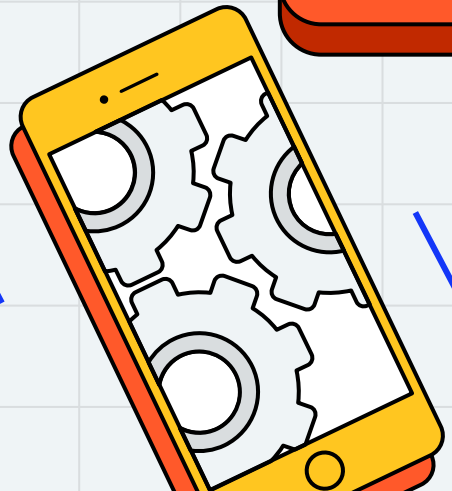
Application Programming



Hend Alkittawi

Final Exam Review

You've Got This! ☺️

IMPORTANT MIDTERM MATERIAL

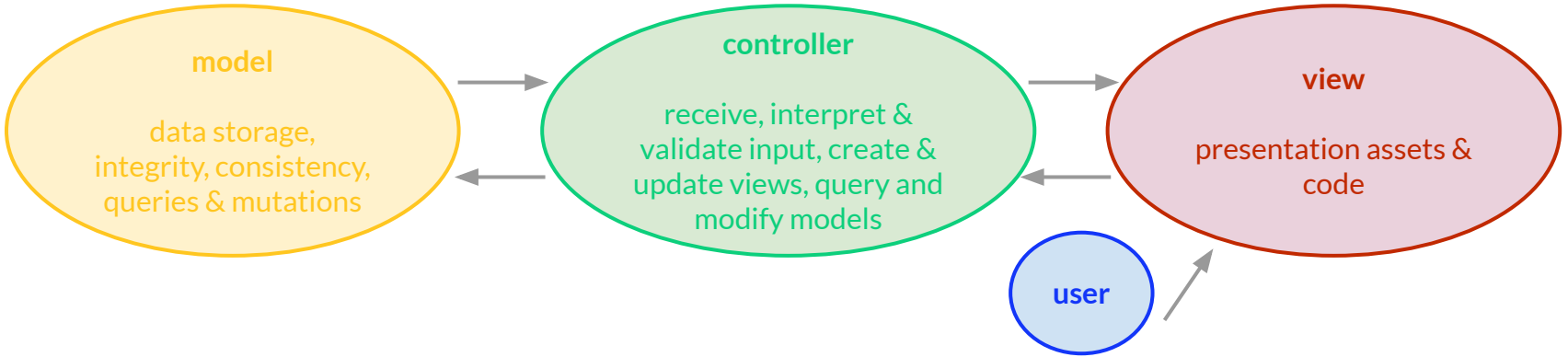
- Understand Java fundamentals
  - Classes and Objects
  - Variables and Methods [getters, setters, toString, equals, object methods/variables, static methods/variables]
  - Class Relationships
  - Arrays, and ArrayLists
  - File I/O
  - UML diagrams
    - Code to diagram
    - Diagram to code

SOLID PRINCIPLES

- Be familiar with the SOLID Principles
  - The Single Responsibility Principle (SRP)
  - The Open Closed Principle (OCP)
  - The Liskov Substitution Principle (LSP)
  - The Interface Segregation Principle (ISP)
  - The Dependency Inversion Principle (DIP)
- Understand why it is important to consider these principles
  - Rigidity
  - Immobility
  - Fragility
  - Viscosity

MVC

- Be familiar with the “design architecture” concept
- Understand what the MVC design architecture is
- Be able to create an Android project that follows the MVC design architecture



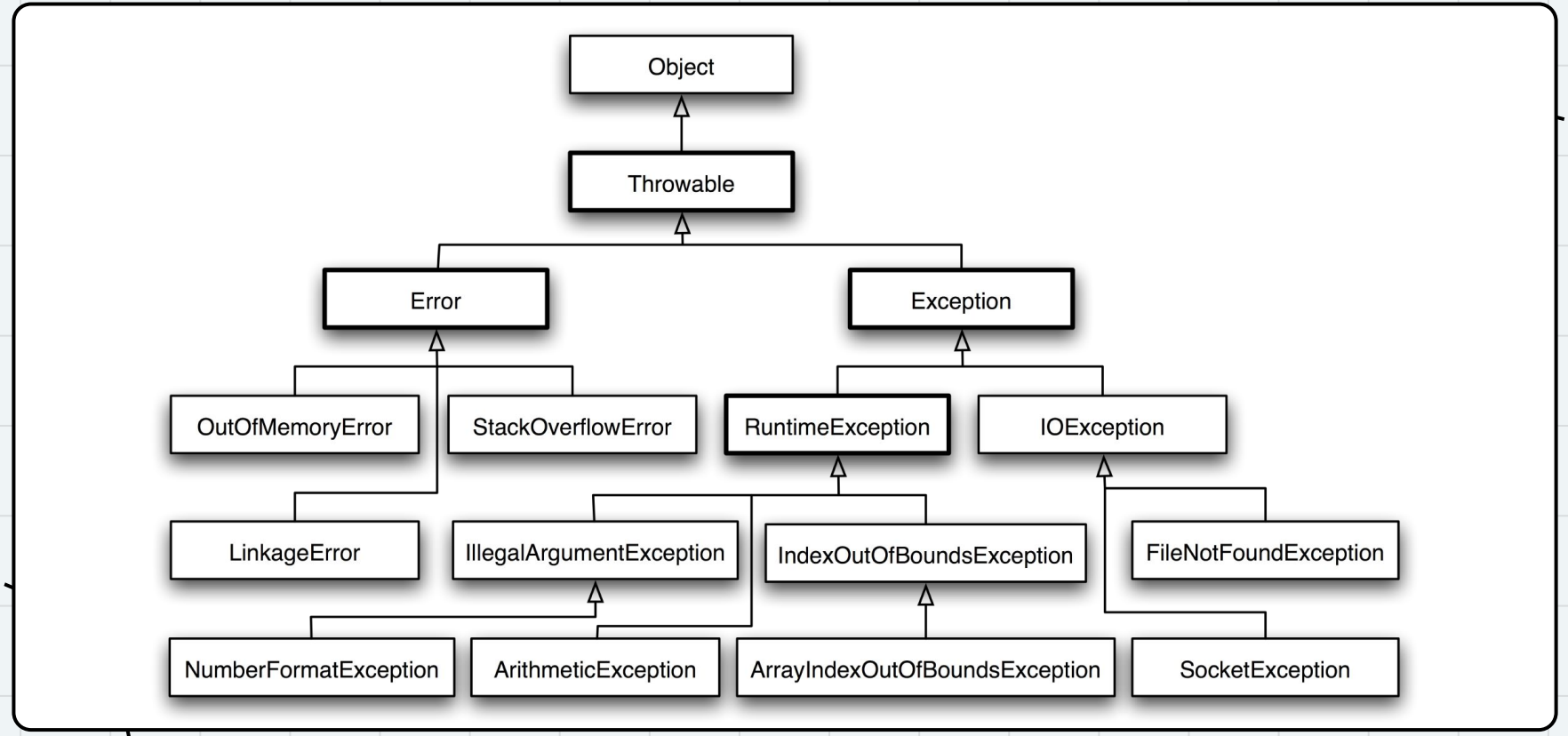
ANDROID BASICS

- Be able to design a simple multi-screen, data-driven Android application and provide the UML diagram for it.
- Be able to create a layout XML file with basic views (Buttons, TextViews, ImageViews, …)
- Be able to create an Activity class as a controller class in an Android app (listen to the user interactions, and manage the flow of app data)
- Understand how to utilize Java and Android APIs to perform I/O operations (AssetsManager, InputStream, OutputStream, …)

EXCEPTIONS

- Understand the difference between Java Exceptions and Java Errors
- Understand the difference between checked and unchecked exceptions
- Be familiar with Java exceptions (NullPointerException, IOException, …)
- Understand the difference between throwing an exception and handling it
- Understand what the call stack is

EXCEPTIONS


Object
Throwable
Error
Exception
OutOfMemoryError
StackOverflowError
RuntimeException
IOException
LinkageError
IllegalArgumentException
IndexOutOfBoundsException
FileNotFoundException
NumberFormatException
ArithmeticException
ArrayIndexOutOfBoundsException
SocketException

GENERICS AND COLLECTIONS

- Understand the advantages of using generics in Java programs.
- Be able to create classes and methods that utilize generic types.
- Understand the difference between the List, Map, and Set Java collections.
- Be able to use Java collections as part of a Java program.
- Be able to utilize the following interfaces in a Java application: Iterator, Iterable, Comparable, Comparator

LAMBDA EXPRESSIONS

- Understand what a functional interface is
- Understand what a lambda expression is
- Be able to trace code that uses lambda expressions
- Be able to write code that uses lambda expressions
- Be able to use Java's functional interfaces in a Java application

THREADS

- Understand the difference between a process and a thread.
- Be able to trace code that involves threads in Java.
- Be able to create threads in Java by extending the Thread class.
- Be able to create threads in Java by implementing the Runnable interface.
- Understand the importance of thread synchronization in Java applications.
- Understand the difference between the main thread (UI thread) and other threads in an Android application.
- Understand the importance of utilizing threads in an Android application (preventing ANR).

UNIT TESTING

- Be familiar with unit testing and the JUnit framework.
- Be able to create basic test cases

VERSION CONTROL

- Understand Git/Github terminology and workflow (local/remote repo, stage, commit, push, pull)

DO YOU HAVE ANY QUESTIONS?

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By Appointment

Online