CSE 3302
Programming Languages

MidTerm Reviews

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Materials Not Covered

- Chapter 3
  - 3.1, 3.2, 3.3, 3.4, 3.5
- Chapter 4
  - 4.7
- Chapter 6
  - 6.8, 6.9
- Chapter 7
  - 7.4, 7.5

Materials Not Covered

- Chapter 8
  - 8.4, 8.5, 8.6
- Chapter 9
  - 9.6, 9.7, 9.8
- Object-Oriented Programming (However Java will be covered, for its imperative programming aspects.)

Important Knowledge Points

- History
  - History of various programming languages
  - Key features for each programming language

Important Knowledge Points

- Syntax
  - Regular Expression
  - Context-Free Grammar
  - Leftmost Derivation
  - BNF & EBNF
  - Parse Tree & Abstract Syntax Tree
  - Ambiguity Elimination
  - Dangling Else
  - Left Recursion Elimination & Left Factoring

Important Knowledge Points

- Semantics
  - Name & Binding
  - Symbol Table
  - Static(Lexical) Scope vs. Dynamic Scope
  - Different Method Overload Resolution Rules in different languages
  - Environment for variables
  - Scope vs. Life Time
  - Box-and-Circle Diagram
  - Aliases & Dangling References
Important Knowledge Points

• Data Types
  – Enumerated types
  – Type Equivalence
  – Structural Equivalence vs. Name Equivalence
  – Struct & Union in C
  – Type conversion
  – Type casting in Java

Important Knowledge Points

• Control
  – Expression vs. Statement
  – Side Effect
  – Applicative Order Evaluation
  – Short-Circuit Evaluation
  – Normal order evaluation
  – Environment for procedures or functions
  – Parameter Passing Mechanisms

Important Knowledge Points

• Abstract Data Types
  – Algebraic Specification
  – Different Module Mechanisms in different languages

Pass by Text

```c
int i;
int p(int y) {
    int j = 1;
    return y;
}
void q() {
    int j;
    i = 2; j = 2;
    printf("%d
",p(i+j));
}
main(){
    q();
}
```

Print 3 using pass by text
Print 4 using pass by name