

Unit 7 - Week 5

Course outline

How to access the portal

Pre-Course

Week 1

Week 2

Week 3

Week 4

Week 5

● Compiler Transformations in High-level Synthesis

● Memory Modelling and Compiler Transformations in High-level Synthesis

○ Quiz : Assignment 5

○ Feedback Form

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

Week 12

Lecture Slides

Assignment 5

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

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

1) Which of the following is true about the Constant Folding transformation? 1 point

- It could lead to a smaller datapath circuit
- It could lead to a circuit with lower cycle count
- It could lead to a smaller datapath circuit AND lower cycle count
- It is possible that the resulting datapath is not smaller

No, the answer is incorrect.
Score: 0

Accepted Answers:
It could lead to a smaller datapath circuit
It could lead to a circuit with lower cycle count
It could lead to a smaller datapath circuit AND lower cycle count
It is possible that the resulting datapath is not smaller

2) The Constant Propagation transformation may lead to opportunities for Constant Folding and Dead Code Elimination. 1 point

- TRUE
- FALSE

No, the answer is incorrect.
Score: 0

Accepted Answers:
TRUE

3) The Strength Reduction transformation may sometimes result in a larger CDFG 1 point

- TRUE
- FALSE

No, the answer is incorrect.
Score: 0

Accepted Answers:
FALSE

4) It is possible to apply the Strength Reduction transformation to realise the statement "y = a * 7;" using what resources? [Assume that it is possible to implement a subtraction operation with one adder, and that no resources are required to shift an operand by a constant.] 1 point

- Zero adders and Zero multipliers
- One adder and Zero multipliers
- Two adders and Zero multipliers
- Strength Reduction does not apply to this statement

No, the answer is incorrect.
Score: 0

Accepted Answers:
One adder and Zero multipliers
Two adders and Zero multipliers

5) The Common Subexpression Elimination transformation in High-level Synthesis always results in reduced cycle count 1 point

- TRUE
- FALSE

No, the answer is incorrect.
Score: 0

Accepted Answers:
FALSE

6) The Common Subexpression Elimination transformation results in reduced node count in the CDFG 1 point

- TRUE
- FALSE

No, the answer is incorrect.
Score: 0

Accepted Answers:
TRUE

7) The Loop Invariant Code Motion transformation could lead to lower cycle count 1 point

- TRUE
- FALSE

No, the answer is incorrect.
Score: 0

Accepted Answers:
TRUE

8) A node in HLS that represents a Memory Write operation: 1 point

- Has an address input
- Has a data input
- Has a data output
- Has an address output

No, the answer is incorrect.
Score: 0

Accepted Answers:
Has an address input
Has a data input

9) A node in HLS that represents a Memory Read operation: 1 point

- Has an address input
- Has a data input
- Has a data output
- Has an address output

No, the answer is incorrect.
Score: 0

Accepted Answers:
Has an address input
Has a data output

10) During high level CDFG transformations, Constant folding may lead to opportunities for dead code elimination 1 point

- TRUE
- FALSE

No, the answer is incorrect.
Score: 0

Accepted Answers:
TRUE

11) Constant folding transformation always results in the area being the same or lesser, independent of the target hardware resources 1 point

- TRUE
- FALSE

No, the answer is incorrect.
Score: 0

Accepted Answers:
TRUE

12) Bringing all the constants of a complex expression together on one side (left or right) of the expression is a heuristic typically used during: 1 point

- Dead code elimination
- Constant propagation
- Constant folding
- Function inlining

No, the answer is incorrect.
Score: 0

Accepted Answers:
Constant folding

13) The Dead Code Elimination transformation may sometimes result in a larger CDFG 1 point

- TRUE
- FALSE

No, the answer is incorrect.
Score: 0

Accepted Answers:
FALSE