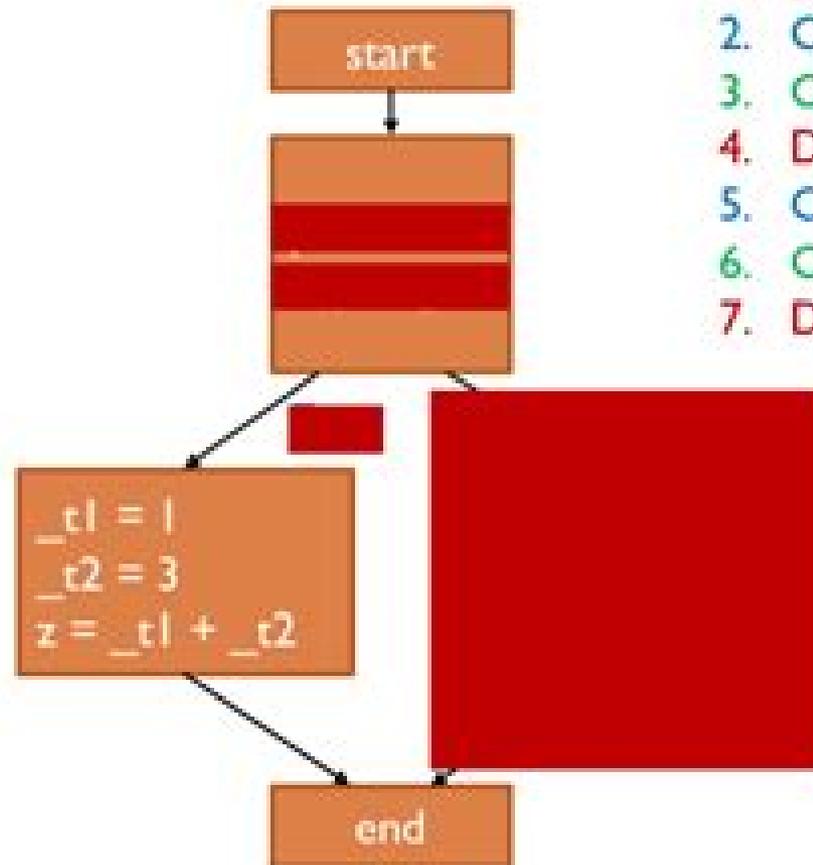


# Example IR Optimizations

```
int x = 3;  
int y = x + 7;  
int z = 2*y;  
if (x < y) {  
    z = x/2 + y/3;  
} else {  
    z = x*y + y;  
}
```



1. Dead code elim
2. Constant propagation
3. Constant folding
4. Dead code elim
5. Constant propagation
6. Constant folding
7. Dead code elim

# Computation Structures

**Igor Walukiewicz**



## Computation Structures:

Computation Structures Stephen A. Ward, Robert H. Halstead, Jr., 1990-03-01      *Computation Structures* Stephen A. Ward, Robert H. Halstead, 1990 Developed as the text for the basic computer architecture course at MIT Computation Structures integrates a thorough coverage of digital logic design with a comprehensive presentation of computer architecture It contains a wealth of information for those who design computers or work with computer systems spanning the entire range of topics from analog circuit design to operating systems Ward and Halstead seek to demystify the construction of computing hardware by illustrating systematically how it is built up from digital circuits through higher level components to processors and memories and how its design is affected by its intended uses Computation Structures is unusually broad in scope considering many real world problems and tradeoff decisions faced by practicing engineers These difficult choices are confronted and given careful attention throughout the book Topics addressed include the digital abstraction digital representations and notation combinational devices and circuits sequence and state synthesis of digital systems finite state machines control structures and disciplines performance measures and tradeoffs communication interpretation microinterpreter architecture microprogramming and microcode single sequence machines stack architectures register architectures reduced instruction set computers memory architectures processes and processor multiplexing process synchronization interrupts priorities and real time directions and trends Stephen A Ward and Robert H Halstead are both Associate Professors of Computer Science and Electrical Engineering at MIT Computation Structures is included in the MIT Electrical Engineering and Computer Science series      *Foundations of Software Science and Computation Structures* Jean Goubault-Larrecq, Barbara König, 2020-04-17 This open access book constitutes the proceedings of the 23rd International Conference on Foundations of Software Science and Computational Structures FOSSACS 2020 which took place in Dublin Ireland in April 2020 and was held as Part of the European Joint Conferences on Theory and Practice of Software ETAPS 2020 The 31 regular papers presented in this volume were carefully reviewed and selected from 98 submissions The papers cover topics such as categorical models and logics language theory automata and games modal spatial and temporal logics type theory and proof theory concurrency theory and process calculi rewriting theory semantics of programming languages program analysis correctness transformation and verification logics of programming software specification and refinement models of concurrent reactive stochastic distributed hybrid and mobile systems emerging models of computation logical aspects of computational complexity models of software security and logical foundations of data bases      Foundations of Software Science and Computation Structures Igor Walukiewicz, 2004-03-19 This book constitutes the refereed proceedings of the 7th International Conference on Foundations of Software Science and Computation Structures FOSSACS 2004 held in Barcelona Spain in March April 2004 The 34 revised full papers presented together with the abstracts of 2 invited talks were carefully reviewed and selected from over 130 submissions Among the topics addressed are lambda calculus cryptographic

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