

CIS265 / CIS506 – Spring 2013

01	<p>Lecture Notes (Review) Click here (pdf format) <i>EnglishDistance Class (Chapter 10)</i> Click here (pdf format) <i>Inheritance example (Person, Agent, Client) (Chapter 11)</i> Click here (pdf format) <i>Exception Management (Division by zero & NegativeRadiusException) (Chapter 13)</i> Click here (pdf format) <i>Using the Compare Interface (Chapter 14)</i> Click here (pdf format) <i>Sample of recursive algorithms (Chapter 20)</i> Click here (pdf format) <i>Using Generic Sets, Lists, and Maps (Chapter 21 & 22)</i> Click here (pdf format) <i>Using Linked-Lists (Chapter 25)</i> Click here (pdf format) <i>Binary Trees (Chapter 27)</i></p>																														
02	<p>Homework 1. – Due Jan 24th Bar code problem</p>																														
03	<p>How to submit your homework.</p> <ul style="list-style-type: none"> Copy/paste your <i>Java code</i> and <i>Console output</i> into a single MS-Word (or equivalent) file. <i>Print it and turn it in.</i> In addition email your code, follow the next three steps: <ul style="list-style-type: none"> Compress your code. It is found in the java workspace you defined in your computer, by default it is at <code>c:\Users\your_user_name\workspace</code>. Name your file as follows: <code>Hwx_FirstName_LastName.zip</code> (where x is the current homework number). Email this single file to: v.matos.cis265@gmail.com The email's subject should be the file name (<code>Hwx_FirstName_LastName</code>) 																														
	<p>Solutions Exam1 (Th. Jan 31st)</p> <table border="1"> <tr> <td>1) D</td> <td>6) C</td> <td>11) D</td> <td>16) A</td> <td>21) D</td> <td>26) B</td> </tr> <tr> <td>2) A</td> <td>7) B</td> <td>12) B</td> <td>17) C</td> <td>22) A</td> <td>27) A</td> </tr> <tr> <td>3) C</td> <td>8) D</td> <td>13) A</td> <td>18) B</td> <td>23) C</td> <td>28) D</td> </tr> <tr> <td>4) B</td> <td>9) C</td> <td>14) E</td> <td>19) B</td> <td>24) A</td> <td>29) A</td> </tr> <tr> <td>5) C</td> <td>10) D</td> <td>15) A</td> <td>20) B</td> <td>25) C</td> <td>30) D</td> </tr> </table> <p>Code for Java problems</p>	1) D	6) C	11) D	16) A	21) D	26) B	2) A	7) B	12) B	17) C	22) A	27) A	3) C	8) D	13) A	18) B	23) C	28) D	4) B	9) C	14) E	19) B	24) A	29) A	5) C	10) D	15) A	20) B	25) C	30) D
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04	<p>Homework 2. – Due Th. Feb 14th Calculate area of geometric objects stored in a list.</p>																														
05	<p>Exam 1. Includes review material from chapters 1-10, and Chap. 11 (Inheritance & Polymorphism)</p>																														
	<p>Exam 2. Thu. Feb 28th Includes Chp11, 14, 15, 20: Inheritance, Exception Handling and Text Files, Abstract Classes and Interfaces, Recursion Click here for answer's key & Java code</p>																														
05	<p>Homework 3. – Due Th. Mar 21st Sorting GeometricObjects stored in an ArrayList (Click here for a description) (Click here for a solution)</p>																														
06-08	<p>Exam 3. Tue. March 26th Includes Chp. (21)Generics, (22) Lists, Stacks, Queues, and Priority Queues. Click here for answer's key & Java code</p>																														
10	<p>Homework 4 – Due Th. Apr 11th</p> <ol style="list-style-type: none"> Using Java Collections – Make an Index for quick retrieval of Cleveland Indians Statistics (follow this link) Baseball data file in comma-separated format. (follow this link) 																														
11	<p>Homework 5 – Due Th. Apr. 18th Write an efficient implementation of the HeapSort algorithm. Follow this link for details</p>																														

12

Homework 6 Due. Th. Apr-25th

[Using a custom-made linked list to deal with key collisions in a TreeMap.](#)

14

Homework 7 [DUE on the day of final exam]

Write a Java program to create a **binary expression tree** (leaves are numbers, interior nodes are binary algebraic operators). The input to the program is an arithmetical expression (already) in postfix notation. For example: **4 8 2 / * 10 7 - +** (equivalent to **4*8/2+(10-7)**). After creating the corresponding expression tree, print it's traversal in Pre-Order, In-Order, and Post-Order. Evaluate the expression and print its final value (for this example, result should be: 19. [Click here for an output example.](#)

BU004 Lab Tutoring Schedule

CIS Tutors:

Apal Bansal, Navneet Chattha, David Freelan

Spr. 2013

Period/Time	Monday	Tuesday	Wednesday	Thursday	Friday
11:00-12:00	Navneet	Navneet	Navneet		David
12:00-1:00	Navneet	Navneet	Navneet		David
1:00-2:00	Navneet	Navneet	Navneet	David	David
2:00-3:00	David	David	Navneet	David	David
3:00-4:00	David	Apal/David	David	Apal	David
4:00-5:00		Apal		Apal	David
5:00-6:00		Apal		Apal	David
6:00-7:00	David	Apal	David	Apal	David
7:00-8:00	David	Apal	David	Apal	David
8:00-9:00					

Spr. 2013	IST Tutor: Chanary Hadley
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Period/Time	Monday	Tuesday	Wednesday	Thursday	Friday
11:00-12:00	Chanary		Chanary		Chanary
12:00-1:00	Chanary	Chanary	Chanary	Chanary	Chanary
1:00-2:00		Chanary		Chanary	
2:00-3:00					
3:00-4:00					
4:00-5:00					
5:00-6:00					
6:00-7:00					
7:00-8:00					
8:00-9:00					

Cleveland State University

CIS 265/506 Data Structures & Algorithms (4 credits) – Spring 2013

Section 1 – Class Nbrs. 2444 & 2445. Tue & Thu. 10:00 – 11:50 AM.

Section 50 – Class Nbrs. 2455 & 2456. Tue & Thu. 4:00 – 5:50 AM.

Prerequisites: CIS260/CIS500

Instructor: Dr. Victor Matos

Office Location: BU342

Phone: 216 687-3911

email: v.matos@csuohio.edu

webpage: <http://grail.cba.csuohio.edu/~matos>

Office Time: Tue & Thu 1:00-4:00PM (or by appointment)

Class Location: LB-0243 Section 1 Tue & Thu 10:00-11:50 AM
LB-0243 Section 50 Tue & Thu 4:00-5:50 PM

Catalog Description: This is a continuation of CIS 260/500. Programming and problem-solving skills are further developed by using language features to implement various data structures such as stacks, queues, linked lists, trees, and graphs. Topics include additional programming and problem-solving techniques, and sorting, searching, and hashing algorithms.

Key Concepts: An Overview of Computers and Programming Languages. Basic Elements of Java. Introduction to Objects and Input/Output Operations. Control Structures I (Selection, Repetition). Graphical User Interface (GUI) and Object-Oriented Design (OOD). User-Defined Functions. User-Defined Classes and ADT. Arrays. The Classes Vector, String, and Enumeration Type.

Expected Outcomes: At the end of this course, a student will be able to: (1) apply computational reasoning skills in solving problems, (2) understand code written by others, (3) estimate the complexity of a problem and its solutions, (4) design an write an effective computerized solution for a small problem, (5) effectively test a program to assess its correctness, (6) use recommended style and conventions when writing a program, (7) use a computer system to edit, compile, and execute a program.

Text: Introduction to Java Programming, 9th Edition. Author: Y. Daniel Liang. Publisher: Prentice Hall, 2013. ISBN: 978-0-13-293652-1

Book Resources: Many useful resources including: answers to Review Question, solution to Programming Exercises, source code for examples, Servlets, JSP, JSF, and Web Services in Chapters 39-42, links to download software, VideoNotes and Web Chapters, etc. are available at the publisher's web site: <http://www.cs.armstrong.edu/liang/intro9e/>

Grading: The course grade is based on a student's overall performance through the entire Semester. The final grade is distributed among the following components:

Laboratory Assignments	30%	(six assignments - Completion is required for obtaining a passing grade)
Weekly Examination	70%	(five exams taken on Thursdays – same value each)

A	94% +	A: Outstanding (student's performance is genuinely excellent)
A-	90% - 93%	
B+	88% - 89%	
B	82% - 87%	B: Very Good (student's performance is clearly commendable but not necessarily outstanding)
B-	80% - 82%	
C	75% - 80%	C: Good (student's performance meets every course requirement and is acceptable; not distinguished)
D	65%-75%	D: Below Average (student's performance fails to meet course objectives and standards)
F	<65%	F: Failure (student's performance is unacceptable)

Assignments: All lab assignments are due at the beginning of class on the date specified. Laboratory Assignments handed in after the class has begun will be accepted with a 50% grade penalty for a period of ONE week and then not accepted at all. All laboratory assignments must be completed. Failure to do so will lower your course grade one additional letter grade.

Student Conduct: Students are expected to do their own work. Academic misconduct, student misconduct, cheating and plagiarism will not be tolerated. Violations will be subject to disciplinary action as specified in the [CSU Student Conduct Code](#). A copy can be obtained at: <http://www.csuohio.edu/studentlife/StudentCodeOfConduct.pdf> or by contacting Valerie Hinton Hannah, Judicial Affairs Officer in the Department of Student Life (MC 106 email v.hintonhannah@csuohio.edu). For more information consult the following web page *CSU Judicial Affairs* available at <http://www.csuohio.edu/studentlife/jaffairs/faq.html>

Examination Policy: *Students are allowed to bring to the tests a summary page (standard letter size) with their own notes.* During the exams: (1) the use of books, cell phones, calculators, or any electronic devices is prohibited, and (2) students must not share any materials.

Make-Up Exam Policy: No makeup exams will be given unless notified and agreed to in advance. Requests will be considered only in case of exceptional demonstrated need.

Homework Policy: The students are expected to attend all classes. The students are responsible for collecting the notes, handouts and any other course material distributed during the class period. All assignments must be individually and independently completed and must represent the effort of the student turning in the assignment. Should two or more students turn in *substantially the same solution* or output, in the judgment of the instructor, the solution will be considered group effort. All involved in group effort homework will receive a zero grade for that assignment. A student turning in a group effort assignment more than once will automatically receive an “F” grade for the course.

Tentative Course Schedule: The schedule of topics and their order of coverage is given below. Every effort will be made to follow the schedule, but topics covered and their sequence may vary depending upon the progress made.

Week	Chapter, Topic.
1,2	Java Programming – Basic Concepts Review (Chapters 1-10) Part1 (Basic concepts) Part 2 (OOP concepts)
3	Chp.11 - Inheritance and Polymorphism Part1-Slides , Part2-Examples
3	Chp.14 – Exception Handling and Text I/O Part1-Slides , Part2-Examples
4	Chp.15 - Abstract Classes and Interfaces Part1-Slides , Part2-Example
4	Chp.20 - Recursion Part1-Slides , Part2-Example
5	Chp.21 - Generics Part1-Slides , Part2-Example
6, 7	Java Collection Framework: Chp.22 – Lists, Stacks, Queues, and Priority Queues Chp.23 – Sets and Maps Part1-Slides , Part2-Example , Part3-More Examples
8	Chp.24 – Developing Efficient Algorithms Part1-Slides
9	Chp.25 – Sorting Part1-Internal sorting , Part2-External sorting

Week	Chapter, Topic.
10, 11	Chp.26 – Implementing Lists, Stacks, Queues, and Priority Queues Part1-Slides , Part2-Example
12	Chp.27 - Binary Search Trees Chp.28 - Hashing Part1-Slides , Part2-Example
13	Chp.30 - Graphs and Applications Part1-Slides , Part2-Example
14	Chp.31 - Weighted Graphs Part1-Slides
15	Chp.32 – Multithreading Part1-Slides
TBA	Chp.12 – GUI Basics Part1 - Slides Part2 – WindowBuilder User Guide Part3 - Developing GUI Apps Using Google Web Toolkit (GWT) Part4 – Examples - Google Web Toolkit (GWT) Part5 - NetBeans – Swing GUI Builder (former Matisse)
TBA	Chp.19 – Binary I/O Part1-Slides , Part2-Example

Method of Instruction

This course will use (a) traditional lectures based on recitation of the material, (b) live presentation of the software in the classroom, and (b) directed tutorials. During those supervised tutorials students will implement small pieces of code related to the topics discussed in class. Students are encouraged to actively participate in the class discussions. *Please bring your portable computer.* Students may be asked to make a class presentation of their computer projects. Your instructor will try to reduce the amount of documents handed to you on paper; important messages, lecture notes, assignments, examples of previous coursework, code samples, etc., will be posted on the course web-page.

What is expected of you and I

1. Class participation and regular attendance is expected.
2. Students are responsible for bringing themselves up-to-date on class material and assignments.
3. All students are expected to read the assigned chapters before attending classes.
4. Exams will be a combination of material presented in lectures, covered in the textbook and additional notes, homework problems, and lab experiences.
5. Homework and lab assignments should be completed and returned in operational form.
6. If I have to cancel a class, I will try to place a message on the course web page as early as possible. I will make efforts in recuperating any lost time.
7. All grading mistakes must be corrected no later than a week after receiving your graded papers.

Official Calendar Please consult the page <http://www.csuohio.edu/enrollmentservices/registrar/calendar/index.html>

Class Meeting Time	Final Exam Day	Time
10:00a-11:50a TTh	Th, May 9	8:30a-10:30a
4:00p-5:50p TTh	T, May 7	4:00p-6:00p

Important Dates	
Academic Year Priority Online Registration Begins	March 26, 2012
Open Enrollment Begins	September 24, 2012
Term Begins (Saturday)	January 12, 2013
First Weekday Class	January 14, 2013
Last Day to Join a Course Waitlist	January 18, 2013
Last Day to Drop with Full Refund	January 18, 2013
Last Day to Add (CampusNet Registration)	January 20, 2013
Last Day to Drop	January 25, 2013
Course Withdrawal Period Begins - 'W' Grade Assigned	January 26, 2013
Last Day to Withdraw from Courses	March 29, 2013
Midterm Grades	March 4-10, 2013
Last Day of Classes	May 3, 2013
Final Exams	May 4-10, 2013
Commencement (Saturday)	May 11, 2013
Spring Incomplete Deadline	September 6, 2013
Martin Luther King Day (University Holiday)	January 21, 2013
President's Day (University Holiday)	February 18, 2013
Spring Recess	March 10-17, 2013
Classes Resume	March 18, 2013

List of Assignments: *Assignments will be announced in class and posted on the course's web-site.*

Programming Standards: Every program must include your name, CSU ID number, the words 'Homework # ...', and a brief description of the assignment. Failure to do this will impact your grade. A sample follows:

```
// Name: Maria Macarena
// CSU ID: 1234567
// CIS 265. Homework #1
// Description: Computing the average life of a light bulb
```

- Every Java variable should have a meaningful name (this includes function/procedure/method names. For instance a variable named X is less meaningful than one called *monthlyInterestRate*).
- Every portion of the program should be as cohesive (single purposed) as possible. This leads to a large number of small methods.
- Every method (including the main function) should be preceded by a brief comment indicating its arguments and a description of the transformation that it performs.
- Non-obvious code within a function should be explained.
- Code should not be over commented.

Programming Guidelines.

Your code is expected to be formatted using a professional programming style. Programming style deals with the *appearance* of your program. Good programming style and appropriate documentation reduce the chance of errors and make programs easy to read and maintain. Follow the link: <http://www.cs.armstrong.edu/liang/intro8e/supplement/Supplement1/codingguidelines.html> for a brief guideline on coding protocols. Observe that Eclipse users could format a selected piece of syntactically correct code by just pressing the key combination "ALT + SHIFT + F".

How to submit your homework.

- Copy/paste your *Java code* and *console output* into a single MS-Word (or equivalent) file. *Print it and turn it in.*
- In addition you need to email your code, follow the next three steps:
 - Compress your code. It is found in the java workspace you defined in your computer, by default it is typically at *e:\Users\your_user_name\workspace*.
 - Name your file as follows: **HWx_FirstName_LastName.zip** (where **x** is the current homework number).
 - Email this single file to: y.matos.cis265@gmail.com
The email's subject should be the file's name (**HWx_FirstName_LastName**)

ADA Adherence: If you need course adaptations or accommodations because of a disability, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible. My office location and hours are listed on top of this syllabus. If you need further information, please contact the Office of Disability Services (Main Classroom 147), phone number 216.687.2015, on the web at <http://www.csuohio.edu/offices/disability/>

Tutoring. Limited hours of tutoring are available at lab BU004. Please contact Mr. David Freelan, his email is: dfreelan@gmail.com His schedule for Spring 2012 is: Monday & Wednesday 3:00pm – 5pm, Friday: 12:30pm – 4:30pm.

Additional Resources: The following are links to pages in the Internet referencing JAVA software libraries, chat rooms, user groups, technical newsgroups, editorial houses, magazines, journals, etc.

Software:

- Java EE Downloads: <http://java.sun.com/javase/downloads/index.jsp>
- Eclipse IDE: <http://www.eclipse.org>
- NetBeans IDE: <http://www.netbeans.org>

Video Lessons

- Eclipse and Java for the Total Beginner by Mark Dexter <http://sourceforge.net/projects/eclipsetutorial/files/>
also available at <http://eclipsetutorial.sourceforge.net/totalbeginner.html>
- 'Introduction to Computer Sciences and Programming' and, 'Introduction to Algorithms'. MIT Open Courseware Project. Massachusetts Institute of Technology.
Available from: <http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/>
iTunes Podcast: <https://itunes.apple.com/us/itunes-u/lecture-3-problem-solving/id499270153?i=110101035>

Support Groups

- Java World: <http://www.javaworld.com/>
- Java Programming Resources: <http://www.apl.jhu.edu/~hall/java/>
- Java Sound Resources: <http://www.jsresources.org/links.html>
- On-Line Resources for Java Programmers: <http://java.sun.com/docs/books/tutorial/information/resources.html>
- Sun Developer's Network: <http://java.sun.com/>

Old Notes (Summer 2010)

Cleveland State University

Old Notes from Summer 2010

2	<p>Final Homework (Multiway Trees) Homework 5 (Address Sort) SOLUTION: Homework 4 (Linked Lists) Exam - 4 - See solution Interesting lecture notes on algorithms from Princeton U. at: http://code.google.com/edu/algorithms/index.html. 9 - Lecture Notes. Recursion - Efficient Sorting (Aug-4) 8 - Lecture Notes. Recursion (Aug-3) Homework 4 (Linked Lists) (Key) Exam-3 (July 27) 7 - Lecture Notes. Dynamic Linked Lists (July-29) 6 - Lecture Notes. Postfix Conversion (July-27) Homework 3 (Balanced Expressions) 5 - Lecture Notes. Array-based Stacks HomeMadeStack (July-22) 4 - Lecture Notes. Simple Sorting (July-21) (Key) Exam-2 (July 20) Homework 2(Array re-arrangement) 3 - Lecture Notes. More Arrays (July-15) Exam-1 - Key 2-Lecture Notes. Using Arrays Homework1(cryptography) 1-Lecture Notes. Java Review</p>
1	<p>HowTo: Running Java and Eclipse from your USB Flash Drive Installing Eclipse on a Mac Computer</p> <p>Eclipse and Java for the Total Beginner by Mark Dexter http://sourceforge.net/projects/eclipsetutorial/files/Eclipse%20Workbench/Version%201.0/ also available at http://sourceforge.net/projects/eclipsetutorial/files/ also available at http://eclipsetutorial.sourceforge.net/totalbeginner.html</p>