| Week # | Meeting | Date | Lab Topic(s) | Lecture Topic(s) | Assigned Reading<br>*To be completed PRIOR to lab or lecture* | Lab<br>Key Concepts (KCs) | Lecture<br>Key Concepts (KCs) |
|---|---|---|---|---|---|---|---|
| 1 | Lecture 1 | Thursday September 06, 2012 | | Introductions, Course Expectations | | | |
| | Lab | Thursday September 06, 2012/ Friday September 07, 2012 | **Lab Exercise**: Introduction to the IDE, viewing the app's API, running an app | | | 2.25 | |
| 2 | Lecture 2 | Tuesday September 11, 2012 | | Topics as per assigned reading, including: Anatomy of an app; declaration, primitive vs nob-primitive types. Also, discussion of Correctness vs Usability; Basic computer architecture | Anatomy of a Program (sec 1.1) and The Declaration Statement (sec 1.2) pp. 1-24 | | 1.1-1.7 |
| | Lecture 3 | Thursday September 13, 2012 | | Topics as per assigned reading, including: The assignment statement, types and their operators, operator precedence, conversion between different representations. Also, discussion of the concept of a contract, roles and responsibilities. Basic UML | The Assignment Statement (sec 1.3, pp. 25-34); read IMD 3.2 (p. 117, try to get the gist of the idea) | | 1.7,1.8,1.9,1.10, foreshadow 2.6, 2.11, 2.23 |
| | Lab | Thursday September 13, 2012/ Friday September 14, 2012 | **Lab Exercises**: (1) Recognize and repair stylistic problems and syntactic errors (KC1.1-1.7), recompilation and reinvocation (KC2.17) [exercises will include apps that are correct, incorrect, and crashing]; (2) recognize app's specification and thus recognize semantic errors (KC 2.23); (3) recognizing and using jar files (KC2.19) | | *review Ch 1 prior to lab;* Post-Compilation Errors (sec 2.2.3, pp. 64-66); Java Standard Library (and jar files) (sec 2.2.4, pp. 66-67) | | |
| 3 | Lecture 4 | Tuesday September 18, 2012 | | Topics as per assigned reading, including: comparison of arithmetic and relational operators, use of relational expressions in if-else clauses | Relational Operators (the text of sec 3.2.4, pp. 110-111, including figure 3.10 on p. 112, but not PT 3.3 nor IMD 3.1); Selection (sec 5.1.1, pp. 173), The if Statement (sec 5.1.2 pp. 173-177); the "Relational Expression" component of sec 5.1.3 (pp.177-178, but not PT 5.3 or the remainder of section 5.1.3) | | 1.11,1.12-1.17, 3.12, start into 5.1-5.6, 5.10 |
| | Lecture 5 | Thursday September 20, 2012 | | Topics as per assigned reading, including: procedural, modular, and OO paradigms; UML, utility classes | Delegation (sec 2.1, pp. 48-58) | | 2.1-2.5, 2.6, 2.7, 2.8, 2.9 |
| | Lab | Thursday September 20, 2012/ Friday September 21, 2012 | **Labtest I**: Identify and repair various types of issues (apps will be provided that have stylistic, syntactic, and semantic problems). Arithmetic and relational expressions included. | | Application Development, Application Architecture, pp. 58-60 (intro para of sec 2.2 and sec 2.2.1) | 2.15-2.17,2.18,2.19, start into 6.16 | |
| 4 | Lecture 6 | Tuesday September 25, 2012 | | Topics as per assigned reading, including: | The Client View (sec 2.2.2, pp. 60-64), Post-Compilation Errors (sec 2.2.3, pp. 64-65), Java Standard Library (sec 2.2.4, pp. 66-68), Readymade I/O (sec 2.2.5) pp. 68-70 | | 2.10-2.13, 2.14, 2.15-2.20, start into 4.1 |
| | Lecture 7 | Thursday September 27, 2012 | | Topics as per assigned reading, including: | Software Engineering, pp. 70-81 (from start of sec 2.3 onwards) | | 2.21-2.24 |
| | Lab | Thursday September 27, 2012/ Friday September 28, 2012 | **Lab Exercises:** (1) Dialog I/O (2) more exercises to identify and repair semantic errors (run-time and logic) using analysis (look at API, stack trace) (KC2.15,2.16,2.17); (3) using Eclipse's console and examining contents of args parameter (KC2.20, 6.16 partial); (4) formatted output using printf (KC3.11) | | *Review Chapter 2 before lab*, ALSO: Dialog I/O, p. 120 (sec 3.3.3); the printf method (sec 3.2.3, pp. 108-110); 6.4.3 (the basic gist of the args[] parameter) | 2.15-2.17, 2.20, 3.11, 3.18, 6.16 | |
| 5 | Lecture 8 | Tuesday October 02, 2012 | | Topics as per assigned reading, including: fields, methods, passing by value vs passing by reference, overloading, early and late binding | Anatomy of an API (sec 3.1, pp. 97-104) | | 3.1-3.6 |
| | Lecture 9 | Thursday October 04, 2012 | | Topics as per assigned reading, including: basic design methodology, wrapper classes, validation (manual vs automatic), utility classes | Mortgage Application Example (sec 3.2, pp. 104-114). Note that pp. 108-110 was assigned earlier, but now be sure to cover PT3.3, IMD 3.1 on p.111; Assertions, (pp. 114-116); Utility Classes, General Characteristics of, (pp. 116-120) | | 3.7-3.10, 3.13, 3.14, 3.15-3.16, 3.17, 2.12-2.13 |
| | Lab | Thursday October 04, 2012/ Friday October 05, 2012 | **Lab Exercises:** (1) using eCheck to perform automatic verification; recognize situations for which manual verification is not possible or practical; (2) command line invocation cf Eclipse (revisit KC2.25); (3) recognizing tools and libraries (KC2.18) | | Command-Line Arguments (sec 6.4.3, pp 241-243, up to but not including split) | 6.16 | |
| 6 | Lecture 10 | Tuesday October 09, 2012 | | Topics as per assigned reading, including: services provided by String class, Image and Pixel classes | **Image and Pixel services (material to be posted in advance of lecture)**; the String class (sec 6.1.1 and 6.1.2, pp. 219-224) | | Image and Pixel KCs, 6.1-6.6 |
| | Lecture 11 | Thursday October 11, 2012 | | Topics as per assigned reading, including: object constructor, API view, reading and writing to a file (non-iteratively) | What is an Object (sec 4.1, p 133-136), File I/O (sec 5.3.2, pp.199-201; but not iteration over contents of file) | | 4.1-4.4, 5.20 |

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| | Lab | Thursday October 11, 2012/<br>Friday October 12, 2012 | **Labtest II:** identify and repair various types of issues (apps will be provided that have stylistic, synatatic, and semantic problems). Problems will include: construction of arithmetic expressions (concerning type promotion/demotion), incorrect use of class services (relative to their specification in the API). Apps will require command line args and/or use of eCheck (e.g., for cases when manual verification is not possible or practical). Apps will make use of dialog-based and/or console-based I/O. | | | | |
| 7 | Lecture 12 | Tuesday October 16, 2012 | | Topics as per assigned reading, including: birth, death of objects, garbage collection, object equality, obligatory methods | The Life of an Object (sec 4.2, pp. 136-148) | | 4.5-4.7, 4.8-4.10 |
| | Lecture 13 | Thursday October 18, 2012 | | Topics as per assigned reading, including: object state (accessing and mutating), design principle of attribute encapsulation, static features, final features | The Object's State (sec 4.3, pp. 149-157) | | 4.11-4.16 |
| | Lab | Thursday October 18, 2012/<br>Friday October 19, 2012 | **Lab Exercises:** (1) contruct Picture from file, modification of object using class services, constructing boolean expressions in order to implement conditional modification, contructing arithmetic expressions to implement abstracted operations (2) construct Strings that follow html formatting, display as formatted text (3) examination of class services to analysis encapsulation and object state modification (via mutators, via direct access of object attributes) | | | | |
| 8 | Lecture 14 | Tuesday October 23, 2012 | | Topics as per assigned reading, including: string accessors, tranformers, comparators, numeric-string conversion | String Handling (sec 6.2, pp. 224-229) | | 6.7-6.9 |
| | Lecture 15 | Thursday October 25, 2012 | | Topics as per assigned reading, including: boolean expressions, regular expressions, pattern matching in strings (input validation) | Boolean Conditions (sec 5.1.3, pp. 177-182), Multiway branching (sec 5.1.4, pp.182-187), Pattern Matching and Regular Expressions (sec 6.4.2, pp. 239-241) | | 5.1-5.6, 5.7-5.9, 5.10, 6.14 |
| | Lab | Thursday October 25, 2012/<br>Friday October 26, 2012 | **Labtest III:** Basic Image Processing, Formatted Text. Test will include a comprehension question about encapsulation and modification of object state (the design principle concerning the importance of using mutators instead of direct modification of object attributes) | | | | |
| 9 | Lecture 16 | Tuesday October 30, 2012<br>Thursday November 01, 2012 | | **Term Test**<br>***<no Thursday lecture this week>*** | | | |
| | | Thursday November 01, 2012/<br>Friday November 02, 2012 | ***<no labs this week>*** | | | | |
| 10 | Lecture 17 | Tuesday November 06, 2012 | | Topics as per assigned reading, including: iteration, friendly validation | Iteration (sec 5.2, pp. 187-196), Friendly Validation (sec 5.3.1, pp. 196-199) | | 5.11-5.19 |
| | Lecture 18 | Thursday November 08, 2012 | | Discussion of applications, with a focus on techniques for iteration and string processing | Applications (sec 6.3, pp. 230-236) | | 6.10, 6.11, application of KCs already covered |
| | Lab | Thursday November 08, 2012/<br>Friday November 09, 2012 | **Lab Exercises:** iterate over pixels in an image, modification of pixels through the use of class services, constructing boolean expressions in order to implement conditional modification<br>***DROP DATE IS NOV 9th*** | | | application of multiple KC's | |
| 11 | Lecture 19 | Tuesday November 13, 2012 | | Topics as per assigned reading, including: apps within a networked context, services provided by URL and URLConnection classes | **Documentation for the URL and URLConnection classes (to be posted in advance of lecture)** | | Network KCs |
| | Lecture 20 | Thursday November 15, 2012 | | Continuation of topic of apps within a networked context | | | application of KCs already covered |
| | Lab | Thursday November 15, 2012/<br>Friday November 16, 2012 | **Labtest IV:** Image Processing (app will require user input and input validation) | | | application of KCs already covered | |

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| 12 | Lecture 21 | Tuesday November 20, 2012 | | Discussion of applications (networked context, string processing, validation) | The StringBuffer class (sec 6.4.1, pp. 236-238); revisit Regular Expressions (sec 6.4.2) | | 6.12, 6.13, 6.15 |
| | Lecture 22 | Thursday November 22, 2012 | | Discussion of applications (networked context, string processing, validation) | | | application of KCs already covered |
| | Lab | Thursday November 22, 2012/ Friday November 23, 2012 | **Lab Exercise:** Using services of URL, URLConnection; fetching context from a web server, parsing strings, use of String services to construct new strings | | | application of KCs already covered | |
| 13 | Lecture 23 | Tuesday November 27, 2012 | | Reserve lecture (to cover topics that require further in-class discussion) | | | |
| | Lecture 24 | Thursday November 29, 2012 | | REVIEW SESSION | review | | review |
| | Lab | Thursday November 29, 2012/ Friday November 30, 2012 | **Labtest V:** Fetching content from a web server and processing it | | | application of multiple KC's | |
| FINAL EXAM PERIOD (Dec 5-Dec 21) | | | Final Labtest | Final Exam | | | |