

Course outline

How does an NPTEL online course work?

Prerequisite: Week 0

Week1: Introduction to C-based VLSI Design

Week2: C-Based VLSI Design: Basic Scheduling

Week3: C-Based VLSI Design: List Based Scheduling

Week 4: C-Based VLSI Design: Advanced Scheduling

Lec1: Forced Directed Scheduling

Lecture Note for Lec1

Lec2: Forced Directed MLRC and MRLC Scheduling Algorithm

Lecture Note for Lec2

Lec3: Path Based Scheduling

Lecture Note for Lec3

Lec4: Path Based Scheduling

Lecture Note for Lec4

Quiz: Week 4: Assignment 4

Week 4: Feedback form

Solution: Assignment 4

Week 5: C-Based VLSI Design: Allocation and Binding

Week 6: C-Based VLSI Design: Allocation, Binding, Data-path and Controller Generation

Week 7: C-Based VLSI Design: Efficient Synthesis of C Code

Week 8: C-Based VLSI Design: Hardware Efficient C Coding

Week 9: C-Based VLSI Design: Impact of Compiler Optimizations in Hardware

Week 10: Verification of High-level 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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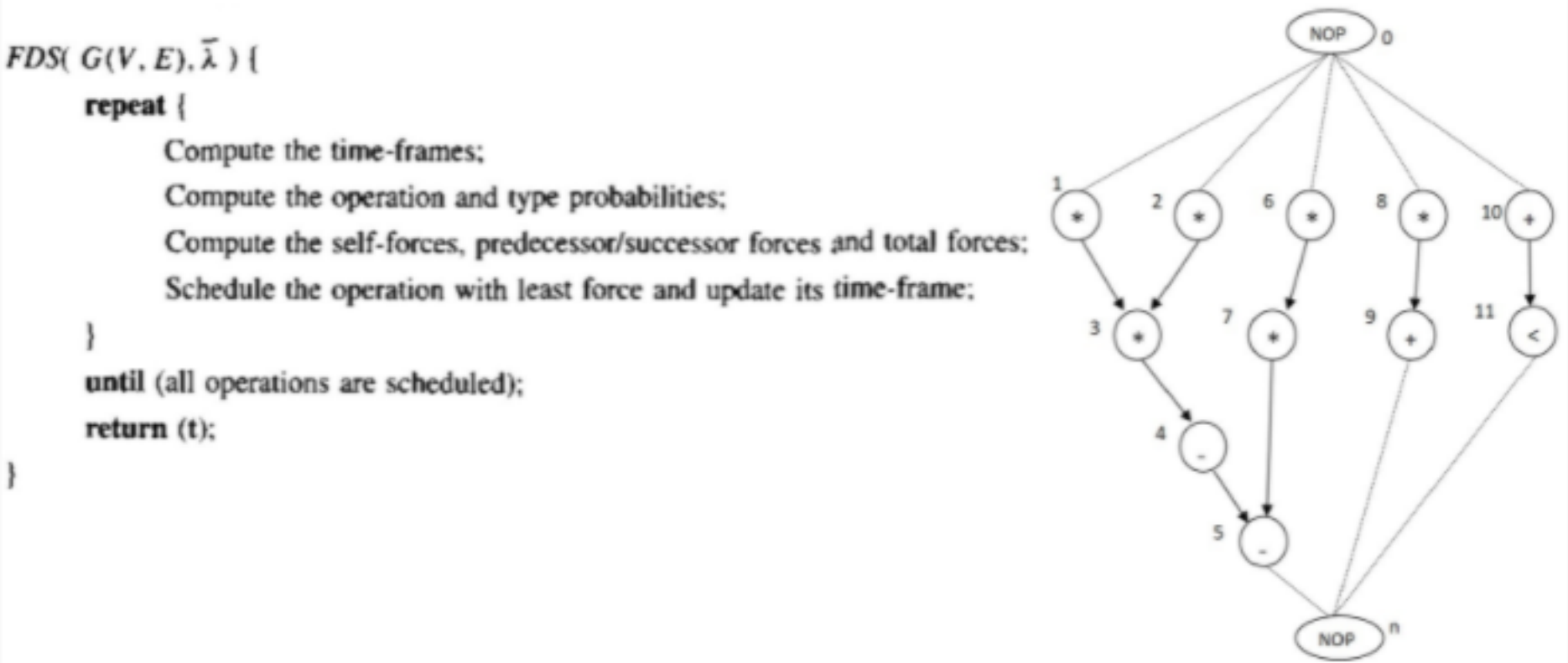
Week 4: Assignment 4

The due date for submitting this assignment has passed.

Due on 2021-09-01, 23:59 IST.

As per our records you have not submitted this assignment.

Consider the Sequence Graph shown in the figure below. Each MUL (performs multiplication operation) and ALU (performs rest operations) operation takes one unit of time (i.e., single cycle). The latency bound $\lambda = 5$. Please note that the dummy operations 0 and n do not take any time step. Operations 1 to 11 will be scheduled during time steps 1 to 5. Answer the following questions from 1 to 9 for minimizing resources under latency constrained (MRLC) Force-Directed scheduling.



1) What is the ASAP and ALAP times of operation 6?

1 point

- ☐ 1, 3
☐ 3, 1
☐ 1, 2
☐ 2, 1

No, the answer is incorrect.
Score: 0

Accepted Answers:
1, 3

2) What is the mobility of operation 8?

1 point

- ☐ 4
☐ 3
☐ 2
☐ 1

No, the answer is incorrect.
Score: 0

Accepted Answers:
3

3) Select the correct ALAP time of operations 3 and 11?

1 point

- ☐ 2, 2
☐ 3, 2
☐ 2, 5
☐ 3, 5

No, the answer is incorrect.
Score: 0

Accepted Answers:
3, 5

4) How many number of MUL and ALU required for this MRLC Schedule

1 point

- ☐ 2, 2
☐ 1, 1
☐ 2, 1
☐ 3, 1

No, the answer is incorrect.
Score: 0

Accepted Answers:
2, 1

5) What is the time frame of operation 10?

1 point

- ☐ [1, 3]
☐ [1, 4]
☐ [1, 5]
☐ [2, 5]

No, the answer is incorrect.
Score: 0

Accepted Answers:
[1, 4]

6) The probability of operations 1 and 10 at time step 1 are

1 point

- ☐ 0.5, 0.25
☐ 0.33, 0.25
☐ 1, 0.33
☐ 0.5, 0.33

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.5, 0.25

7) The value of the MUL resource type distribution at time step 1 is

1 point

- ☐ 1.83
☐ 0.25
☐ 1.58
☐ 2.83

No, the answer is incorrect.
Score: 0

Accepted Answers:
1.58

8) When operation 2 is assigned to time step 1, what is the self-force for operation 2:

1 point

- ☐ 0.415
☐ 0.25
☐ -0.25
☐ -0.415

No, the answer is incorrect.
Score: 0

Accepted Answers:
-0.415

9) The assignment of operation 2 to time step 2 implies that the assignment of operation 3 to time step 3. Therefore, the force of operation 3 related to time step 3 is:

1 point

- ☐ 0.415
☐ 0.25
☐ -0.25
☐ -0.415

No, the answer is incorrect.
Score: 0

Accepted Answers:
-0.25

10) Consider the following code. How many longest paths are there in the behavior?

1 point

```
for( )
{
    1. ppc = pc
    2. popc = oldpc
    3. pbus = ibus + 4
    4. if(branch==1)
    5. pc = branchpc;
    6. endif
    7. while(irel==1); //Busy Wait//
    8. oldpc = pc
    9. pc = pc + 4
    10. Endop
}
```

- ☐ 2
☐ 3
☐ 4
☐ 5

No, the answer is incorrect.
Score: 0

Accepted Answers:
3