Assignment 5

Due on 2019-09-04, 23:59 IST.

The data due for submitting this assignment has been posted.

For the diagram shown, assume that the input is $x(n)$ and the output is $y(n)$. Also assume that each node A, B, C, D, O is a functional unit that performs an operation, and that the rectangular boxes are registers or delay elements in general.

1. Assume that you have one type of hardware unit that can perform either addition or multiplication, whichever is specified in the data sheet. The latency is 1.

In the ASAP schedule for this system, the cycle numbers in which each of the following operations will be scheduled (even if the first cycle is called cycle 0).

- Value of $A$: __________

- Value of $B$: __________

In the ASAP schedule for this system, assume that we are trying to fit within a total period of 6 clock cycles (cycles are numbered from 0 to 5). Indicate the cycle numbers in which each of the following operations will be scheduled (even if the first cycle is called cycle 0).

- Value of $A$: __________

- Value of $B$: __________

- Value of $C$: __________

- Value of $D$: __________

- Value of $E$: __________

- Value of $F$: __________

Given the previous two cases for a total schedule length of 9 time units, what will be the latency of each of the following blocks in number of cycles?

- Value of $A$: __________

- Value of $B$: __________

- Value of $C$: __________

- Value of $D$: __________

- Value of $E$: __________

- Value of $F$: __________

What will be the hardware utilization efficiency (in percentage)? Answer accurate to two decimal points assuming the single hardware unit is used for all the computations and the maximum schedule length is 9 time units.

- Value: __________

For the diagram shown, assume there are some functions being scheduled in an overlapping schedule on two processors. The block $B_1$ shows all the functions in one iteration (without showing the individual functions), and $B_2$ is identical to $B_1$, except that it is later in time.

10. What will be the value of $k$ in the figure?

- Value: __________

11. What is the lat????

- Value: __________

12. What is the schedule length of this design (in percentage)?

- Value: __________