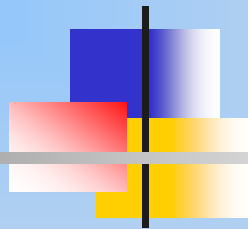


CSE302: Compiler Design



Instructor: Dr. Liang Cheng
Department of Computer Science and Engineering
P.C. Rossin College of Engineering & Applied Science
Lehigh University

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Outline

- Recap of 3-address code generation
 - Array references
- Review and feedback



SDT of Array Type Declaration

- $D \rightarrow T \text{ id}; \{\text{top.put}(\text{id.lexeme}, T.\text{type}, T.\text{width});\}$
- $T \rightarrow B \{t = B.\text{type}; w = B.\text{width};\} C \{$
 $T.\text{type} = C.\text{type}; T.\text{width} = C.\text{width};$
 $\}$
- $B \rightarrow \mathbf{int} \{B.\text{type} = \text{integer}; B.\text{width} = 4;\}$
- $B \rightarrow \mathbf{float} \{B.\text{type} = \text{float}; B.\text{width} = 8;\}$
- $C \rightarrow [\mathbf{num}] C1 \{$
 $C.\text{type} = \text{array}(\mathbf{num}.\text{value}, C1.\text{type});$
 $C.\text{width} = \mathbf{num}.\text{value} \times C1.\text{width};$
 $\}$
- $C \rightarrow \varepsilon \{C.\text{type} = t; C.\text{width} = w;\}$



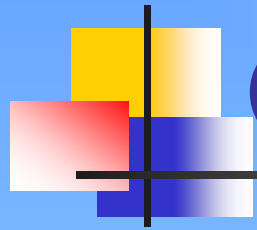
Translation of Array References

- $L \rightarrow \mathbf{id} [E]$
 - $L.array = top.get(id.lexeme)$
 - $L.type = L.array.type.elem$
 - $L.addr = \mathbf{new} Temp()$
 - $gen(L.addr '=' E.addr '*' L.type.width)$
- $L \rightarrow L1 [E]$
 - $L.array = L1.array$
 - $L.type = L1.type.elem$
 - $t = \mathbf{new} Temp()$
 - $L.addr = \mathbf{new} Temp()$
 - $gen(t '=' E.addr '*' L.type.width)$
 - $gen(L.addr '=' L1.addr '+' t)$
- $S \rightarrow \mathbf{id} = E ;$
 - $S.code = E.code || gen(top.get(id.lexeme) '=' E.addr)$
- $E \rightarrow L$
 - $E.addr = \mathbf{new} Temp()$
 - $gen(E.addr '=' L.array.base '[' L.addr ']')$
- $S \rightarrow L = E ;$
 - $gen(L.array.base '[' L.addr '] '=' E.addr$

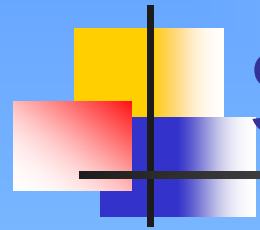


Outline

- Recap of 3-address code generation
- **Review and feedback**



Course Evaluation



Suggestion and Comments?
