Jerry Olds

PROBLEM STATEMENT

This program will calculate the end time and cost of a call given the start time, duration, and the different pay rates at certain times of the day.

Output Display

N = 2	e(1) = 2	e(2) = 2.5	delta = 0.5
N = 3	e(2) = 2.5	e(3) = 2.67	delta = 0.17
N = 4	e(3) = 2.667	e(4) = 2.708	delta = 0.041
N = 5	e(4) = 2.7083	e(5) = 2.7167	delta = 0.0084
N = 6	e(5) = 2.71667	e(6) = 2.71805	delta = 0.00138
N = 7	e(6) = 2.71805	e(7) = 2.71825	delta = 0.00020
N = 8	e(7) = 2.71825	e(8) = 2.71827	delta = 0.00002
N = 9	e(8) = 2.71827	e(9) = 2.71828	delta = 0.00001
N = 10	e(9) = 2.7182815	e(10) = 2.7182818	delta = 0.0000003

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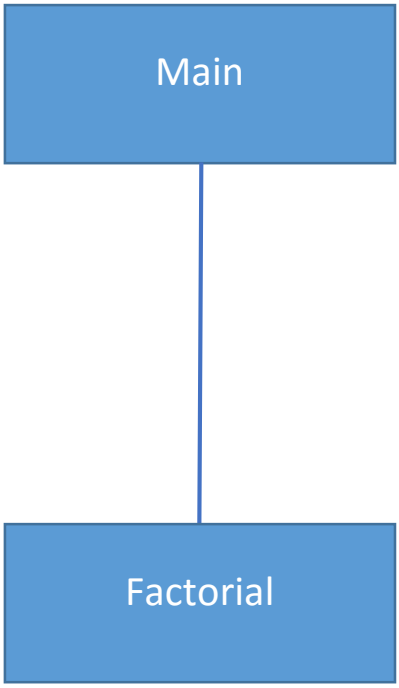
Structure Chart



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Flowchart for Main

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Pseudo Code for Main

Start of algorithm for Main

1. Define variables n = 0, old_e = 0, new_e = 1
2. While(new_e – old_e > 0.000001)
   - old_e = new_e
   - new_e = new_e + 1.0 / (factorial(n++))
   - Display output
3. Display final output

End of algorithm for Main

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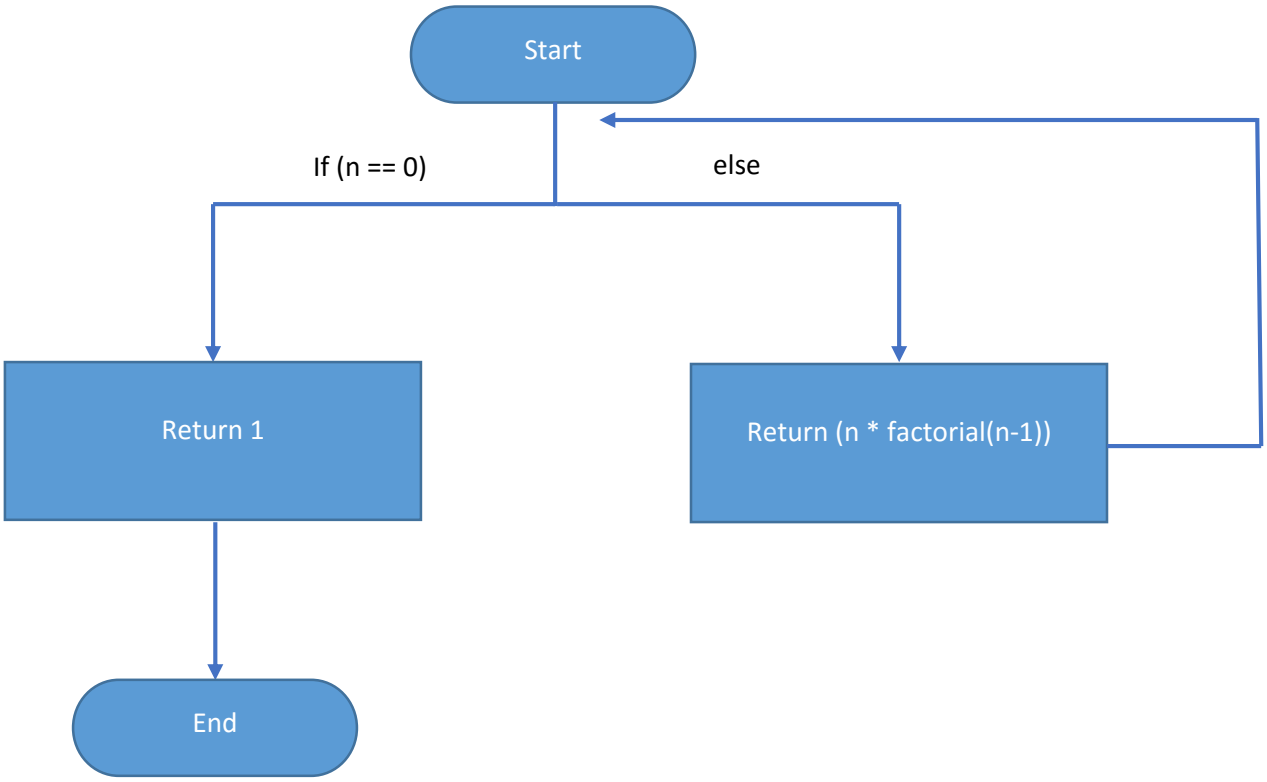
Flowchart for Factorial



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Pseudo Code for Factorial

Start of algorithm for Factorial

1. If (n == 0)
   - return 1
2. Else
   - return(n * factorial(n-1))

End of algorithm for Factorial

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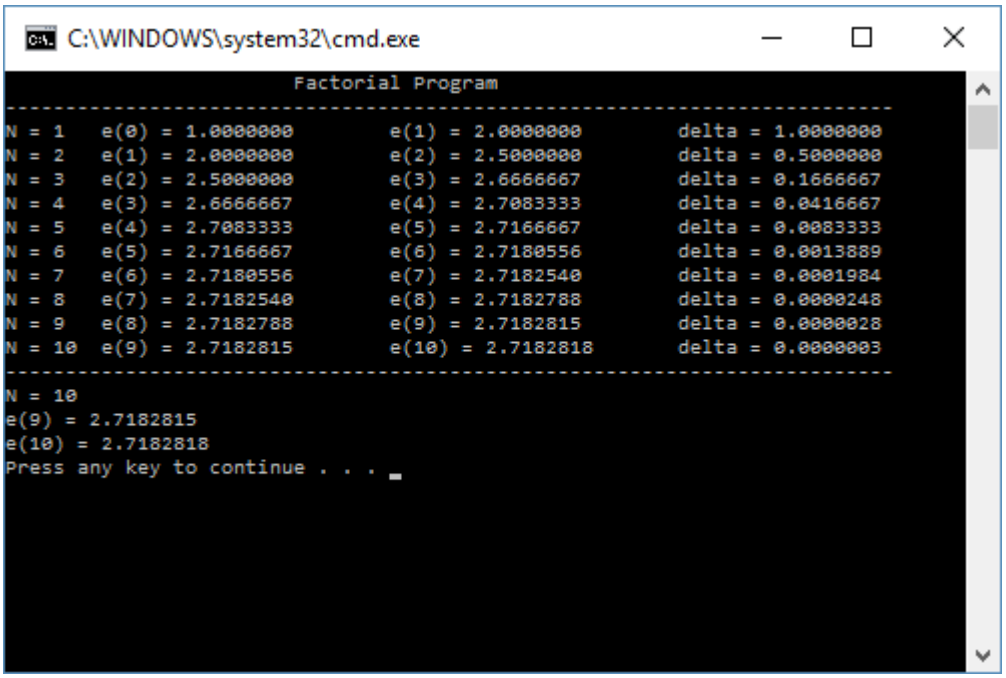
Output



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User Instructions

This program requires no input from the user. Simply run the program and it will calculate the difference between two sequential factorial numbers until the difference is less than 0.000001.

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Comment

This lab was real nice, quick and easy. It was cool to see how a recursive function works and it is interesting that a function can call itself. I’m interested in how I am going to use this new technique in the future.