

CSIT-890 – Object-Oriented Programming in Java

Topics for Review in preparation for the Final Exam

Textbook Chapters

Chapters 8, 9, 10, 11, 16

A Second Look at Classes and Objects (Chapter 8)

Static Class Members

Instance Fields and Instance Methods vs. Static Fields and Static Methods

Passing Objects as Arguments to Methods

Returning Objects from Methods

The toString() Method

Writing a custom equals() Method

Copying Objects, Copy Constructors

Aggregation

The this Reference Variable (Using this to overcome shadowing, Using this to Call an Overloaded Constructor from Another Constructor)

Enumerated Types (enum)

Garbage Collection (System.gc())

The finalize() Method

Text Processing and Wrapper Classes (Chapter 9)

Wrapper Classes, Autoboxing and Unboxing

Character and String Methods, Conversion Methods

Searching and Extracting Substrings

The StringBuilder Class

Tokens and Tokenization, StringTokenizer Class

Conversion and Parsing Methods

StringBuilder Class

Working with Binary, Hexadecimal, and Octal Representation of Numbers

MIN_VALUE and MAX_VALUE Constants

Object Oriented Programming – Inheritance and Polymorphism (Chapter 10 – Inheritance)

Inheritance

Keywords **super** and **this**

Inheritance and constructors

Method overloading and overriding

Protected members

Object Class

Polymorphism

Abstract classes and abstract methods

Interfaces

Default Methods

Exception Handling (Chapter 11 – Exceptions and Advanced File I/O)

Exceptions, Java exception hierarchy, Throwable, Exception, and Error classes

- Checked vs. runtime exceptions
- Two ways of dealing with exceptions (catch or declare)
- Try–catch–finally statement
- Re–throwing exceptions
- Runtime execution stack, unwinding stack, printing stack trace
- Chained exceptions
- Declaring new exception classes

File I/O (Chapter 11 – Exceptions and Advanced File I/O)

- Text and binary files
- Files and streams, stream sources (files, pipes, network connections)
- Stream types: byte and character streams
- Reader/Writer and Input/Output streams
- Random access files
- Object serialization and deserialization
- Java.io package, class hierarchy
- File wrapping
- Buffering
- Reading and saving program properties

Recursion (Chapter 16 – Recursion)

- How to solve problems with recursion
- Two rules for writing recursive algorithms
- Recursive array sorting and array searching methods
- Towers of Hanoi problem
- Runtime execution stack during recursion
- StackOverflowError