

Lecture 1

- Information Systems 25
- Von Neumann Architecture 33
- JAVA Virtual Machine 34
- Java and programming basics 41
- Matrix operations 61
- Magic Square 65
- OOP 69
- Exceptions 82
- Java Syntax and Runtime 91
- Exceptions VS Errors 98

Lecture 2

- Internationalization 4
- File IO 5
- OOP 13
- Lift Example 19
- Exceptions VS Errors 26
- Checked and Unchecked Exceptions 34
- Creating New Exception Types 37
- Throwable 52
- Finally 62
- Assertions 67
- Recursion 71
- Searching 72
- Sorting 81
- Quick sort and Merge sort 86
- Algorithm complexity 90
- Mathematical Induction 112

Lecture 3

- Making a program 3
- Data types 19
- Type conversion 24
- Short, int, float, double, long 32
- Strong typing and dynamic typing 38
- Overloading 45
- GENERICS 50
- Boxing 91
- Searching Collections of Objects 100
- List ADT 101
- Java Collections Framework 124
- GENERICS 138
- Linked Lists 142
- List Iterator 145
- Tree set or Hashset 150
- Set 154
- queue 155
- Maps 160

Lecture 4

- Lambda Expressions 62
- Functional Interfaces 69
- Java Code Annotations 78
- Annotations 79
 - Metadata 82
 - Making Annotations 85
- Reflection 92
 - Class objects 96
 - Uses of Reflection #1: Getting Class Names 97
 - Uses of Reflection #2: Locating Files used by Your Program 98
 - Uses of Reflection #3: Reading Annotations 102
 - Uses of Reflection #4: Dynamically loading a class 108
- HashMap Example 112
 - Maps 113
 - Properties 114
- Example: Writing Generic Classes 123

Lecture 5

- Hill Climbing 7
- Magic Square 46
- Streams 104
- Anonymous Classes for Event Handlers 117
- Anonymous Classes 120
- Event Handlers 123
- Lambda Expressions 125
- Graphical User Interfaces I 128
 - Event Driven Programming 137
 - Containers 151
 - Boxes 155
 - Grids 156
 - Callback 159
 - Predefined Events 160
- Graphical user Interfaces II First Application 162
 - Life of a javafx application 166

Lecture 6

- Junit 3
- Test Driven Development (TDD) 6
- Graphical user Interfaces II First Application 71
 - Life of a javafx application 75
- Graphical User Interface IV Group Layouts 93
 - In JavaFX Panes are used for Laying Out Containers 94
 - 总图 98
 - Panes 102

- Graphical User Interface V Various Widgets 115
 - Buttons 115
 - Radio Buttons 119
 - Radio Button Widgets 123
 - CheckBox 124
 - TabPane 127
 - Padding and Spacing 131
 - 总图 135
 - Shapes 138
 - Event Listeners 152
 - Events and Change Listeners 158

Lecture 7

- Displaying Data 67
- Principles for Data Presentation 74
- BarChart 95
- Graphics 99
- CLICKABLE 117

Lecture 8 and 9

Software developing in organizations Ways for achieving data persistence between different runs of your

program Serialization to Databases

- Multimedia 15
- Style Sheets 25
- Persistence and Memory 42
- Files and their Use 57
- Files and Streams 81
 - Streams 82
- Object Serialization 98

The way of using byte streams to save objects
- Character Streams 109
- Persistence and Databases 128
 - Parameter files 138
 - Saving Properties 143
 - DBMS – DataBase Management System 149
- Relational Databases 160
- JDBC 189

Week 10

Working with databases

- JDBC 22
- Java/JDBC Example 38
- Working with DB Systems 44

Relational Databases

 - SQL Injection 53

- Transactions and Batching 57
- JPA to Object 58
 - Relational Mapping
- ORM with Hibernate 71
- Multiple Processes 91
 - Intro to networking
 - Java Threads 104
 - Thread Safety 132
 - Deadlocks 133
- Client Server Intro 145
 - Socket 159
 - Network Programming 162
 - TCPConnector Class 177
 - HTTPConnector 182
- Designing a Client Server 188
 - Application: Server
 - Film Server Example 197
- Designing a Client Server 200
 - Application: Client
 - Basic Film Client Example 202
 - Client Design 207
- Software System Design: 210
 - Modular Systems
- Software System Design: 219
 - Patterns

Lecture 11

Multi Tasking

- The Thread Class 5
- Synchronized 18
- Work Safety 33
- Network Programming 47
- Class Socket 48
- TCPConnector 83
- HTTPConnector 85
- Designing a Client Server 91
 - Application: Server
- Designing a Client Server 103
 - Application: Client
- Software System Design: 113
 - Modular Systems
- Software System Design: 122

Patterns

- Software Development 136

Process

- Software Build Tools 156

Maven

- Source Control Systems 160

git

- Testing 166
 - Junit 174
- Deployment 181
 - Deployment: Jar Files 184

Lecture 13

- Software System Design: Patterns 3
 - MVC 18
- Software Development Process 21
- Software Organization 24
 - Javac 28
 - Packages 30
- Software Build Tools 34
 - ApacheAnt
- Software Build Tools 41
 - Maven
- Source Control Systems git 45
- Installing a library for Optimization using Evolutionary Computation 51
- Testing 74
- Deployment 89
 - Deployment: Jar Files 92
- Regex 98
 - Regular Expressions 103
 - Regex Example: matching an IP address 118
 - Wild-Card Characters 128 通配符和字符
 - Regular Expression Quick Guide 135
 - Matching with Finite Automata 148
 - Symbol 167
 - Some basic regular expression examples 171
- Advanced RegEx 176
 - Basic quantifiers
- Regular Expressions with Java 187
 - Case Study 204

Lecture 14

Regex Review

- Testing 3
- Deployment 22
- Regex 31
- Regex Example: matching an IP address 51
- Regular Expression Quick Guide 58
- Wild-Card Characters 62
- Fine-Tuning Your Match 63
- Matching and Extracting Data 65
- Transition function 70
- Transition Tables 73
- Bank Automata 76
- Matching with Finite Automata 81
- The pre-process to build the Finite Automaton 86
- symbol 100
- Some basic regular expression examples 104
- Advanced RegEx 109
- Basic quantifiers 111
- example using quantifiers
- Regular Expressions with Java 120
- Convert Regex to Predicate 136