Due on 2021-08-18, 23:59 IST.

2 points

1 point

1 point

1 point

1 point

Course outline

How does an NPTEL online course work?

Prerequisite: Week 0

Week1: Introduction to Cbased VLSI Design

Week2: C-Based VLSI

Design: Basic Scheduling

- Lec 1: Introduction to
- Scheduling

Lecture Note for Lec1

- Lec 2: ILP formulation of
- Scheduling Lecture Note for Lec2
- Lec 3: ILP formulation of
- MRLC and MLRC Scheduling

Lecture Note for Lec3

- Quiz: Week 2: Assignment 2
- Solution: Assignment 2

Week 2: Feedback form

Design: List Based Scheduling

Week3: C-Based VLSI

Week 4: C-Based VLSI Design: Advanced Scheduling

Week 5: C-Based VLSI

Design: Allocation and

Binding Week 6: C-Based VLSI Design: Allocation, Binding,

Data-path and Controller

Week 7: C-Based VLSI

Week 8: C-Based VLSI

Week 9: C-Based VLSI

Generation

Design: Efficient Synthesis of C Code

Design: Hardware Efficient C Coding

Design: Impact of Compiler Optimizations in Hardware

Week 10: Verification of Highlevel Synthesis

Week 11: Securing Design with High-level Synthesis

Week 12: Introduction to EDA and Recent Advances in C-Based VLSI Design

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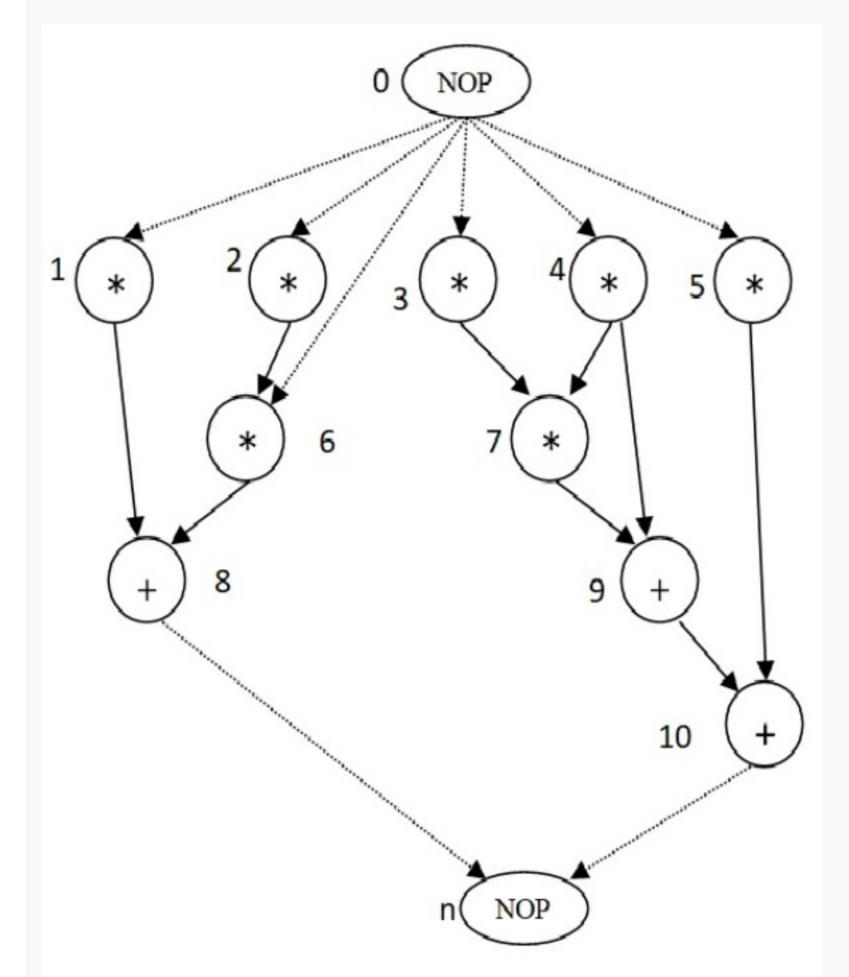
Week 2: Assignment 2

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment.

Consider each operation takes one cycle. Answer the following questions from 1 to 4?

1) Consider the sequence graph in below Figure. Let binary decision variables of type X_{i,j} denotes the assignment of operation-i 1 point at time step-j. $X_{i,j}$ is 1 if operation-i is scheduled at time step-j. $X_{i,j}$ is 0 otherwise. There are 3 MUL, 2 ALU and latency bound is 4.



Determine the correct inequality representing the unique start time constraint of operation 5.

2) Determine the correct inequality representing the resource constraint at time step 1.

- $X_{5,1} = 1$
- $X_{5,1} + X_{5,2} = 1$
- $X_{5,1} + X_{5,2} + X_{5,3} = 1$
- $X_{5,1} + X_{5,2} + X_{5,3} + X_{5,4} = 1$

No, the answer is incorrect. Score: 0

Accepted Answers: $X_{5,1} + X_{5,2} + X_{5,3} = 1$

- $X_{1,1}+X_{2,1}+X_{3,1}+X_{4,1}+X_{5,1}+X_{6,1} \le 3$
- $\bigcirc X_{1,1}+X_{2,1}+X_{3,1}+X_{4,1}+X_{5,1} \le 3$ $X_{1,1}+X_{2,1}+X_{3,1}+X_{4,1} \le 3$
- $X_{1,1}+X_{2,1}+X_{3,1}+X_{4,1}+X_{5,1}+X_{6,1}+X_{7,1} \le 3$

No, the answer is incorrect. Score: 0

Accepted Answers:

 $X_{1,1}+X_{2,1}+X_{3,1}+X_{4,1}+X_{5,1} <= 3$

- 3) Determine the correct inequality representing the dependency constraint between operations 5 and 10, while each operation 2 points takes one cycle.
 - $\bigcirc 4X_{10.4} + X_{5.1} + 2X_{5.2} + 3X_{5.3} 1 \ge 0$ $\bigcirc 4X_{10,4} - X_{5,1} - 2X_{5,2} - 3X_{5,3} + 1 \ge 0$
 - $\bigcirc X_{5,1} + 2X_{5,2} + 3X_{5,3} 4X_{10,4} 1 \ge 0$
 - $\bigcirc 4X_{10.4} X_{5.1} 2X_{5.2} 3X_{5.3} 1 \ge 0$ No, the answer is incorrect.

Score: 0 Accepted Answers:

- $4X_{10,4} X_{5,1} 2X_{5,2} 3X_{5,3} 1 >= 0$
- 4) Consider the above figure again. In which states the operation 8 will be scheduled by ASAP and ALAP algorithms? (Assume 1 point the latency bound for ALAP is 4)
 - ASAP: 3 and ALAP: 4 O ASAP: 2 and ALAP: 3
 - O ASAP: 4 and ALAP: 4 ASAP: 3 and ALAP: 3

No, the answer is incorrect. Score: 0 Accepted Answers:

ASAP: 3 and ALAP: 4

5) Which of the following is the best match from Set A to Set B? Set B Set A

Scheduling

- a. Solves a latency-constrained problem
- b. Determine start time of each operation and satisfying all ii. Latency sequencing (timing and resource) constraints
- iii. ALAP iv. Basic block
- c. Sequence of operations d. Number of cycles to execute the entire schedule
- (i, a), (ii, c), (iii, b), (iv, d) (i, d), (ii, a), (iii, c), (iv, b)
- (ii, d), (i, b), (iv, a), (iii, c)
- (i, b), (ii, d), (iii, a), (iv, c)

No, the answer is incorrect. Score: 0 Accepted Answers:

(i, b), (ii, d), (iii, a), (iv, c)

6) Mobility is defined for each operation

 ALAP time of each operation ASAP time of each operation

Addition of ALAP and ASAP time

Difference between ALAP and ASAP schedule

Score: 0 Accepted Answers: Difference between ALAP and ASAP schedule

No, the answer is incorrect.

ASAP and ALAP scheduling information help to reduce the decision variables in ILP formulation of scheduling.

False

True

Score: 0

- 8) Integer linear Program always gives
 - Approximate solution
- Near optimal solution

No, the answer is incorrect.

Accepted Answers:



- Heuristic solution
- Optimal solution
- Score: 0
- Optimal solution