

Write a C++ code to read the following netlist from a text file, extract the different paths, calculate the maximum propagation delay for each node, and then try to find the longest path, determine the suitable clock period. Use text files to input the below netlist into your program.

Component	Inv	And	Or	Xor	FF	Nand	Nor	Xnor
Delay	1	$(n/2)+1$	$n+1$	n	2	$n/2$	n	N

Where n is the number of inputs.

Text File is as follows:

Flipflop F1 (in D1, clk Clk1, out Q1);

Flipflop F2 (in D2, clk Clk1, out Q2);

Flipflop F3 (in D3, clk Clk1, out Q3);

And A1 (in Q1, in Q2, out S1);

Or O1 (in Q2, in Q3, out S2);

Xor X1 (in S1, in S2, out S3);

Inv I1 (in S2, out S4);

And A2 (in Q3, in S3, out S5);

Flipflop F4 (in S1, clk Clk1, out Q4);

Flipflop F5 (in S3, clk Clk1, out Q5);

Flipflop F6 (in S4, clk Clk1, out Q6);

Flipflop F7 (in S5, clk Clk1, out Q7);

Inv I2 (in Q4, out S6);

Xor X2 (in Q4, in Q5, out S7);

Or O2 (in Q6, in S7, out S8);

Inv I3 (in Q7, out S9);

And A3 (in S9, in S8, out S10);

Or O3 (in S6, in S7, out S11);

Flipflop F8 (in S11, clk Clk1, out Q8);

Flipflop F9 (in S8, clk Clk1, out Q9);

Flipflop F10 (in S10, clk Clk1, out Q10);