

Lecture 30

Code Generation

Awanish Pandey

Department of Computer Science and Engineering Indian Institute of Technology Roorkee



• a+e*(c+d)



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- Minimum registers required for correct execution?



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- **3** $R_2 = d$
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- Minimum registers required for correct execution?
- **1** $R_0 = a$
- ② $R_1 = c$
- **3** $R_2 = d$
- $R_1 = R_1 + R_2$
- **6** $R_2 = e$



- a+e*(c+d)
- Minimum registers required for correct execution?
- **1** $R_0 = a$
- 2 $R_1 = c$
- **3** $R_2 = d$
- $R_1 = R_1 + R_2$
- **6** $R_2 = e$



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- **1** $R_0 = a$

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- ② $R_1 = c$
- **3** $R_2 = d$
- $Q R_1 = R_1 + R_2$
- **6** $R_2 = e$
- $R_2 = R_2 * R_1$



• Minimum registers required for correct execution?

1
$$R_0 = a$$

1
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②
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②
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 - ► Local register allocation





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 - Optimal code generation is NP-hard





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- For a leaf operand x, if base is b generate the instruction LD R_h , x

