

# CSCI 132:

# Basic Data Structures and Algorithms

Syllabus and Logistics

Reese Pearsall  
Spring 2024

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- Code (a lot)
- Learn a new programming language (**Java**)



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- Learn a variety of **algorithms** for searching and sorting
- Analyze the complexity and runtime of the algorithms that we write





# Reese Pearsall (pierce-all)

Second year Instructor @MSU  
B.S & M.S @ MSU

## Interests

- Cybersecurity
- Malware analysis and detection
- Cybercrime
- Computer Science Education

## Hometown

- Billings, MT

## Teaching

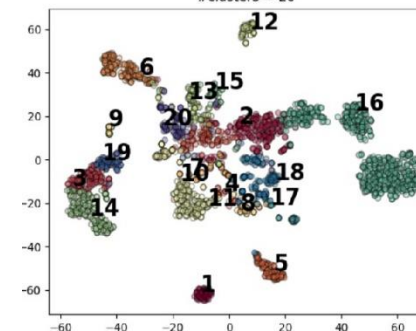
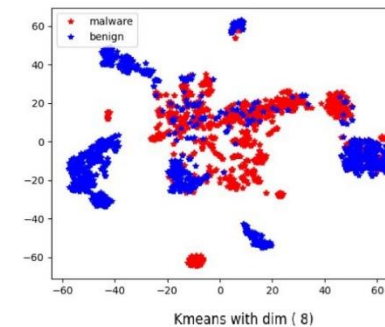
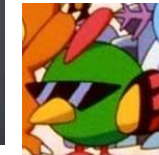
- CSCI 132
- CSCI 232

## Experience

- Software Engineer and Tester, Techlink (Bozeman)
- Software Engineer, United States Air Force (Hill AFB, Utah)
- Cybersecurity Software Engineer, Hoplite Industries (Bozeman)
- Graduate Researcher, MSU (Bozeman)

## Outside of academia

- Video games, New England Patriots, Fantasy Football, TikTok, Movies, Dr Pepper, Memes, *The Bachelor*, Naps



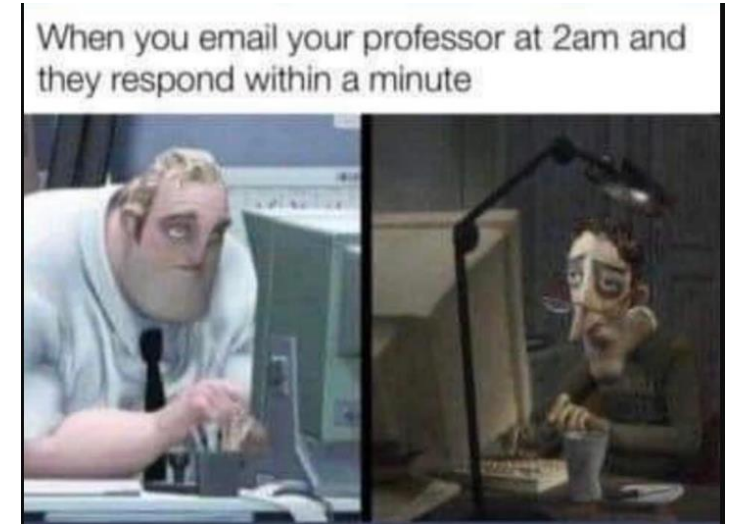
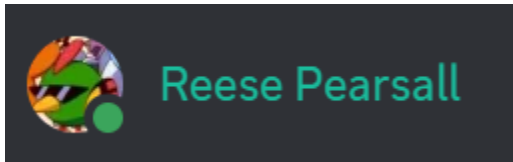
# Contact

**Email:** [reese.pearlsall@montana.edu](mailto:reese.pearlsall@montana.edu) (I will respond as soon as I can)

**Office Hours:** Monday Wednesday 1:00 – 2:00 PM  
Tuesday and Friday 12:10 – 1:00 PM

**Office:** Barnard Hall 361

I am also very  
responsive on  
Discord!  
(@reese\_p)





# Course Logistics (Lecture)

## Class Meetings

MWF: 3:10 – 4:00 PM

Norm Asbjornson Hall 165

- All lectures will be recorded and posted on the course website (coming to class is still a good idea)
- We will be doing lots of live coding during lecture, so it might be helpful if you bring your own laptop to class (if you would like to code along)
- Please be respectful and considerate of your classmates sitting around you



**when I go to uni on 2h  
of sleep and the professor  
doesn't take attendance**



# Course Logistics (Lab)

- Section 003- Tuesdays 10:00 - 11:50 AM
- Section 004- Tuesdays 12:00 - 2:00 PM
- Section 005- Tuesdays 2:10 - 4:00 PM
- Section 006- Tuesdays 4:10 - 6:00 PM

## Locations: Roberts 111




- You can go to lab and get help from your TA and lab assistants
- Lab attendance is **optional**
- Lab assignments will be posted a few days before Tuesdays and can be completed from home.
- You can attend a different lab section earlier/later in the day if you would like

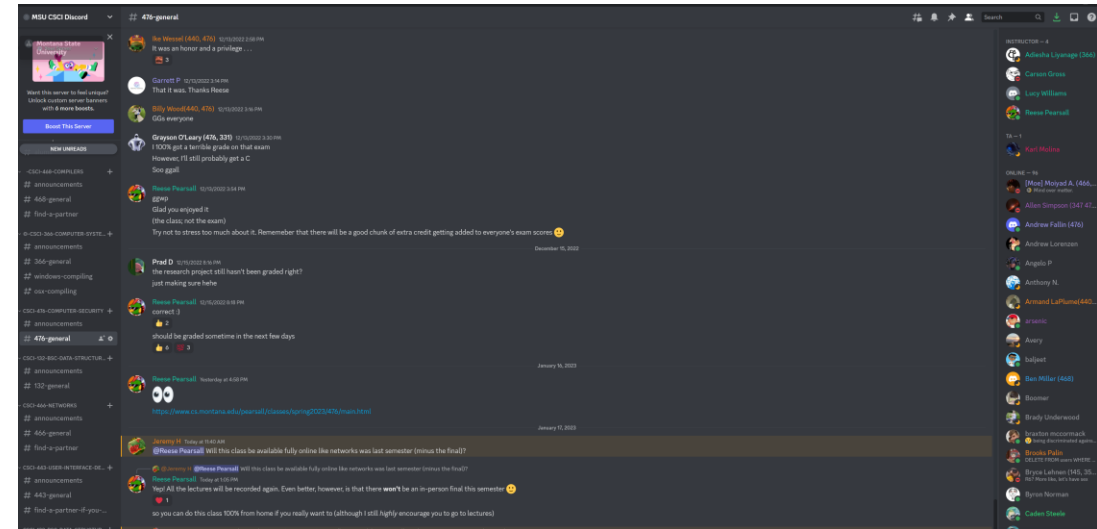
# Course Logistics

You will be visiting this website a lot... be sure to bookmark it!

<https://www.cs.montana.edu/pearsall/classes/spring2024/132/main.html>

You also will need to join our **Discord** server!

<div> <div>CSCI 132: Basic Data Structures and Algorithms</div>  </div>				
Spring 2024				
Date	Topic	Extra Notes	Class Content	Assignment
Wednesday January 17th	Syllabus	Eclipse IDE Installation Tutorial		Please fill out the Course Questionnaire!
Friday January 19th	Python to Java (variables, data types, operations)			
Monday January 22nd	Python to Java (OOP, functions/methods, if statements)			
Tuesday January 23rd	Lab 1 (Basic Java)			
Wednesday January 24th	Python to Java (loops, arrays)			
Friday January 26th	More Java			
Monday January 29th	File I/O			
Tuesday January 30th	Lab 2 (Java OOP)			
Wednesday January 31st	Program 1, Inheritance			
Friday February 2nd	Inheritance, References			
Monday February 5th	Interfaces, Polymorphism			
Tuesday February 6th	Lab 3 (Java OOP)			
Wednesday February 7th	(Rubber Duck Day) Static methods, Abstract classes, Exceptions, Debugging			
Friday February 9th	Dynamic Arrays			
Monday February 12th	Dynamic Arrays + ArrayLists			



# Course Questionnaire

Please take some time this week to fill out the course questionnaire 😊

Spring 2024- CSCI 132 Course Questionnaire

This information will help me get to know you better and your experience with various tools and topics

reesepearsall@montana.edu [Switch account](#)

Not shared

\* Indicates required question

What is your email address? (I will use this email if I need to contact you) \*

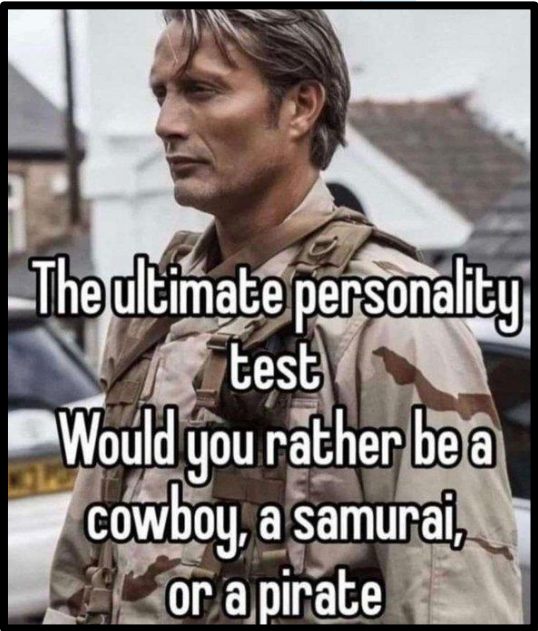
Your answer

Please tell me your FIRST name as it appears in MSU's s

Your answer

Please tell me your LAST name as it appears in MSU'S s

Your answer





# Prerequisites

- CSCI 127- Joy and Beauty of Data
- M151Q- Precalculus\*

\*(you will be fine if you have not completed M151Q)

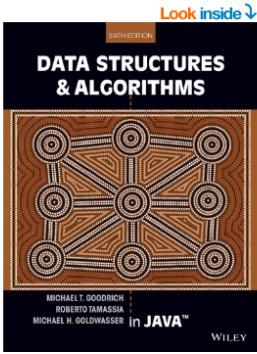
You should feel comfortable with basic programming constructs:  
(functions, variables, loops, if statements, lists, etc)

If you failed CSCI 127, you  
should **not** be here

# Textbook

## Data Structures and Algorithms in Java, 6th Edition by Goodrich, Tamassia, and Goldwasser

Kindle Store > Kindle eBooks > Computers & Technology



Follow the Author

Michael T. Goodrich

Follow

### Data Structures and Algorithms in Java, 6th Edition 6th Edition, Kindle Edition

by Michael T. Goodrich (Author), Roberto Tamassia (Author), Michael H. Goldwasser (Author) | Format: Kindle Edition  
★★★★☆ 115 ratings

See all formats and editions

eTextbook	Paperback
\$21.00 - \$60.00	\$78.73 - \$169.84
Read with Our Free App	7 Used from \$151.05 11 New from \$159.00 2 Rentals from \$78.73

The design and analysis of efficient data structures has long been a core part of computer science curriculum. Goodrich and Tamassia's approach to this classic topic is a natural choice for the design of data structures. For each ADT presented in the book, the authors provide a concrete data structure realizing the ADT as a Java class. The design of the fundamental data structures in this book is organized in a single Java library of data structures and algorithms in Java specifically designed to support the Java Collections Framework.

ISBN-13	Edition	Sticky notes
978-1118771334	# 6th	Not Enabled

☐ Buy \$60.00

☒ Rent \$24.51

Today through selected date:



It's in the MSU bookstore



@bejewelledbud

Can you guys please recommend books that made you cry?



Frease  
@FreaseDaddy



### Data Structures and Algorithms in Java (2nd Edition) 2nd Edition

by Robert Lafore (Author)  
★★★★☆ 114 customer reviews



Kindle	Hardcover	Paperback	Other
\$29.80	\$33.89 - \$45.04	\$23.39 - \$27.18	See all 6 versions
<input type="radio"/> Buy used			
<input checked="" type="radio"/> Buy new			
In Stock			

unfortunately, a very relatable meme

This textbook is **not** required (but it does have tons of great stuff!!)

# Grading

- 30% - Labs (12 @ ~3% each)
- 40% - Programs (5 @ 8% each)
- 15% - Midterm
- 15% - Final Exam

# Grading

## Labs (30%)

- Shorter, weekly assignments.
- Can generally be finished within 1-2.5 hours
- Due on Tuesday nights @ 11:59 PM
- I will post the labs a few days ahead of time
- You should be able to finish within your 2hr lab time
- I will drop your lowest lab grade at the end of the semester
- Individual submissions



# Grading

## Programs (40%)

- Longer, more complicated programming assignments
- Will likely take 2+ hours to complete
- You will always have 2-3 weeks to complete them
- Much higher stakes, make sure you give yourself plenty of time to complete them
- You can get help from your TA during lab time, or office hours, or from Reese, or on Discord
- You are allowed to work with 1 partner

# Grading

Exams (Midterm and Final) (30%)

Midterm: Wednesday March 6th

Final: Wednesday May 8th

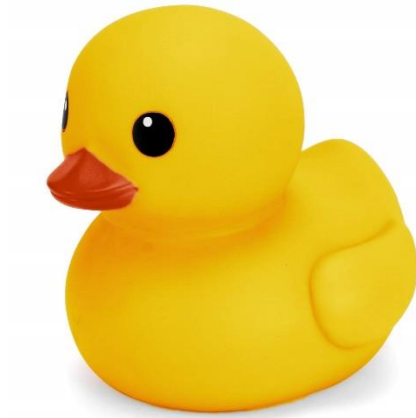
- Exams consist of short answer, multiple choice, true/false, and some small coding problems
- You are allowed to use your laptop and any notes

# Grading

## Extra Credit

### Rubber Duck Extra Credit (1%)

- I will give you a rubber duck to take care of during the semester
- If you still have the rubber duck by the end of the semester, and if it is still alive, I will give you extra credit



# Late assignment policy

- If you submit late, but you are within < 24 of the original deadline, you will face a -25% penalty
- If you submit late, but you are within < 48 of the original deadline, you will face a -50% penalty

Any assignment submitted 48+ hours after the deadline will **not** be accepted



# Grading Scale

- 93+: A
- 90+: A-
- 87+: B+
- 83+: B
- 80+: B-
- 77+: C+
- 73+: C
- 70+: C-
- 67+: D+
- 63+: D
- 60: D-

At the end of the semester, if you are within 1% of the next letter grade, I will bump you up

I will not curve exams or final grades unless it is needed



# IDE

You will need to download an IDE that you can write Java programs in

- Eclipse (I will use this one)
- Netbeans
- IntelliJ

I will post a video walking you through the installation process 😊



The screenshot shows the Eclipse IDE interface. The Package Explorer on the left shows a project named 'tutorial' with a source folder 'src' containing a file 'Car.java'. The main editor window displays the code for 'Car.java'. The code defines a 'Car' class with private attributes 'color' and 'wheels', a constructor, and three getter methods. The 'main' method creates a 'Car' object and prints its details.

```
1 package tutorial;
2
3 public class Car {
4
5     private String color;
6     private int wheels;
7
8
9     public Car(String color, int wheels) {
10         this.color = color;
11         this.wheels = wheels;
12     }
13
14
15     public int getWheels() {
16         return this.wheels;
17     }
18
19     public String getColor() {
20         return this.color;
21     }
22
23
24     public static void main(String[] args) {
25         // TODO Auto-generated method stub
26
27         System.out.println("Hello world!");
28
29         Car mycar = new Car("red",4);
30         System.out.println(mycar.getColor());
31         System.out.println(mycar.getWheels());
32
33     }
34 }
35
36
37
```

The Outline view on the right shows the class structure: 'tutorial' package containing 'Car' class, which has attributes 'color : String' and 'wheels : int', and methods 'Car(String, int)', 'getWheels() : int', 'getColor() : String', and 'main(String[]) : void'.

## Plagiarism and cheating is very not cool

You are **not** allowed to submit something that is not your own, and you are **not** allowed to steal solutions from another person and modify it

I have a Chegg and Course Hero membership. **Don't try it**

Do not use any tools or AI that will write code for you

Using small snippets of code from the internet is acceptable (*but should not be needed*). If you do use a small snippet of code from the internet, you should leave a reference as a comment in your code

# Collaboration Policy

All labs will be individual submissions.  
For programs, you are allowed to work with **one** partner.

When it comes to labs, you *may*

- Share ideas with other students in the class.
- Work together on labs in the same physical location.
- Help other students troubleshoot problems.
- Give hints or provide textbook page numbers/slide numbers to students seeking help

You may *NOT*

- Share your code and solutions directly with other students.
- Submit solutions that you did not write.
- Modify another student's solution and claim it as your own.
- Share your report or solutions directly on Discord



# Additional MSU Resources:

[https://www.cs.montana.edu/pearsall/classes/msu\\_resources.html](https://www.cs.montana.edu/pearsall/classes/msu_resources.html)

## Diversity Statement

Montana State University's campuses are committed to providing an environment that emphasizes the dignity and worth of every member of its community and that is free from harassment and discrimination based upon race, color, religion, national origin, creed, service in the uniformed services (as defined in state and federal law), veteran's status, sex, age, political ideas, marital or family status, pregnancy, physical or mental disability, genetic information, gender identity, gender expression, or sexual orientation. Such an environment is necessary to a healthy learning, working, and living atmosphere because discrimination and harassment undermine human dignity and the positive connection among all people at our University. Acts of discrimination, harassment, sexual misconduct, dating violence, domestic violence, stalking, and retaliation will be addressed consistent with this policy.

## Inclusivity Statement

I support an inclusive learning environment where diversity and individual differences are understood, respected, appreciated, and recognized as a source of strength. We expect that students, faculty, administrators and staff at MSU will respect differences and demonstrate diligence in understanding how other peoples' perspectives, behaviors, and worldviews may be different from their own.

## Counseling

In addition to eating right, taking breaks when you need them, and getting enough sleep, you may benefit from talking to a professional counselor if you think stress could be impacting your health. Here is a blurb and some links from MSU's Counseling & Psychological Services: MSU strives to create a culture of support and recognizes that your mental health and wellness are equally as important as your physical health. We want you to know that it's OK if you experience difficulty, and there are several resources on campus to help you succeed emotionally, personally, and academically:

- Counseling & Psychological Services: [montana.edu/counseling](https://montana.edu/counseling)
- Health Advancement: [montana.edu/oha](https://montana.edu/oha)
- Insight Program (Substance Use): [montana.edu/oha/insight](https://montana.edu/oha/insight)
- Suicide Prevention: [montana.edu/suicide-prevention](https://montana.edu/suicide-prevention)
- Medical Services: [montana.edu/health/medical.html](https://montana.edu/health/medical.html)
- WellTrack: [montana.welltrack.com/register](https://montana.welltrack.com/register)

## Civil Rights

There should be no discrimination or harassment for anyone at MSU. If you notice anything that seems to violate that principle, the Office of Institutional Equity can help. As an employee of MSU, I am a mandatory reporter, which means if I learn of any discrimination or harassment at MSU, I am obligated by my contract to report it.

Hamilton Hall, Offices 114, 116, and 118

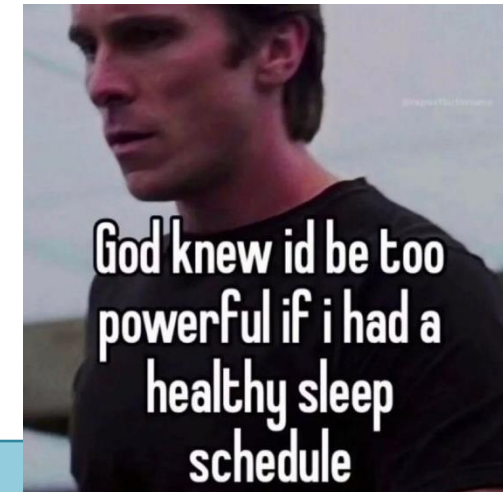
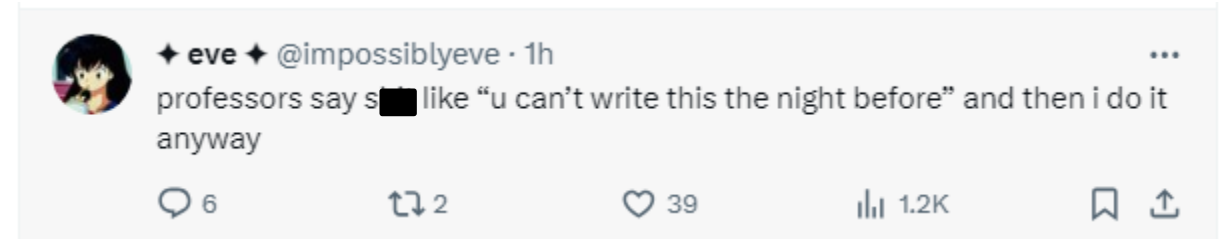


*“Not everyone can become a great artist, but a great artist can come from anywhere”*



# How to do well in this class

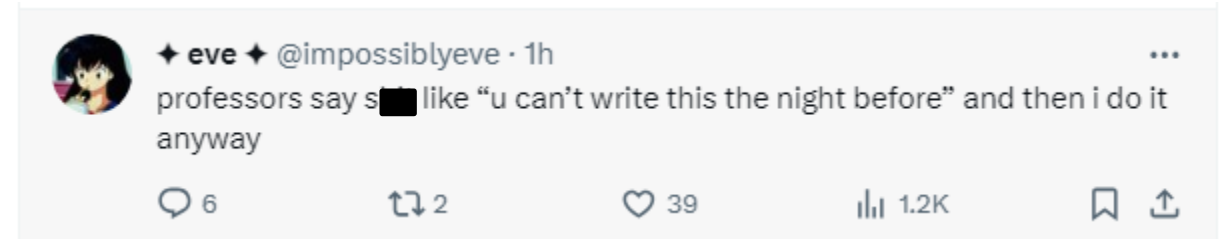
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**Get help when you need it**
- Get started on assignments early (especially programs)!
- Come to class and office hours
- Take care of yourself



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- Get started on assignments early (especially programs)!
- Come to class and office hours
- Take care of yourself
  - **Try to have fun**

**I am here for you**, and I am willing to do whatever it takes to help you succeed!



**Questions?**

