Course Overview:
AP Computer Science A deepens students' understanding of computer science through programming. Fundamental topics in this course include the design of solutions to problems, the use of data structures to organize large sets of data, the development and implementation of algorithms to process data and discover new information, the analysis of potential solutions, and the ethical and social implications of computing systems. The course emphasizes object-oriented programming and design using the Java programming language. Students are expected to take the AP Exam in May.

Units and Activities: What will we be learning about and doing in this course?

Our year will be split into these units of study:
1. Primitive Types
2. Using Objects
3. Boolean Expressions
4. Iteration
5. Writing Classes
6. Arrays
7. Arraylists
8. 2-D Arrays
9. Inheritance
10. Recursion

And here's the basic roadmap of our activities:
Standards: What knowledge and skills will I gain by the end of this course?

Anchor Standards:

- **Creating Computational Artifacts**: Students write programs that combine building blocks to implement algorithms, and judge the efficiency of different approaches to solving problems computationally.

- **Digital Citizenship**: Students work collaboratively to design and develop programs using an iterative development process. Additionally, students explore unintended effects of computing innovations, legal and ethical concerns, and the responsibilities of programmers.

Course Standards: This course builds student knowledge using the College Board’s AP CSA Conceptual Framework, which asks students to learn:

- **MOD-1**: Some objects or concepts are so frequently represented that programmers can draw upon existing code that has already been tested, enabling them to write solutions more quickly and with a greater degree of confidence.
- **MOD-2**: Programmers use code to represent a physical object or nonphysical concept, real or imagined, by defining a class based on the attributes and/or behaviors of the object or concept.
- **MOD-3**: When multiple classes contain common attributes and behaviors, programmers create a new class containing the shared attributes and behaviors forming a hierarchy. Modifications made at the highest level of the hierarchy apply to the subclasses.
- **VAR-1**: To find specific solutions to generalizable problems, programmers include variables in their code so that the same algorithm runs using different input values.
- **VAR-2**: To manage large amounts of data or complex relationships in data, programmers write code that groups the data together into a single data structure without creating individual variables for each value.
CON-1: The way variables and operators are sequenced and combined in an expression determines the computed result.
CON-2: Programmers incorporate iteration and selection into code as a way of providing instructions for the computer to process each of the many possible input values.
IOC-1: While programs are typically designed to achieve a specific purpose, they may have unintended consequences.

Assessment of Learning:
Units are organized around discrete skills. Students learn and practice the skills, then when they are ready the students demonstrate their mastery of a skill. Formative assessments track a student's progress throughout a unit.

Summative assessments are generally composed of two parts:
- Part 1 = a portfolio of the skills you mastered throughout a unit
- Part 2 = a project in which you integrate those skills or apply them in a new context

Distinguished level grades indicate that a student has consistently engaged more deeply with the skills throughout a unit, not just during the summative assessment at the end. A "Spicy 🌶 Menu" describes these opportunities for deeper engagement, and is published at the start of each unit.

For information about assessment types, scoring, and overall grade calculation: click here.

Communication:
How Do I Access Work from Home, and What Should I Expect?
- All work will be posted in Google Classroom.
- The work will be explained during our in-person meetings and/or by video posted to Google Classroom.
- The work will also be explained in our Class Planner posted to Google Classroom.
- If you have any questions, email your teacher.

How Do I Know What My Grades Are?
- On Summative Assessments, teachers will provide both a 4-point grade and a letter grade.
- You can monitor your progress in the following ways:
  - By reading feedback and scoring returned to students on summative assessments.
  - By monitoring the scores and Overall Course Mastery Grade in the Parent/Student portal on JumpRope. Reminders to check grades will be sent from the school.
Communicating with your teacher if you are unclear.

Where Can I Find This Syllabus during the School Year?
- This syllabus will be available on the school website in each subject’s department tab once the school year is up and running. It will also be available in our Google Classroom.

How Do I See What’s Due?
- Assignment and summative assessment due dates with handouts are posted in Google Classroom, with connection to Google Calendar, for student access.

How Do I See What’s Past Due?
- If a student is missing a grade on an assessment, it will be listed in the red “Missing Assessment” section of the JumpRope Parent/Student Portal along with any attachments. Please contact your teacher if you have any questions.

Materials:
You’ll need a laptop with a working internet connection. You can use a personal device or the school can issue you a device on request.

Sometimes you'll be asked to post digital photos of work you've done at home or on paper. For this you'll need access to a phone camera.

Accounts:
To support learning I may ask students to create accounts using your school email on one or more of the following educational or professional websites: github.com, khanacademy.org, glitch.me, code.org, codingbat.com, tinkercad.com, edublogs.org, editor.p5js.org, deltamath.com, runestone.academy, cs50.me, cs50.io, flipgrid.com, voicethread.com, marketwatch.com. (Still reading? Don't worry, you won't use all of those!)

Schoolwide Procedures:
Please see the Student Handbook for Procedures and Policies related to: Due dates and deadlines, extra credit, retaking assessments, and turnaround time for grade entry.

Personal Mobile Devices: This class will follow the procedures outlined in the student handbook.