

**MONTGOMERY COLLEGE: Course Syllabus**  
**Computer Science and Information & Interactive Technologies**  
**CMSC100: Fundamentals of Programming, Prof. J. Joy, Fall 2017**

**I. Contact Information:** Professor J. Joy

**Email: Janet.Joy@montgomerycollege.edu** (*This is the preferred way to contact me.*) Please include your name, course and section when you email. I usually answer my email first thing in the morning and again in the evening. (*It depends on my schedule.*) On weekends it may be less often.

**Office Hours:** Office in SC 438.  
Tuesday: 3:00pm-5:00pm in SC 438  
Thursday: 10:00am-12:00 noon in SC 438



**Online with Zoom:** Wednesday: 9:30am-10:30am and 5:00pm-6:00pm or *by appointment*

My office hours and other class materials are available at [www.zebra0.com/MC](http://www.zebra0.com/MC). Additional information about me is available at <http://www.zebra0.com/resources/jjoy.php>

Your Montgomery College e-mail account is the official means of communication for the college. Blackboard will use this email address to send reminders about overdue projects and other announcements. It is recommended that you check this account routinely. To check your e-mail, log into your MyMC online account and locate the e-mail icon in the upper right hand corner of the page. You can forward your MC email to your other email.

Announcements sent from Blackboard may have "Do not respond" as the subject. Please take a look to see if it is important!

**II. General Course Information: CMSC 100 - Fundamentals of Programming**

Designed for students with no prior programming experience, this course introduces students to fundamental structures of sequence, selection, and repetition, emphasizes solving simple problems using a flowchart. With a high-level language, students code, test, and debug short programs. Assessment levels: ENGL 101/101A, MATH 093/096, READ 120. 2 credits

**Accessibility:** This section uses Alice3 to create 3D animation. This course is not recommended for students who cannot view and create videos. The videos used in this course have closed captions or a text version is available. Montgomery College accessibility statement: <http://cms.montgomerycollege.edu/edu/Department.aspx?id=53990>

**Preparedness:** This is a fully online class. To succeed in this course you should be confident working with a computer, accessing information via the Internet, and using email as a primary means of communication. You should be comfortable with email attachments, troubleshooting an Internet connection, and downloading software. Online courses require extreme self-discipline. One must log on 3-5 times per week and be prepared to read and follow through on assignments and instructions. Students must plan to spend 4-6 hours per week preparing and submitting assignments. Initially, a great

deal of time is spent becoming familiar with Blackboard and dealing with technical problems. Technology is unreliable. The plan to submit homework at the last moment can be defeated with a busy or down server.

**III. Student Learning Outcomes:** By the end of this course you will be able to:

By the end of this course you will be able to:	You will demonstrate this objective through:
1. Define the software development life cycle.	By creating a storyboard for your final project and testing and debugging each of the programming assignments.
2. Describe the core features of programming languages: a) Variables, constants, and data types b) Flow control structures c) Arrays	Each week you will learn new features. You will test your understanding through quizzes. Then you will apply what you have learned by writing programs that use these core features and the ones you have learned previously.
3. Demonstrate the ability to design, develop, and test basic computer programs using the core programming features.	This is demonstrated in all programming projects, progressing from simple to more complex. In your final project you will apply these skills to create an animated movie with sound and other effects.
4. Decompose a software program into functional subprograms (procedures and functions).	As your programs get larger, you will use functions and procedures in order to work on one part at a time. This will make it easier to test and debug your programs.

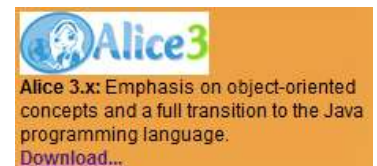
Learning to program is a cumulative skill. Each week you will learn a few new skills or tools. You will share your thoughts, and what you have created using these new skills in the discussion area in Blackboard. You will also have a chance to see what your classmates have created and get new ideas and techniques from them. You will test your understanding of the new material through quizzes. Finally, you will *apply* what you have learned by creating a program that uses the new tools, along with the skills from previous weeks to create increasingly more complex 3D animation. You will use a variety of control structures to make interesting animations. The control structures allow you to specify which actions to take, whether to perform actions at the same time or in sequence and to specify how many times an action should be performed. As your programs get larger, you will learn to break them into subparts so that you can write, test and debug one piece at a time.

**IV. Required materials:**

There is NO required text for this class. We will use online materials and tutorials that are available for **free** on the internet. Alice is available for both the Mac and Windows computers. Alice requires the Java Development kit, JDK. The easiest way to install Alice is to download and install Eclipse first. Eclipse is a Java compiler and the installation includes the JDK.

- Download and install Eclipse from <https://eclipse.org/downloads/>
- Download and install Alice 3.1 from <http://www.alice.org> Do NOT download Alice 2.x

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 Alice/Zebra0.com © 2016, Joy, J. for zebra0.com. All rights reserved.



## V. Grading

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Grades are earned, not given.

Course grades will be based upon the following:

- There is a final project for this course in lieu of exams. You will be required to complete a summary of your final project and evaluate 3 other projects by your class peers.
- There will be 10 programming assignments. All assignments must be uploaded to your course assignment page with all files needed to grade the assignment/practice activity to receive credit.
- Each week there will be a discussion question in Blackboard. You will be required to give an initial response and you must respond to at least two other students regarding their initial postings. Responses must be substantive, relevant and constructive. Responses must be at least 25 words long using standard academic English.
- There will be a quiz each week in Blackboard.
- All assignments, discussions and quizzes will be due on Sunday night, postmarked by midnight.
- I usually grade assignments within 2 days once submitted. If I ask for corrections, they must be resubmitted within 2 days.
- All assignments lose 10% each day they are late. They will receive a grade of 0 if more than 1 week late.

The relative weights of these assignments are:

10 Programming projects	@ 5%	50%
12 Weekly Discussion questions	@ 1%	12%
12 Weekly Quizzes	@ 1%	12%
Final project design		5%
Final Project		21%

A=100-90% B= 89-80% C=79-70% D=69-60% F=60%-below

This is an online course. Active participation in the online activities and completion of all homework and online assignments is required in order to pass this course.

**Due Dates:** All due dates are in Blackboard. You can check the calendar in Blackboard.

**Participation:** Students must participate in the Blackboard discussion every week. **If you miss 2 weeks in a row without contacting me, you are subject to being dropped from the class.**

**Audit Policy:** If you are auditing, you are welcome to participate in the Blackboard discussions and take all quizzes and submit programs but it is not required.

## VI Class Policies

**Important Student Information Link:** In addition to course requirements and objectives that are in this syllabus, Montgomery College has information on its web site (see link below) to assist you in having a successful experience both inside and outside of the classroom. It is important that you read and understand this information. The link below provides information and other resources to areas that pertain to the following: student behavior (student code of conduct), student e-mail, the tobacco free policy, withdraw and refund dates, disability support services, veteran services, how to access information on delayed openings and closings, how to register for the Montgomery College alert System, and finally, how closings and delays can impact your classes. If you have any questions please bring them to your professor. As rules and regulations change they will be updated and you will be able to access them through the link. If any student would like a written copy of these policies and procedures, the professor would be happy to provide them. By registering for this class and staying in this class, you are indicating that you acknowledge and accept these policies.

<http://cms.montgomerycollege.edu/mcsyllabus/>, [Additional Montgomery College policies](#)

## VII Resources

**Computer problems:** As a computer student, you are expected to anticipate potential computer problems. Save often! Keep backups! Allow plenty of time to complete the assignment! Computer problems are not an excuse for submitting an assignment late! I can provide help if you send me a clear explanation of the problem, plus any relevant source files or screen shots.

**Netiquette:** Etiquette rules for the discussion board.

The discussions are an important part of online classes. Each week you will share ideas with your classmates. You can learn a lot from your classmates and by sharing ideas. Your classmates come from many different cultures and backgrounds. You want to share ideas and tips, not offend. Please read <http://www.zebra0.com/MC/netiquette.pdf> for discussion rules.

**Technical Requirements & Technical Support:** You will need the following to participate online:

- Regular use of a computer with Internet access and a web browser such as Firefox, Chrome, or Internet Explorer. Expect to spend several hours online each week.
- A web browser such as Firefox, Chrome, or Internet Explorer.
- Speakers or headphone to listen to the videos and to play the sounds you add in Alice.
- See prepare yourself: <http://cms.montgomerycollege.edu/distance/prepare/>
- It is highly recommend that you have internet access at home, however, there are computer labs <http://cms.montgomerycollege.edu/oit/InTech.aspx?id=60795>

**For technical assistance** with college supported resources, call the Montgomery College IT Service Desk at 240-567-7222 or

[://cms.montgomerycollege.edu/EDU/Department2.aspx?id=9356](http://cms.montgomerycollege.edu/EDU/Department2.aspx?id=9356)

**Blackboard Help Desk:** The **HELP** link on the left-hand course menu links to the **MC Blackboard Online Support Center:**

- Call the Support Center at 240-567-7222 or
- Chat with a service representative, or
- Submit a ticket.

Note: Click the **My Support** link at the top of the Blackboard Online Support Center screen to view a history of your correspondence with the Blackboard Support Center.

**System Downtime:** The Office of Information Technology conducts computer network maintenance on Sunday morning from 12:01 AM to 6:00 AM each week. During this time you may be not be able to access My MC to login to Blackboard. Do not rely on this time to submit course work.

**Distance Learning Support:** For all general distance education related questions, contact the Office of Distance Education and Learning Technologies at 240-567-6000 or [dl@montgomerycollege.edu](mailto:dl@montgomerycollege.edu).

For all Blackboard and MyMC related questions and issues, contact the IT Service Desk at 240-567-7222 or [ITServiceDesk@montgomerycollege.edu](mailto:ITServiceDesk@montgomerycollege.edu) or [Blackboard Online Support Center](#).

## Class Schedule and Important Dates

In order to provide the best possible learning experiences, these dates may change. Please refer to the resources in Blackboard for any announcements or changes. August 28 is the official start date for this course. All of the learning modules are required.



### **Week 1: August 28-September 3**

#### **Introduction**

#### **Module 1: Introduction to Alice 3 +/-**

*This week you will meet your classmates and install Alice. You will learn the basics of Alice so that you can set up a scene and explore the characters and other objects that will make up your virtual worlds.*

- Orientation to Blackboard and course resources
- Introduce yourself and welcome your classmates.
- Getting started with Alice.



**Week 2: September 4-10**

[Module 2: Your First program: Hello World](#)

[Module 3: Start, Save, Reopen and modify your program](#)

*You will write your first Alice program. You will learn to reopen and modify your Alice programs.*

- Adding code
- Motion of Objects

Program 1: **Hello World** due.



**Week 3: September 11-17**

**Using the Camera**

[Module 4: Understanding the Alice Virtual World](#)

[Module 5: Setting up the Alice Virtual World](#)

*You will learn to modify scenes and add code. This is your first chance to demonstrate learning outcome #3: the ability to design, develop, and test a basic computer program.*

- Change the atmosphere, add fog.
- Change the camera

**Week 4: September 18-24 Variables and interactive movies**



[Module 6: Variables in Alice3](#)

[Module 7: User Input in Alice3](#)

*This week you will learn to use variables. You will ask the user questions and store those answer to use later.*

- Learn to use variables: **Learning outcome goal #2a**
- Ask the user questions and respond.
- Program 2: **Talk to the User** due



**Week 5: September 25-October 1: Posing Subparts**

[Module 8: Posing Objects in Alice3](#)

*This week you will learn to move and turn the characters using code. You will also learn to pose the subparts such as arms and legs or turn the head. You will do this at design time using "one shots" and by using code.*

**Learning outcome #3**

- Posing the arms, legs and other subparts using one shots and code.
- Program 3: **A Comic** due



### **Week 6: October 2-8 Boolean Expressions**

#### **Module 9: Boolean Expressions: true or false**

*This week you will learn to use Boolean expressions. Boolean expressions are either true or false. You will be able to perform tasks such as asking the user a question and tell if the answer is right. If/else is a control structure. You will also learn to use the control structures do in order, do together, and while to create animation. **Learning outcome goal #2b, #3***

- Learn to use if/else control structure: **goal #2b**
- Use counters
- Program 4: **A Guessing Game** due



### **Week 7: October 9-15 Animation**

#### **Module 10: Creating Animation in Alice3**

*If/else is a control structure. You will also learn to use the control structures do in order, do together, and while to create animation. **Learning outcome goal #2b, #3***

- Use do together control structure for more fluid movements;
- Use count and while control structures to wave, clap, shake the head and stomp the feet!

Program 5: **Animation** due



### **Week 8: October 16-22 Software Lifecycle**

#### **Module 11: The Software-Lifecycle**

*This week you will learn to design large programs using various tools. You will break the program into small manageable procedures to facilitate writing, testing and debugging the program.*

**Learning outcome goals #1, #3, #4**

- Software Lifecycle
- Learn about algorithms, flowcharts, and storyboards
- Learn to create and use truth tables.
- **Your design for Final Project is due**



### **Week 9: October 23-29: Procedures**

#### **Module 12: Procedures in Alice3: Top Down Code and Reusable Code**

*This week you will learn to write procedures for an object to perform an action. The code can then be reused many times and for many objects. This*

*will allow you to decompose a program into functional subprograms and create and test larger programs. **Learning outcome goal #4***

- Decompose a program into procedures
- Write once, use many times: Use procedures to reuse code
- Use parameters for flexibility
- Program 6: **An Exercise class** due



### **Week 10: October 30- November 5: Calculations**

#### [Module 13: Calculations](#)

*This week you will learn to use arithmetic expressions to move the characters to precise locations.*

#### **Learning outcome goal #3**

- Use arithmetic expression to calculate distance.



### **Week 11: November 6- 12: Random Numbers and Functions**

#### [Module 14: Random Numbers](#)

*This week you will learn to use random numbers for more natural movements.*

#### **Learning outcome goal #3**

- Use random numbers for more natural movement
- Program 7: **A Soccer Match** due



### **Week 12: November 13-19: Arrays**

#### [Module 15: Arrays: Working with groups of objects](#)

*This week you will learn to use arrays. An array is a variable that is a list. You can create arrays of words, numbers, or objects, then use loops to process the entire array. **Learning outcome goal #2c***

- Learn to use arrays to control a list of objects
- Program 8: **A Flock of Birds, A School of Fish** due



### **Week 13: November 20-26**

*This is a short week because of the Thanksgiving holiday. This is a good time to review what you have learned so far and get started on the final project. There's no turkey in Alice, this is a Phoenix.*





**Week 14: November 27- December 3: Advanced Techniques**  
**Module 16: Advanced Techniques: The finishing touches**

*This week you will learn several techniques that will enhance your projects and allow you to create the effects you desire.*

**Learning outcome goal #3**

- Learn to move in circles
- Use Billboards and text
- Change scenes
- Add sound
- Program 9: **A Soaring Bird, A Circling Shark** due



**Week 15: December 4-10: Event Handling**  
**Module 17: Events: Responding to the Mouse and Keyboard**

*This week you will learn to use events. Events are things that happen such as pressing a key on the keyboard, moving the mouse or clicking on an object. Handling events allows you to create games and other interactive movies. **Learning outcome goal #3***

- Make your movie interactive with events
- Control the action with the mouse and keyboard
- Program 10: **Event Handling** due



**Week 16: December 11-17: Final Projects**

*This week you will present your final project to the class. You will create an MP4 of your movie and share it in Blackboard. You will look at what your classmates have done and provide feedback.*

**Learning outcome goal #3**

- You will present your final project to the class through Blackboard
- Look at all of the final projects and give feedback to classmates.

## A Typical Week in CMSC100

An online class requires quite a bit of self motivation. Active participation in the online activities and completion of all homework and online assignments is required in order to pass this course.

Each week there is an assigned online tutorial and activities at <http://www.zebra0.com/MC>. After watching the videos and reading the online lecture, you will create one or more programs on your own computer, then add

additional features and enhancements to show your understanding of the material and to personalize the project. After finishing the project you will share your thoughts and ideas with your classmates on Blackboard.

Write your response to the discussion question early in the week so that there is time to exchange ideas and thoughts with classmates.

Each week there is a quiz in Blackboard that is due by Sunday. You can take the quiz again if you miss any questions. Obviously, if you wait until Sunday night to take the quiz, there isn't much opportunity to take it over. Take the quiz early in the week so that you can repeat it if necessary.

Check into the discussion board in Blackboard periodically to ask questions, answer questions, and respond to your classmates.

The projects and activities are due on Sunday night. Sunday marks the end of the week so that we end one week on Sunday and begin the next week on Monday. When you make out your schedule for the week, be sure to block out at least 9 hours when you can read and work on a computer!

Start on Monday by looking in Blackboard for the week's assignments and discussion questions. Keep the discussion questions in mind as you read the chapter.

You are expected to save all of your work on a Flash drive or other storage device. You are responsible for completing all of the work on time even if your computer crashes.

## Course Resources & Technologies

**Adobe Acrobat Reader, required:** Download and install from <https://get.adobe.com/reader/> Copyright © 2017 Adobe Systems Incorporated. *You probably already have this if you are reading the syllabus. No privacy policy available. Adobe acrobat is accessible with a screen reader.*

**Alice 3.1, required:** Download and install Alice 3.2 or later from <http://www.alice.org>, Alice 3.x © 2008-2017, Carnegie Mellon University. You do not need to login or register. Alice is available for PC and Mac. No privacy policy is available. Alice is a tool for creating 3D animation. There is no comparable tool for students who cannot see the animation.

**Alice Lessons at Zebra0.com, required:** Available at <http://zebra0.com/alice>  
Author: [Janet E. Joy](#); Publisher: Zebra0.com, This work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](#)  
Privacy policy: <http://www.zebra0.com/resources/privacy.php> All videos have closed captions.

**Blackboard, required:** Copyright © 1997 - 2017. Blackboard Inc. Login to Blackboard from MyMC. Privacy policy: <http://www.blackboard.com/footer/privacy-policy.aspx> Blackboard is fully accessible.

**Eclipse, optional:** Download and install from <https://eclipse.org/downloads/> Copyright © 2017 The Eclipse Foundation. *If you have a problem installing Alice with the message that you need the Java JDK, install Eclipse and then retry installing Alice.* Eclipse is accessible. Privacy police: <https://eclipse.org/legal/privacy.php>

**Screeencast-o-matic, recommended:** Download and install or run online from <https://screencast-o-matic.com/> © Screencast-O-Matic , privacy policy: <https://screencast-o-matic.com/privacy> You may use any video recording software except Flash to create the required videos for this class. Screeencast-o-matic is a tool for creating videos. It is vision dependent.

**Zoom, required:** Copyright ©2017 Zoom Video Communications, Inc.  
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*No privacy policy available.* Eclipse is accessible.