# CS 3310

## Assignment 1

## Due September 14th, 2025, at 11:59pm CT

This assignment will give you hands-on experience with different programming languages and an opportunity to compare their syntax, features, and usability.

**Instructions:**

1. Choose **3 programming languages** from the list provided below.

2. In each chosen language, write programs that accomplish the 3 tasks (listed below) given to you. **Thus, 3 tasks × 3 languages = 9 total programs.**

3. Write a **1-page, single-spaced paper (12-point font)** discussing your experience with the three languages. Some topics you could discuss are:

   - Their syntactic differences.
   - Type system.
   - How input/output was handled.
   - Your experience with string manipulation.
   - Compare array/list creation and usage.
   - Reflect on writing a recursive program in each language.
   - Explain what you particularly liked or disliked about any of the languages.
   - Anything else you feel like discussing.

4. Take a screenshot of each program you write (9 total) and place it in your paper. These screenshots do not count toward the 1-page requirement.

**Important Note:**

- You are not required to install compilers or interpreters on your computer. Here is an online editor which works for all the languages on the list. I recommend you use it for this assignment unless you really want to go through the effort of downloading the compilers/interpreters on your system.

**Languages to choose from:**

- C#
- Scala
- Dart

- Go (Golang)
- Rust
- Ruby
- PHP
- Swift
- TypeScript
- R

**The 3 Tasks:**

- **Task 1, String manipulation:** Create a program which asks the user to input their name. Take the name provided by the user and output the name reversed with the words "This name reversed is [reversed name]". For example, if the user inputs "John", your program should output "This name reversed is nhoJ".

- **Task 2, Array/List manipulation:** Create an array or list of size $n$ and fill it with any non-zero numbers you'd like. After creating the array, count how many even numbers are in the array and output the result. You do not need to get input from the user. You can hardcode $n$ to be any value you'd like, but your program should be a general solution, i.e. work for any value of $n$.

- **Task 3, Factorial calculation:** Given a number $n$ output $n$ factorial. For example, for $n = 5,\ 5! = 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 = 120$. Your program **MUST USE RECURSION** to perform this calculation. You do not need to get input from the user. You can hardcode $n$ to be any value you'd like, but your program should be a general solution, i.e. work for any value of $n$.

**Deliverables**

- A report which includes:
    - A 1-page discussion as described in point 3 of the instructions.
    - 9 code screenshots (one for each language/task combo).