Principles of Programming Languages(CS F301)

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Conclusion to PPL (CSF 301)

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Preliminaries (Ch.1)

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1. Why study PPL?
2. Programing Domains.
3. Language Evaluation Criteria.
4. Influences on Language Design
5. Language Categories.
6. Design Trade-offs.
7. Implementation Methods.
8. Environments

Evolution of Programming Languages (Ch.2)

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1. We understood the evolution of some important languages.
2. We investigated the development and development environments of a number of important PLs.
3. Got prepared to start with discussion of the important features of contemporary PLs.

Description of Syntax and Semantics (Ch.3)

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- What is Syntax and Semantics?
- Describing Syntax.
- Grammar, Derivation, Parse tree and ambiguity.
- Specifying the semantics:
- Static semantics: Attribute Grammar
- Dynamic Semantics- Operational semantics, Denotational semantics, Axiomatic semantics

Lexical and Syntax Analysis (Ch.4)

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- Intro to Lexical Analysis & Syntax Analysis
- Finite Automata
- Parsing problem (top-down & Bottom-up)
- Top-down parsers
- Recursive descent parser
- Left recursion
- Left factoring
- Bottom-up parsing (LR), Handle
- LR Parsing table
- LR parsing process

Names Bindings and Scopes (Ch.5)

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1. What is a variable and name.
2. Reserved word and keyword.
3. Variables and their attributes.
4. The concept of binding.
5. Static and dynamic binding.
6. Storage binding and lifetime
7. Categories of variable.
8. Scope.
9. Lifetime.
10. Referencing environment of a variable.
11. Named constants.

Data types (Ch.6)

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1. Introduction
2. Primitive types
3. Char Strings
4. User defined ordinal types
5. Array types
6. Associative arrays
7. Record/ Tuple/ List types
8. Union type
9. Pointer type
10. Type checking

Subprogram (Ch.9)

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1. Introduction
2. Parameters- semantic models
3. Categories
4. Procedures & Functions
5. Local referencing environments
6. Parameter passing
7. Overloaded subprograms
8. Design issues in Functions

Implementing Subprograms (Ch.10)

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1. Introduction
2. Subprogram linkage
3. Implementing simple subprograms
4. Activation record instance
5. Implementing subprograms with stack-dynamic variables.
6. Call prologue/epilogue
7. Implementing recursive subprograms.

Concurrency (Ch.13)

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1. Introduction
2. Types of concurrency
3. Synchronization
4. Subprogram level concurrency.
5. Message passing
6. Semaphores
7. Monitors

Exception Handling (Ch.14)

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1. Introduction
2. Exception and Exception handler
3. Exception handling control flow
4. Design issues
5. Ada, C++, Java Exception handling
6. Java assert.
7. Java and .NET event handling in GUI

Logic Programming (Ch.15)

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1. Introduction
2. Propositions
3. Introduction to Prolog
4. Facts, Rules and Goals
5. Deficiencies of Prolog
6. Applications

Functional Programming (Ch.16)

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1. Introduction
2. Mathematical Functions
3. Fundamentals of Functional Programming
4. Introduction to LISP
5. Other Functional Languages.

Points to Note

1. We will consider textbook as the authentic source, not other sources.
2. Do not consider PPTs as the complete material for preparation. PPTs just tell you what topics are covered.
3. PPTs may have type errors may not be complete.
4. Students should read the textbook for the comprehensive coverage of the Chapters/Sections mentioned in the syllabus.
5. Pre-compre marks are already announced through CMS on 01-Dec.

Comprehensive examination:

Date : 18-Dec, 2021; FN (9-00AM to 12-00PM)
Weightage : 40%
Type : Closed Book

Good Luck!