***“****I’ve always objected to doing anything over again if I had already done it once.”* – Grace Hopper

*“With software, there are two possibilities: either the users control the software or the software controls the users.”* – Richard M. Stallman

# Course Description

This course provides students an introductory look into the world of computers and exposes them to big ideas in computer science. It is intended to demystify the computer and give students the confidence to look "inside" the various abstractions that give computers their power.

In the first half of the course, students will be exposed the basics of programming. The goal will be to understand the fundamentals of computational thinking and to identify opportunities to utilize automation. In the second half, they will utilize this knowledge to understand different “levels” of abstraction within the computer. This will include seeing how 1s and 0s can be used to represent all manners of data including pictures, text, and emojis. It will also include understanding how the parts of computers work together to provide a single unified experience and how networking principals give the cloud its power.

The theme of the course will be "it's not magic.” Students will learn to assess the power that abstraction provides to its users. They will also learn how abstraction can be used to take power away from users. The aim will be to instill confidence when approaching new technologies and to understand the tradeoffs inherent in the decision to utilize automation.

# Essential Questions

# Learning Objectives

## Having successfully completed this course, students…

* Demonstrate confidence as problem solvers and computational thinkers.
* Learn independence and self-sufficiency when using technology.
* Use prior knowledge to logically approach unfamiliar problems.
* Work individually beyond situations presented in class.
* Collaborate effectively with peers.
* Understand the theory behind devices they use in their everyday lives.
* Apply programming and engineering concepts to real world problems.
* Have the ability to translate ideas to a computer.
* Represent and interpret data in a meaningful way.

1. **Methods**

* Presentation of new concepts through class discussion, investigations, and one on one problem solving.
* Paired programming.
* Structured group and individual inquiry.
* Homework, including both application and reflection on processes.
* Projects that have real world examples, which allow students to self-assess.
* Projects where students can express creativity and expand upon topics that interest them.