

Northern Virginia Community College
Annandale Campus
CSC 201 Computer Science I Spring 2018
002N 26386
MoWe 11:00AM- 12:50PM CT 234

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My office hours are in CM 122: Monday, Wednesday, 10:00 AM to 11:00 AM and Tuesday, Thursday 9:00 AM to 10:00AM, Tuesday 12:00 PM to 1:00 PM. Appointment hour Monday, Wednesday 9:00 AM to 10:00 AM, Monday 4:00 to 5:00, Tuesday 4:00 PM to 5:00 PM and Thursday 12:00 PM to 1:00 PM.

Textbook: JAVA an Introduction to Problem Solving & Programming eighth edition by Walter Savitch published by Prentice Hall

Grading: 2 midterm exams 100 points
 Programming projects very very important
 Final Exam Monday May 7, 10:00AM

Computer Science I is a programming course that requires a substantial amount of programming. A student who might receive 100 points on the two exams and does not do the programs will receive the letter grade D.

Project policies:

Each project will receive a maximum grade according to the following breakdown:
Program compiles
Program runs correctly
Program demonstrates proper style and documentation.

To receive an "A" in this class the student must demonstrate a complete and commanding understanding of the class material by receiving high test scores, and by turning in all of the projects.

Approximate grade distribution for 100 points

100 – 90 A

89 – 70 B

Please note that the last day to withdraw from a course without penalty is March 22. The award of W after the last day to withdraw without grade penalty REQUIRES official documentation and the Dean's signature.

Students are expected to follow Information Technology Student/Patrol Ethics Agreement as posted in computer areas and academic integrity standards as set down in the Students Handbook.

In case of emergency, please follow the emergency procedure as discussed on the first day of class and as posted in the classroom.

NOVA is a place for learning and growing. You should feel safe and comfortable anywhere on this campus. In order to meet this objective, you should: a) let your instructor, his/her supervisor, the Dean of Students or Provost know if any unsafe, unwelcome or uncomfortable situation arises that interferes with the learning process (Campus Police-703-764-5000); b) inform the instructor within the first two weeks of classes if you have received a special needs or a disability accommodation that may affect your performance in this course. The Special Needs/Disabilities Counselors are in CA 112, 703-323-3200. In case of emergency, please follow the emergency procedure as discussed on the first day of class and as posted in the classroom.

In case of inclement weather go to: <http://www.nvcc.edu/emergency/closing/index.html> Go to Blackboard for specific communication for further instruction.

Academic Dishonesty

When College officials award credit, degrees, and certificates, they must assume the absolute integrity of the work students have done; therefore, it is important that students maintain the highest standard of honor in their scholastic work. The College does not tolerate academic dishonesty. Students who are not honest in their academic work will face disciplinary action along with any grade penalty the instructor imposes. Procedures for disciplinary measures and appeals are outlined in the *Student Handbook*. In extreme cases, academic dishonesty may result in dismissal from the College. Academic dishonesty, as a general rule, involves one of the following acts:

1. Cheating on an examination or quiz, including giving, receiving, or soliciting information and the unauthorized use of notes or other materials during the examination or quiz.
2. Buying, selling, stealing, or soliciting any material purported to be the unreleased contents of a forthcoming examination, or the use of such material.
3. Substituting for another person during an examination or allowing another person to take the student's place.
4. Plagiarizing, which means taking credit for another person's work or ideas. This includes copying another person's work either word-for-word or in substance without acknowledging the source.
5. Accepting help from or giving help to another person to complete an assignment, unless the instructor has approved such collaboration in advance.
6. Knowingly furnishing false information to the College; forgery and alteration or use of College documents or instruments of identification with the intent to defraud.

Attendance/Student Participation

Education is a cooperative endeavor between the student and the instructor. Instructors plan a variety of learning activities to help their students master the course content. Students are expected to participate in these activities within the framework established in the class syllabus. Faculty will identify specific class attendance policies and other requirements of the class in the syllabus that is distributed at the beginning of each term. Successful learning requires good communication between students and instructors; therefore, in most cases, regular classroom attendance, or regular participation in the case of a nontraditional course format, is essential.

It is the student's responsibility to inform his/her instructor prior to an absence from class. Students are responsible for making up all coursework missed during an absence. In the event of unexplained absences, the instructor may withdraw a student administratively from the course.

If a student does not attend at least one class meeting or participate in an online learning class by the "last day to drop with a tuition refund" (census date), his/her class registration will be administratively deleted. This means that there will be no record of the class or any letter grade on the student's transcript. Furthermore, the student's class load will be reduced by the course credits, and this may affect his/her full-time or part-time student status. Tuition will not be refunded.

TO REPORT AN EMERGENCY OR SUSPICIOUS ACTIVITY

- NOVA Police at 703-764-5000
- Police and Fire at 9-1-1

SAFETY PREPARATION

Your ability to react effectively during an emergency takes preparation. The Office of Emergency Management and Safety wants you to be prepared to react immediately. To start, you should know the locations of: the two safest and most direct evacuation routes (see posted evacuation route signs in classrooms), the locations of designated Assembly Areas outside the facility, shelter-in-place areas for a severe weather event, and the nearest automated external defibrillators (AEDs). For additional emergency preparedness information, visit the Office of Emergency Management and Safety website at: www.nvcc.edu/emergency.

FIRE/EVACUATION

- Activate the nearest fire alarm and call 9-1-1 if possible. If there are no fire alarms nearby, knock on doors and yell "fire" as you exit the building.
- Evacuate the building. Do not use elevators!
- Feel closed doors with the back of your hand. Do not open if doors are hot.
- Move well away from the building when evacuating, and assemble at designated assembly areas.
- Do not re-enter the building until cleared by authorized personnel.

SEVERE WEATHER/SHELTER-IN-PLACE

If the area is under a Severe Weather/Tornado **WARNING**, or if notified to shelter:

- Seek shelter immediately in a Severe Weather Shelter Area or go to an interior hallway or room; at the lowest level in the building; and/or an area free of windows or glass.
- Protect your body from flying debris with any available furniture or sturdy equipment.
- Use your arms to protect your head and neck.

- Wait for the “All Clear” before leaving your shelter area.

VIOLENCE/ACTIVE SHOOTER

Determine the most reasonable way to protect your own life and call 9-1-1 or 703-764-5000 when it is safe to do so.

- **Run** and evacuate if you can. This may be your best chance of survival. Have an escape route in mind. Leave valuables behind and keep hands visible.
- **Hide** in an area outside of the shooter's view. Block entry to your hiding place and lock doors. Turn off lights and silence electronic devices.
- **Fight** as a last resort and only when your life is in imminent danger. Attempt to incapacitate the shooter. Act with physical aggression.

EMERGENCY COMMUNICATION

In the event of an emergency you may be notified by various means depending on the emergency. Some of the ways you may be notified include:

- classroom telephones,
- computer pop-ups, ➤ digital flat panels,
- NOVA Access through www.facebook.com/NOVAaccess and www.twitter.com/novaaccess), or ➤ text messaging through NOVA Alert.

NOVA Alert is a free notification service. You are automatically signed up for email alerts through your NOVA email address. To add a mobile phone number or an additional email account, you must register by going to: <https://alert.nvcc.edu>. You are strongly encouraged to add additional devices.

- NOVA may use some or all notification channels to notify you. For a complete list, visit the NOVA website at www.nvcc.edu and search for Alert Notification Systems.

Closing/Class Cancellations

If the College is closed or delayed for any reason, a text alert will be sent to cell phones registered on [NOVA Alert](#) and a notice will be posted on the home page of the College's website. In addition, a message will appear on our cable television station and on local radio and TV stations. The home page of the College's website will always have the most reliable and up-to-date information about closures or delays.

More Info: www.nvcc.edu/emergency

Week 1

review Eclipse IDE (integrated development environment)
 algorithm development
 testing and debugging
 String class
 String constants and variables
 Concatenation of strings
 Intro to classes
 String methods
 String processing
 Escape characters
 documentation and style
 if else statements
 loop

Homework for first 3 chapters.

Chapter 2 Practice problems: 2, programming projects 2, 4, 7, 8 These projects are found starting on page 130. Do not confuse them with the exercises found on page 127. (To set Font: Window, Preferences, General, Appearance, Colors and fonts, edit)

Chapter 3 practice programs 3, 4 page 193 and programming projects: 4, 5 page 195

Chapter 4 programming projects: 2, 8, 9 page 259

Examine homework

Week 2

Start chapter 5 Defining classes and methods

Class and method definitions

Class files and separate compilation

Instance variables

Using methods

Void method definitions

Methods that return a value

The this parameter

Local variables

Parameters of a Primitive Type

Information hiding and encapsulation

Information hiding

Local parameters

Pre and post condition comments

Public and private modifiers

Programming example: a Purchase class

Encapsulation

UML class diagrams

Accessor methods and mutator methods

Week 3

Objects and references

Variables of a class type and objects

Programming example: Species class from text book

Boolean valued methods

Methods calling methods

Class parameters

Encapsulation

Comparing class parameters and primitive-type parameters

Defining an equals method

UML diagrams

Week 4

Discuss self-test questions 28, and 31 in Chapter 5

Chapter 6 More about Objects and Methods

Methods calling methods

Make helping methods private

Static methods and static variables

Static methods

Static variables

The math class: examine static methods of the Math class.

Wrapper classes

Overloading

Overloading described

Example: a pet class from text

Example: a money class from text

Overloading and automatic type conversion

Week 5

Constructors

Defining constructors

Other methods can be called from a constructor

Information hiding revisited, privacy leaks

Week 6

Chapter 7 Arrays

Array basics

- Creating and accessing arrays
- Array details
- The length instance variable
- Using for loops to work through arrays
- Initializing arrays

Week 7

- Arrays in classes and methods
- Hand out information on ArrayList and “for-each” loops
 - Define ArrayList
 - Discuss how ArrayList work
 - Discuss ArrayList syntax
- Arrays in classes and methods
 - Case study: sales report from text book
 - Indexed variables as method arguments
 - Entire arrays as methods arguments
 - Arguments for the method main
 - Methods that return arrays
- Programming with arrays and classes
 - Programming example: a specialized list class
 - Searching arrays
- Sorting arrays
 - Selection sort
 - Other sorting algorithms
- Multidimensional arrays
 - Multidimensional-array basics
 - Multidimensional-array parameters and returned values
 - Implementation of multidimensional arrays

Week 8

- Start Chapter 8 Inheritance
- Examine text book example A Person Class
- Deriving a class
- Overriding Method Definitions
- Overriding compared to Overloading
- The final modifier
- Protecting private data
- Constructors in Derived classes
- The this Method
- Calling an overridden Method
- Text example: Multilevel Derived Class
- “Is a “ and “Has a” relationship

Week 9

- The class Object
- Class interfaces
 - Java Interfaces
 - Implementing an interface
 - An interface as a type
 - Abstract classes
- Discuss Interface Handout

Week 10

- Chapter 9 Exception Handling
- Philosophy of exception handling
- Defining exception classes
- Using exception classes.
- Multiple throws and catches

Week 11

- Chapter 10 Streams and File I/O
- Streams in Java
- Files for I/O

- Text files and Binary files
- Text files
 - PrintWriter class
 - BufferedReader
 - Text book example
- StringTokenizer Class
- The file Class.
- Binary files.
 - Binary I/O with of Class Objects
 - The Serializable interface

Week 12

- Graphics

Week 13

- Chapter 11 Recursion
 - Introduce recursion
 - Form of repetition
 - Method call
 - Base case
 - Factorial example
 - Summation example
 - How Recursion works
 - Stack frame
 - System stack
 - Text example: printing digits of a number
- Binary Search

Week 14

- Chapter 12 Dynamic Data Structures and Generics
 - Array-based data structures
 - The ArrayList
 - Creating an instance of ArrayList
 - Programing example: a ToDo List
 - Parameterized Classes and Generic Data Types
 - The Java collections framework
 - The collection interface
 - The class HashSet
 - The Map interface
 - The class HashMap

Week 15

- Linked data structures
 - The class LinkedList
 - Linked lists
 - Implementing the operations of a linked list
 - Inner classes
 - Iterators
 - The Java Iterator interface
 - Variations on a linked list
 - Other kinked data structures
 - Generics
 - The basics
 - Programming example: a generic linked list

Week 16

- Final Exam