Session: Odd semester, 2022 (Aug-Dec)

Semester: 3$^{rd}$
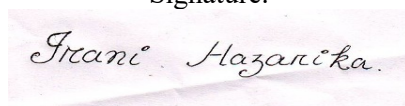
Course Title: Compiler Design

Course Code: CSC3036

| Class | Unit | Topics |
|---|---|---|
| Class 1 | Unit I: Introduction | What is Compiler?, Phases of Compiler |
| Class 2 | Unit I: Introduction | Overview of working of a compiler |
| Class 3 | Unit III: Syntax Analysis | Grammar representation, Derivation and parse tree |
| Class 4 | Unit III: Syntax Analysis | Ambiguity and Possible elimination |
| Class 5 | Unit III: Syntax Analysis | Top Down Parsing |
| Class 6 | Unit III: Syntax Analysis | Recursive Descent and Predictive top down parsing |
| Class 7 | Unit III: Syntax Analysis | Elimination of left recursion, Adopting Translation scheme by applying left recursion |
| Class 8 | Unit III: Syntax Analysis | Left recursion elimination technique in productions containing semantic actions |
| Class 9 | Unit II: Lexical Analysis | Regular expression, Regular Definitions |
| Class 10 | Unit II: Lexical Analysis | Extensions of regular expressions |
| Class 11 | Unit II: Lexical Analysis | Recognition of tokens |
| Class 12 | Unit II: Lexical Analysis | Structure of Lex program |
| Class13 | Unit II: Lexical Analysis | NFA, DFA, Conversion from NFA to DFA |
| Class 14 | Unit II: Lexical Analysis | Conversion from NFA with null transition into NFA without null transition |

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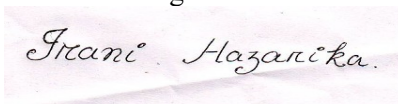Session: Odd semester, 2022 (Aug-Dec)

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| Class | Unit | Topics |
|---|---|---|
| Class 15 | Unit II: Lexical Analysis | Conversion from NFA with null transition into DFA |
| Class 16 | Unit II: Lexical Analysis | Minimization of DFA |
| Class 17 | Unit III: Syntax Analysis | Example of elimination of left recursion, left factoring, left factoring for dangling else grammar |
| Class 18 | Unit III: Syntax Analysis | FIRST and FOLLOW of a grammar G |
| Class 19 | Unit III: Syntax Analysis | LL(1) grammar, Construction of predictive parsing table for LL(1) grammar |
| Class 20 | Unit III: Syntax Analysis | Parsing table for Dangling-else problem (non-LL(1) grammar) |
| Class 21 | Unit III: Syntax Analysis | Moves of a predictive parser on an input |
| Class 22 | Unit III: Syntax Analysis | Error recovery in predictive parser |
| Class 23 | Unit III: Syntax Analysis | Bottom up parsing, Reductions, Handle Pruning |
| Class 24 | Unit III: Syntax Analysis | Shift Reduce Parsing, Conflicts during Shift Reduce Parsing |
| Class 25 | Unit III: Syntax Analysis | LR(0) Automaton |
| Class 26 | Unit III: Syntax Analysis | Construction of LR(0) parsing table |
| Class 27 | Unit III: Syntax Analysis | Construction of SLR Parsing table |
| Class 28 | Unit III: Syntax Analysis | Canonical-LR |

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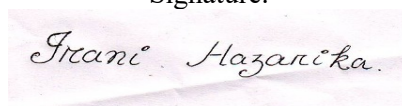Session: Odd semester, 2022 (Aug-Dec)

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| Class | Unit | Topics |
|---|---|---|
| Class 29 | Unit III: Syntax Analysis | LALR parser |
| Class 30 | Unit III: Syntax Analysis | Dangling -Else Ambiguity |
| Class 31 | Unit III: Syntax Analysis | Yacc |
| Class 32 | Unit III: Syntax Analysis | Yacc |
| Class 33 | Unit IV: Code generation | Symbol table contents |
| Class 34 | Unit IV: Code generation | Type checking |
| Class 35 | Unit IV: Code generation | Syntax directed translation |
| Class 36 | Unit IV: Code generation | Forms of intermediate codes, Abstract Syntax Trees |
| Class 37 | Unit IV: Code generation | Directed Acyclic Graph |
| Class 38 | Unit IV: Code generation | Three address code |
| Class 39 | Unit IV: Code generation | Intermediate code generation for different language constructs like arrays |
| Class 40 | Unit IV: Code generation | Intermediate code generation for different language constructs like boolean expressions |
| Class 41 | Unit IV: Code generation | Intermediate code generation for different language constructs like if, ifelse, while, case or switch, function call |
| Class 42 | Unit V: Code Optimisation | Basic blocks |

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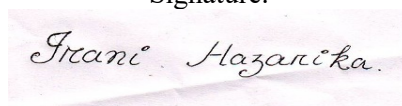
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| Class | Unit | Topics |
|---|---|---|
| Class 43 | Unit V: Code Optimisation | Common sub-expression elimination |
| Class 44 | Unit V: Code Optimisation | Variable propagation |
| Class 45 | Unit V: Code Optimisation | Code motion |
| Class 46 | Unit V: Code Optimisation | Strength reduction, Elimination of dead code |
| Class 47 | Unit V: Code Optimisation | Loop optimization |

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