Test Plan

Scope

This test plan covers the unit tests written for the NumberToWords converter class. The goal is to verify that the conversion algorithm handles all realistic inputs correctly, fails gracefully on invalid inputs, and covers the important edge cases.

Test Categories

- **Happy Path:** Normal valid inputs that should convert successfully
- **Edge Cases:** zero, max value, singular cent, 000 chunks, one
- **Invalid Input:** Inputs that should be invalidated with a clear error message

Tools

- **Framework:** xUnit (unit testing framework for C#)
- **CI Integration:** runs all tests automatically upon push
- **Run locally:** dotnet test from the NumbersToWords.Tests

Test Cases

Test Name	Input	Expected Output	Category	Result
Simple amount	"123.45"	ONE HUNDRED AND TWENTY THREE DOLLARS AND FORTY FIVE CENTS	**Happy Path**	**PASS**
Zero input	"0"	ZERO DOLLARS	**Edge Case**	**PASS**
Whole number	"1000"	ONE THOUSAND DOLLARS	**Happy Path**	**PASS**
Cents only	"0.50"	ZERO DOLLARS AND FIFTY CENTS	**Edge Case**	**PASS**
One cent singular	"0.01"	ZERO DOLLARS AND ONE CENT	**Edge Case**	**PASS**

Max supported value	"999999999999999"	NINE HUNDRED AND NINETY NINE TRILLION...	**Edge Case**	**PASS**
Zeros in middle	"90000009"	NINETY MILLION NINE DOLLARS	**Edge Case**	**PASS**
Empty input	""	Throws ArgumentException	**Invalid Input**	**PASS**
Whitespace input	" "	Throws ArgumentException	**Invalid Input**	**PASS**
Letters input	"abc"	Throws ArgumentException	**Invalid Input**	**PASS**
Comma input	"100,100"	Throws ArgumentException	**Invalid Input**	**PASS**
Multiple decimal points	"678.89.9"	Throws ArgumentException	**Invalid Input**	**PASS**
Negative number	"-678.89"	Throws ArgumentException	**Invalid Input**	**PASS**
Too many decimal places	"123.456"	Throws ArgumentException	**Invalid Input**	**PASS**

Summary

Total Tests: 13
Passed: 13
Failed: 0

All 13 tests pass. The CI pipeline verifies this automatically on every push to the main branch.

A bug was found and fixed during testing. A scale index issue where zero-value chunks were being skipped but the position counter wasn't being decremented, causing incorrect scale labels on subsequent chunks.

90000009 was being interpreted as NINETY MILLION AND NINE THOUSAND DOLLARS.

The tests caught this immediately and it was fixed by decrementing the scale index by 2 for 000 chunks.