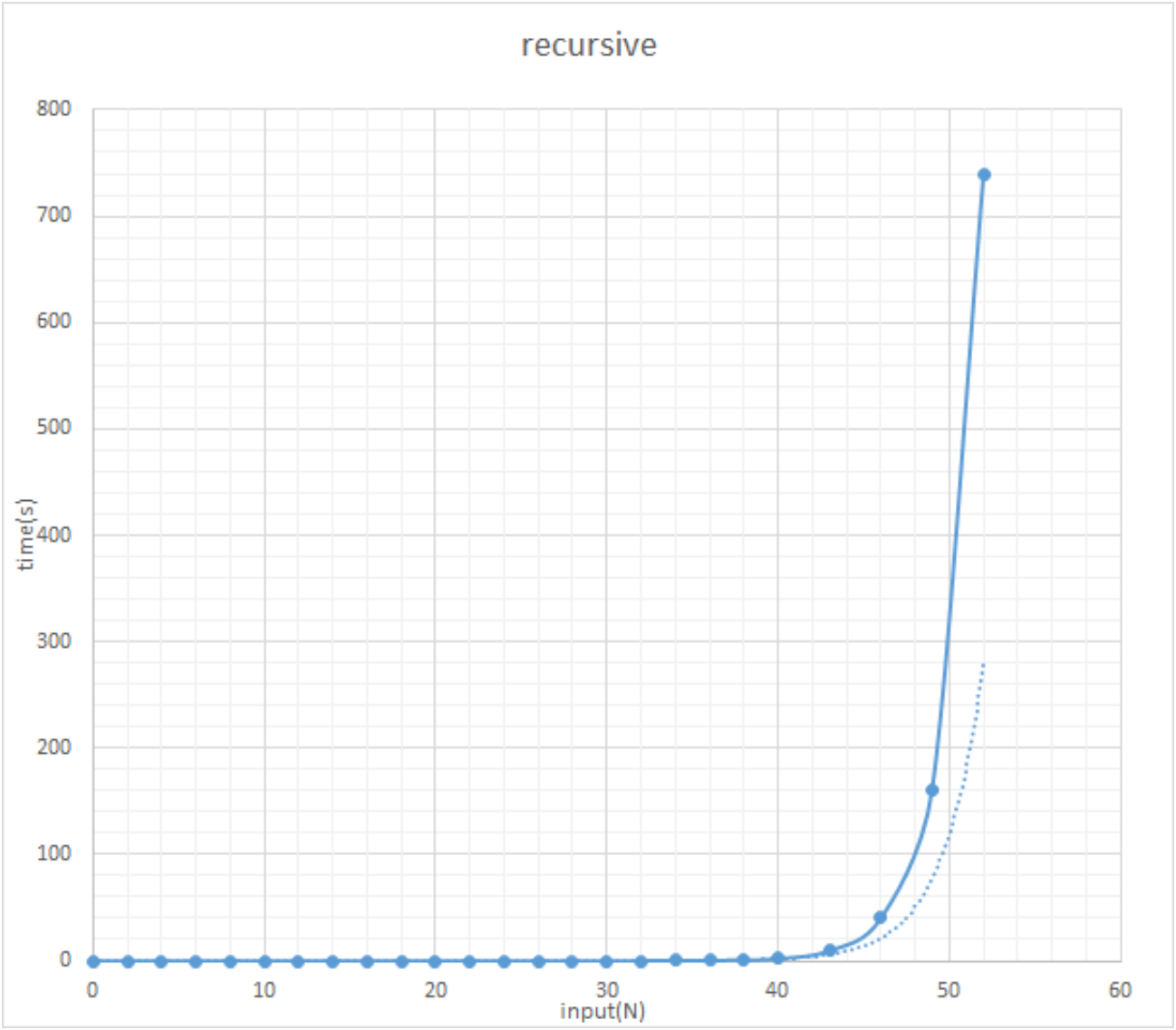
Plot a graph of time taken vs N (X-axis: N, Y-axis : Run Time (in sec))



B) Iterative Fibonacci (IFib):

| Time (in sec) | .001 | .01 | .1 | 1 | 5 | 60 | 600 |
|---|---|---|---|---|---|---|---|
| Max value of N | 14000 | 200000 | 40000000 | 45000000 | 250000000 | 5000100001 | 50000100001 |

Plot a graph of time taken vs N (X-axis: N, Y-axis : Run Time (in sec))



C) Clever Fibonacci (Clever-algo-Fib):

| Time (in sec) | .001 | .01 | .1 | 1 | 5 | 60 | 600 |
|---|---|---|---|---|---|---|---|
| Max value of N | >10^18 | >10^18 | >10^18 | >10^18 | >10^18 | >10^18 | >10^18 |

Plot a graph of time taken vs $\log_2 N$ (X-axis: $\log_2 N$, Y-axis : Run Time (in sec))