
CS 105: Introduction to Computer Science

— Prof. Thao Nguyen —

Spring 2025

Logistics: Midterm 2

- In class on **Thursday, April 17** (1h 20min)
- You may use one letter page (front and back) “study sheet”, handwritten, created by you
- Practice midterm on April 10

Object Oriented Programming

- Programming paradigm based on the concept of *objects*
 - Objects can contain data, have actions they can perform, and interact with other objects
 - Objects of the same type share the same data format and methods
- Allows us to encapsulate common data structures and actions so we don't have to define them over and over again

Classes

- User-defined templates for creating objects
- Creating a new class creates a new *type* of object
- An object is an instance of a class

Python Class Example

```
class Student:
    def __init__(self, name, year):
        self.name = name
        self.year = year

    def is_senior(self):
        if self.year == 2025:
            return True
        return False

s = Student("Thao", 2018)
print(s.is_senior())
```

reference to the current instance of the class

attributes

Practice writing Classes

- Define `Circle` and `Rectangle` classes with the appropriate variables and methods for calculating area
- Create instances of `Circle` and `Rectangle` objects and calculate their areas