Screenshots Module 6: Root Solver

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CSC505: Principles of Programming

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This document contains a screenshot of the Root Solver script user interactions and outputs

Figure 1

Project Outputs on Terminal – User Flow

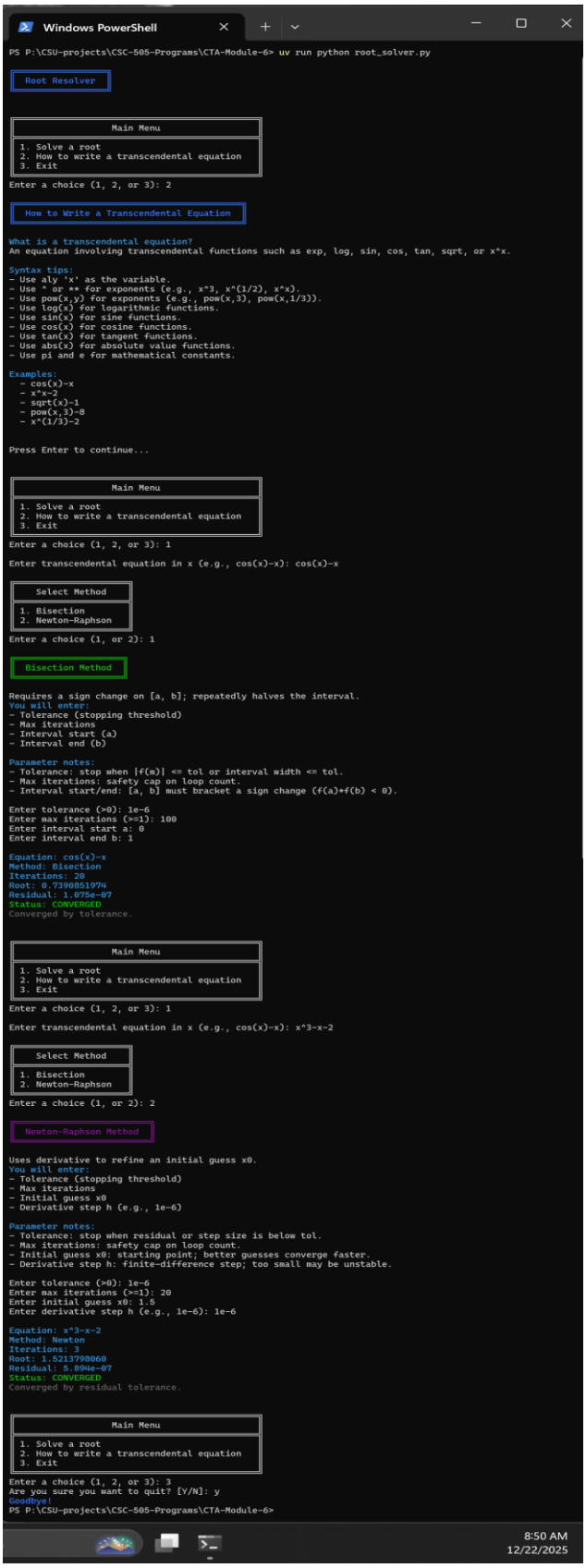

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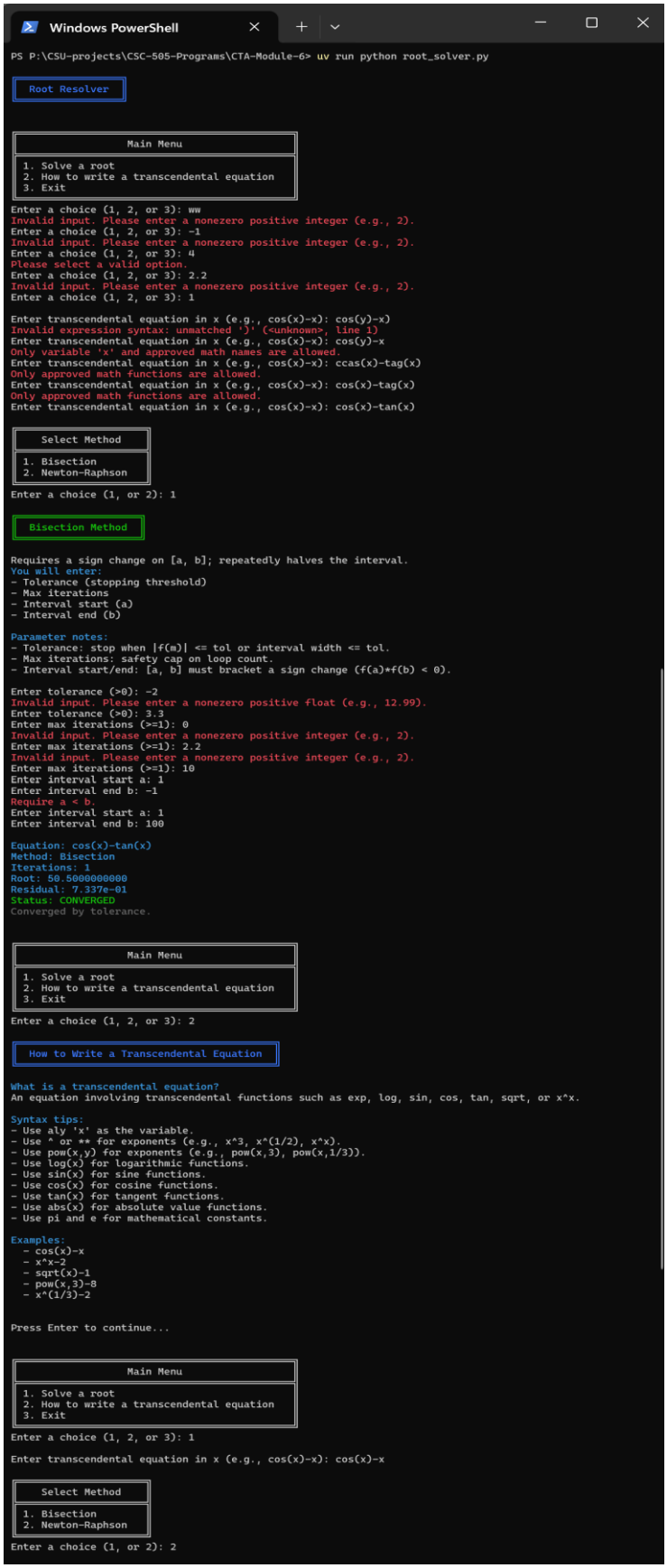
Figure 2

Project Outputs on Terminal – Input Validation



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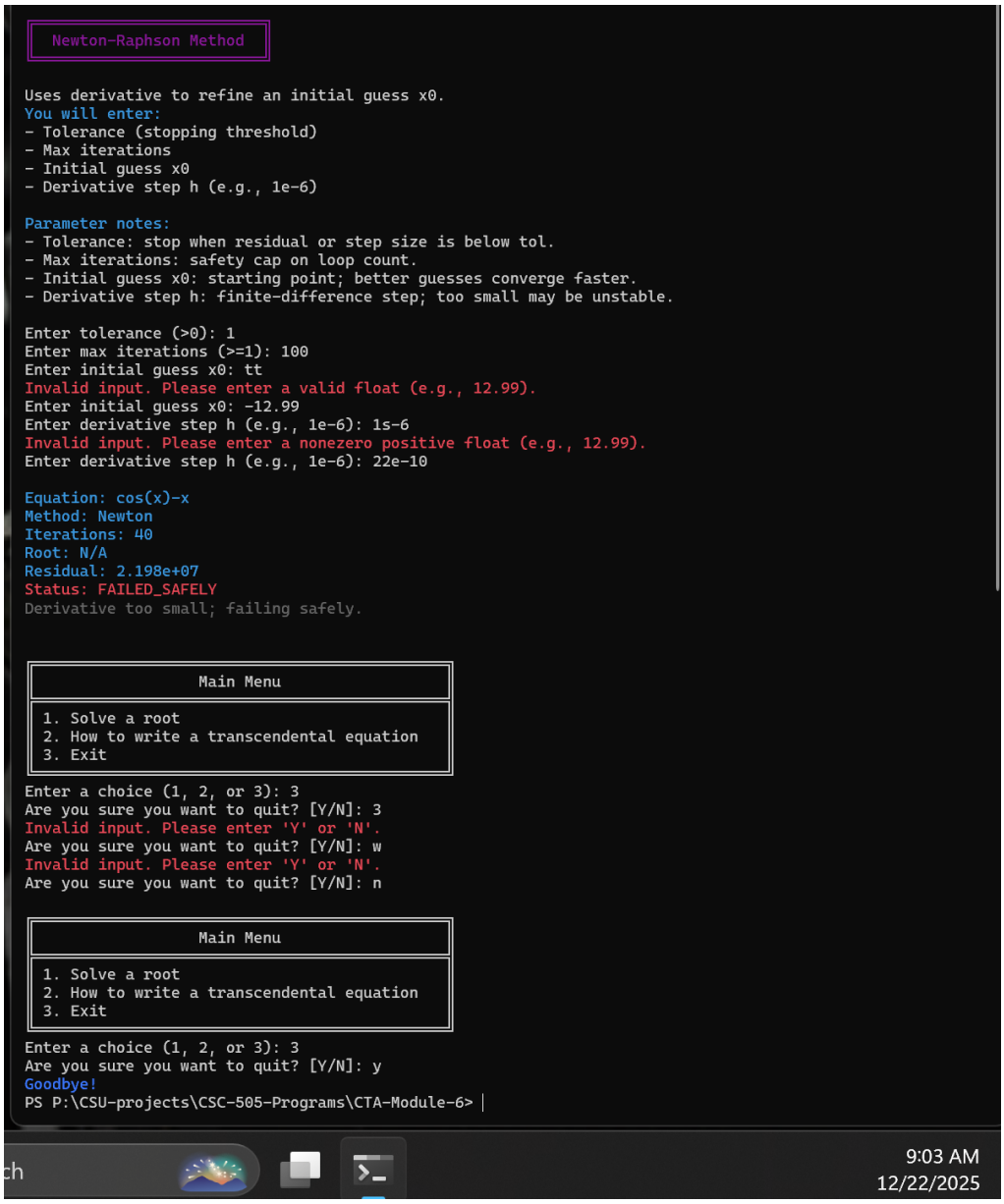
Newton-Raphson Method
Uses derivative to refine an initial guess x0.
You will enter:
- Tolerance (stopping threshold)
- Max iterations
- Initial guess x0
- Derivative step h (e.g., 1e-6)
Parameter notes:
- Tolerance: stop when residual or step size is below tol.
- Max iterations: safety cap on loop count.
- Initial guess x0: starting point; better guesses converge faster.
- Derivative step h: finite-difference step; too small may be unstable.
Enter tolerance (>0): 1
Enter max iterations (>=1): 100
Enter initial guess x0: tt
Invalid input. Please enter a valid float (e.g., 12.99).
Enter initial guess x0: -12.99
Enter derivative step h (e.g., 1e-6): 1s-6
Invalid input. Please enter a nonezero positive float (e.g., 12.99).
Enter derivative step h (e.g., 1e-6): 22e-10
Equation: cos(x)-x
Method: Newton
Iterations: 40
Root: N/A
Residual: 2.198e+07
Status: FAILED_SAFELY
Derivative too small; failing safely.
Main Menu
1. Solve a root
2. How to write a transcendental equation
3. Exit
Enter a choice (1, 2, or 3): 3
Are you sure you want to quit? [Y/N]: 3
Invalid input. Please enter 'Y' or 'N'.
Are you sure you want to quit? [Y/N]: w
Invalid input. Please enter 'Y' or 'N'.
Are you sure you want to quit? [Y/N]: n
Main Menu
1. Solve a root
2. How to write a transcendental equation
3. Exit
Enter a choice (1, 2, or 3): 3
Are you sure you want to quit? [Y/N]: y
Goodbye!
PS P:\CSU-projects\CSC-505-Programs\CTA-Module-6>
9:03 AM
12/22/2025