

3305 Data Structures

Introduction, Overview, Using D2L and
How This Course Is Organized

3305 Data Structures

- Instructor - Who is Sharon Perry ?
- 3305 Course Overview
- My Opinions
- Using D2L
- Communication
 - Graduate Teaching Assistants GTAs
 - Discussion Groups & Email

Sharon Perry

BBA, Transportation & Logistics – University of North Florida

MS Computer Science – Southern Polytechnic State University

Served on the SPSU Alumni Board for 12 years

25 Years of Software Development Experience

Corporations

Startups

My own companies

Course Overview - CS 3305 Data Structures

CS 3305 - Data Structures

This course introduces data structures, specification, application, and implementation. The case studies will illustrate how data structures are used in computing applications. The emphasis of the course is on linear and some nonlinear data structures and object oriented principles. Topics include: abstract data types, stacks, queues, lists, binary search trees, priority queues, recursion, algorithm efficiency, trees, heaps, hash tables, and analysis of search and sort algorithms and their performance for implementation and manipulation. The programming language to be used in this course is any standard high-level object-oriented programming language such as C++, Java, and Ada.

Prerequisites: MATH 2345 and (CSE 1322 and CSE 1322L)

Credits: 3

CS 3305 Overview

- Set up your environment – IDE and compiler
 - Eclipse, jGrasp etc – you may use any IDE you like but try different IDEs over time
- Assignments
 - Follow instructions for solving the problem and submitting deliverables
 - That's the reason I ask for pseudo code / steps to solving the problem
 - You are creating a checklist to use to review your assignment before you submit it
- Quizzes
 - Always Open Book And You Have 3 Hours For Every Quiz
 - Open on Wednesdays and Close Sunday night – take it when you want to
 - USE THE BOOK, study it to answer the questions – they all came from the book
- Tests
 - Not open book, not lock down browser, you may use your IDE
 - Open on Wednesdays and Close Sunday night – take it when you want to
- Email - PLEASE only use D2L Email ! More on this later

Course Overview - JAVA

Computer science is about solving problems, like doing math

Best way to learn math ? PRACTICE PRACTICE PRACTICE

JAVA is a programming LANGUAGE

What do languages have ? Syntax and grammar

JAVA has syntax and grammar

Best way to learn a language ? PRACTICE PRACTICE PRACTICE

GOAL: You must learn to read, write and speak JAVA

Course Overview - Data Structures

Data structures are a way of organizing data

Data structures are used to search, sort and store data

Data structures have different efficiency measurements under different circumstances – here comes some math !

Efficiency is described using Big O Notation

Best way to learn math ? PRACTICE PRACTICE PRACTICE !!!

ARE YOU GOING TO PRACTICE ???

ARE YOU GOING TO PRACTICE ???

ARE YOU GOING TO PRACTICE ???

ARE YOU GOING TO PRACTICE ???

ARE YOU GOING TO PRACTICE ???

ARE YOU GOING TO PRACTICE ???

ARE YOU GOING TO PRACTICE ???

ARE YOU GOING TO PRACTICE ???

Hopefully you said “YES!”

The Practice Available In 3305

Warm Up Quizzes – one every day for the first week – open book

Programming Practice Exercise Quizzes

Assignments – Graded by Grad Teaching Assistants (GTA) – use them !

LeetCode – this site rocks !

The Practice Available In 3305

You will notice **Warm Up Quizzes** – one every day for the first week

Warm Up Quizzes cover the first 10 chapters of the Liang Java textbook

All of the questions are from the textbook, use the book during Quizzes

I do the Warm Up Quizzes because....

THIS COURSE STARTS ON **CHAPTER 18** WITH RECURSION !

The Practice Available In 3305

Programming Practice Exercises - small value programming exercises

I do not “grade” them - get full credit if you submit solution before the deadline

Late submissions do not receive credit

After you submit the programming exercise quiz, the solution is available in D2L – that’s why I do this as a quiz

My solution is different than your solution

There are hundreds of solutions for every programming question, right ?!?

Look at how you solved the problem

Look at how I solved the problem

Use the discussion boards to see if others have posted solutions or comments

The Practice Available In 3305

Assignments

Graded by Graduate Teaching Assistants (GTA) – use them !

Their office hours are available in D2L Content -> GTA Office Hours

They are familiar with the assignments

The Practice Available In 3305

LeetCode – this site rocks !

You can sign up for an account – IDK how that works

You don't need an account to practice, just go here

<https://leetcode.com/playground/new/empty> Click Problems in top nav

<https://leetcode.com/problemset/all/> Click/Sort on “Difficulty” level to bring up list of Easy

My Humble Opinions – Level of Ability



PERSPIRATION and INSPIRATION

Everyone has a certain level of ability for everything: sports, drawing, cooking, etc. I can barely draw a circle. I call that ability, your Inspiration level.

My Humble Opinions – Level of Ability



PERSPIRATION and INSPIRATION

So if you think that you are low on inspiration for Java, the solution is to add more PERSPIRATION !
That means spend more time trying to understand the material.

Everyone is different. You have to do the amount of work that makes you confident you are learning JAVA. Read text more. Do more practice problems. Does that make sense ?

Opinions - Software Development Life Cycle

There are jobs for EVERYONE in our field ! The key is to understand your strengths and what you like to do. Regardless of your major, play to your strengths.

Note, it doesn't matter what a "job title" is, it matters what the "job description" says. I have seen SW Eng jobs with job description that says "writing code" and I have seen Developer jobs with job description that says "writing requirements." Figure out what you want to do.

IT



^^

SW Eng
Document

^^

Graphics
Database
Architect

^^

CS
Code

^^

Various
Disciplines

^^

Opinions - Another Thing

I know you just want to start writing code, but....

Learn to think through the problem and outline the steps to solve it

What if I gave you this problem...

ASSIGNMENT

Write a program that prints a triangle pattern of stars.

But first, write out the steps needed to solve this problem.

Write a program that prints a triangle pattern of stars.

The steps to solve the problem look like this...

Use variable *i* to set and manipulate the number of rows and variable *j* to set and manipulate the number of columns.

Create two loops using *i* and *j*. The first loop, is the outer loop and controls the number of rows. The second loop is the inner loop and controls the number of columns.

After each iteration of the inner loop, print a * and the output will be to print a triangle pattern of stars.

Then print a blank line to start a new row.

The steps refined...

1. write program to print a pattern of stars
2. use i for rows and j for columns
3. row is the number of rows you want to print
4. outer loop for rows
5. inner loop for columns
6. print stars
7. add a new line after each line print

```
// i for rows and j for columns  
// row is the number of rows you want to print
```

```
// outer loop for rows
```

```
// inner loop for columns
```

```
// prints stars
```

```
// start a new line after printing each line
```

```
public class RightTrianglePattern {  
    public static void main(String args[]) {  
        // i for rows and j for columns  
        // row is the number of rows you want to print  
        int i, j, row=6;  
  
        // outer loop for rows  
        for(i=0; i<row; i++) {  
  
            // inner loop for columns  
            for(j=0; j<=i; j++) {  
  
                // prints stars  
                System.out.print("* ");  
            }  
            // start a new line after printing each line  
            System.out.println();  
        }  
    }  
}
```

Now.... Run this code.

Warning – copying and pasting from power point may add unwanted characters/errors

What does the code print ?

Do you follow the evolution of the problem statement, to the pseudo code, that turns into comments... ??

and those comments become an outline for your program... ?

This approach make you a better Programmer !

```
public class RightTrianglePattern {  
    public static void main(String args[]) {  
        // i for rows and j for columns  
        // row is the number of rows you want to  
        print  
        int i, j, row=6;  
  
        // outer loop for rows  
        for(i=0; i<row; i++) {  
  
            // inner loop for columns  
            for(j=0; j<=i; j++) {  
  
                // prints stars  
                System.out.print("* ");  
            }  
            // start a new line after printing each line  
            System.out.println();  
        }  
    }  
}
```



```

public class RightTrianglePattern {
    public static void main(String args[]) {
        // i for rows and j for columns
        // row is the number of rows you want to print
        int i, j, row=6;

        // outer loop for rows
        for(i=0; i<row; i++) {

            // inner loop for columns
            for(j=0; j<=i; j++) {

                // prints stars
                System.out.print("* ");
            }
            // start a new line after printing each line
            System.out.println();
        }
    }
}

```

```

public class RightTrianglePattern {    public static
void main(String args[]) { int i, j, row=6;
    for(i=0; i<row; i++) {    for(j=0; j<=i; j++) {
        System.out.print("* ");    } System.out.println();
    } } }

```

REVIEW these two panels of code.

NOTICE they are the exact same code.

BOTH examples of code will run and produce the same output.

Which panel of code would you rather work with ? Hopefully you said the code with the nice formatting !

Using D2L

All lectures, slides, videos, assignments, discussions and tests are in D2L

All current due dates for all materials are in D2L – Check dates often !!

I am not responsible for dates that do not appear in the “Calendar”

All communication with instructor, is in D2L

- Discussions

- Email

Contact GTAs with questions via their office hours – posted in Content

Using D2L

All lecture and instructional material is in Content
Content is organized by Chapter / Topic

Each Chapter has
 Lecture Videos
 Lecture Slides
 Specific Topic Discussions

Use General Discussion for questions not topic related

We have Graduate Teaching Assistants (GTAs) to answer questions and help with assignments – you may contact any of the GTAs during their office hours

Using D2L

All communication with instructor, is in D2L

Discussions

- please post questions for a specific topic in the Discussion for that topic
- allows everyone to see the questions AND answers

Email

- Please use ONLY the email in D2L – do not use outlook
 - Use a “meaningful subject” for example, “3305 My Test 1 Score”
 - Check your email settings to
 - include original message
 - beware forwarding to your name@students.kenensaw.edu
- YOU CANNOT EMAIL ME IN D2L FROM YOUR outlook account

Using D2L Email

Our course is built in D2L

I prefer that you email me in D2L with meaningful subject

- please do not use the “default” subject

There are some other strange things about D2L email

Notice the “domain name” for D2L: it does not interact with Outlook !

The next few slides point out some email settings that will make our communication more meaningful and timely

Using D2L Email – Notice Domain

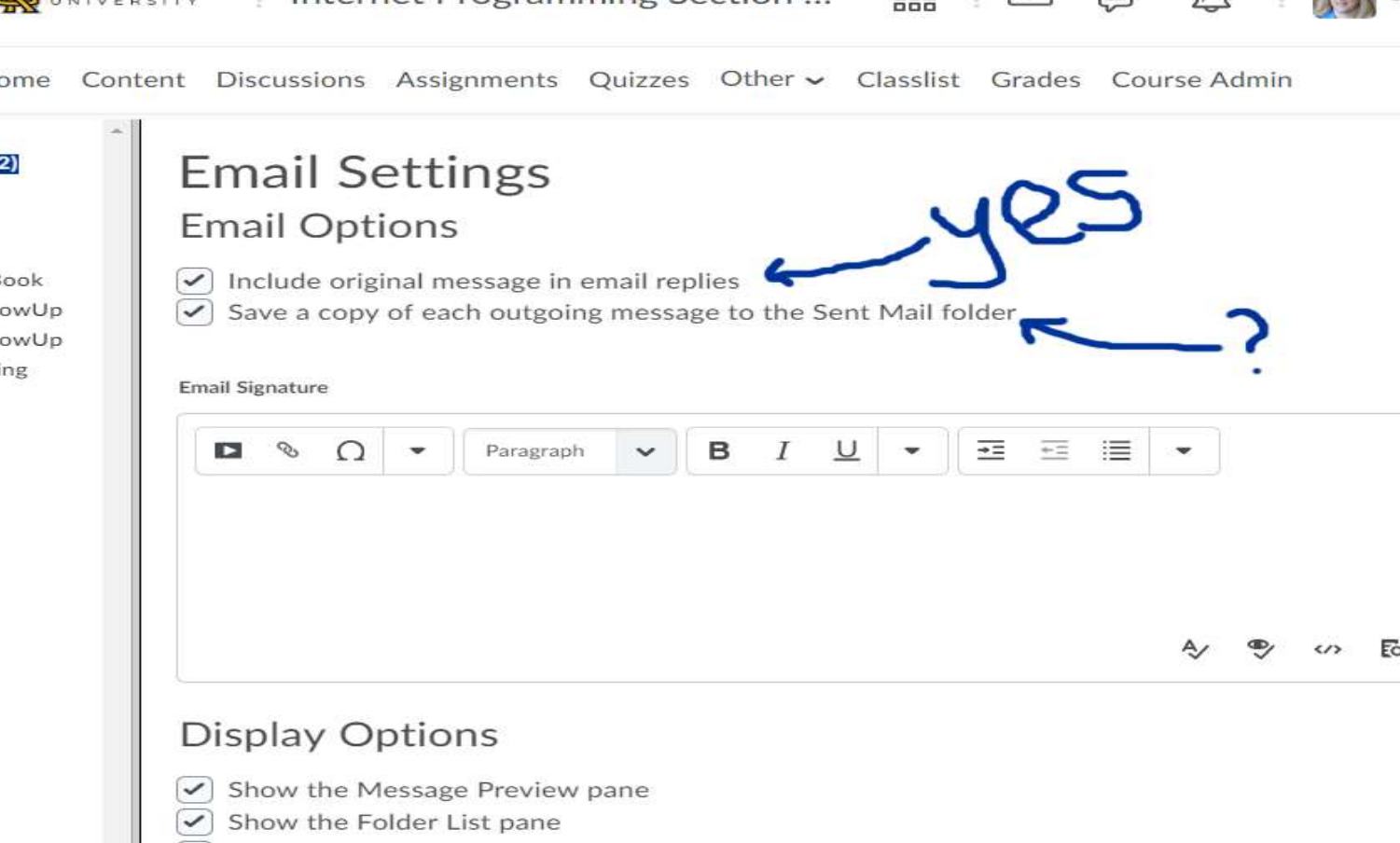
The screenshot shows a web browser window with the URL <https://kennesaw.view.usg.edu/d2l/lms/email/frame.d2l?ou=1865948>. The page header includes the Kennesaw State University logo and the text "Internet Programming Section ...". Below the header is a navigation bar with links: Course Home, Content, Discussions, Assignments, Quizzes, Other, Classlist, Grades, and Course Admin. On the left is a "Folder List" with items: Inbox (282), Sent Mail, Drafts (3), Trash (6), Address Book, 1301-FollowUp, 5423-FollowUp, and 2019-Spring. The main area displays a table of emails with columns for checkboxes, Subject, icons, From, and Date. The first email in the list is selected, and its details are shown at the bottom.

<input type="checkbox"/>	Subject	Icons	From	Date
<input type="checkbox"/>	Question about course offering "...	[Icon]	abir" abir...	Jul 28, 2019 5:00 PM
<input type="checkbox"/>	RE: iOS Development Fall 2019	[Icon]		Jul 25, 2019 10:14 AM
<input type="checkbox"/>	iOS Development Fall 2019	[Icon]		May 19, 2019 11:30 AM
<input type="checkbox"/>	Course Confirmation	[Icon]		May 13, 2019 4:28 PM

Details of the selected email:

From: abir2@kennesaw.view.usg.edu>
To: sperry46@kennesaw.view.usg.edu
Received: Jul 28, 2019 5:00 PM

Using D2L Email – Adjust Your Settings



Course Home Content Discussions Assignments Quizzes Other ▾ Classlist Grades Course Admin

Folder List

- Inbox (282)
- Sent Mail
- Drafts (3)
- Trash (6)
- Address Book
- 1301-FollowUp
- 5423-FollowUp
- 2019-Spring

Email Settings

Email Options

- ☒ Include original message in email replies
- ☒ Save a copy of each outgoing message to the Sent Mail folder

Email Signature

Paragraph B I U

Display Options

- ☒ Show the Message Preview pane
- ☒ Show the Folder List pane
- ☒ Mark messages as read when viewed in the Message Preview pane
- ☒ Show internal email addresses in the Address Book
- ☒ Allow filtering messages and contacts on group enrollment

Using D2L Email – Adjust Your Settings

IF YOU CHECK “FORWARD INCOMING MESSAGES” to your name@students.kennesaw.edu account

THEN you cannot reply – from your outlook account - to an email you received/forwarded from D2L

https://kennesaw.view.usg.edu/d2l/lms/email/frame.d2l?ou=1865948

KENNESAW STATE UNIVERSITY Internet Programming Section ... Sharon Perry

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Folder List

- Inbox (282)
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Paragraph

Display Options

- ☒ Show the Message Preview pane
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- ☒ Show internal email addresses in the Address Book
- ☒ Allow filtering messages and contacts on group enrollment

Forwarding Options

- ☐ Forward incoming messages to an alternate email account

Email Address

sperry46@kennesaw.edu

No

Couple More Things

Jdoodle.com - online compiler – pick a language

tutorialspoint.com/compile_java_online.php

Learn to use the Debugger in your IDE

Don't waste your time Googling assignments and chasing YT videos

Everything you need is in the textbook (available in D2L by Syllabus)

Moving Forward

This Teams meeting is recorded and each of you are members

This Teams meeting is available and can be viewed at any time

We will do other Teams meetings the same way

Teams has “closed captioning” for students who want that

GO

I look forward to working with you this semester

Get busy and start practicing !