

## Classroom Assignment: Factorial Calculation

### Learning Objective:

Understand and apply basic programming constructs in TypeScript to compute the factorial of a non-negative integer using iterative methods.

### Expected Completion Time:

Best Case: 15 min

Average Case: 20 min

### Assignment Details:

Create a TypeScript program that defines a function to compute the factorial of a given non-negative integer using a loop (iterative approach).

### Assignment Requirements:

1. Write a function named `factorial` that accepts an argument `n`, which is a non-negative integer, and returns its factorial.
2. Include a check to ensure that the factorial is not computed for negative numbers. If a negative number is passed, the function should throw an error.
3. Use a loop to compute the factorial. Initialize a result variable and multiply it by each integer from 2 up to `n`.
4. Include example calls to the `factorial` function with different integers to demonstrate the function's functionality. Include at least one example where an error is thrown due to a negative input.

### Expected Outcome:

Upon completion, you should be able to:

- Understand the concept of loops and conditionals in TypeScript.
- Demonstrate the calculation of factorial for various inputs, handling both valid and invalid cases.