

Lab 05 (Due: Monday, February 29, 2016, 11 : 59 : 00pm Central Time)

CSCE 155N

1 Lab Objectives

- Trace simple code that uses control structures: `if`, `switch`, `while`, and `for`
- Develop simple programs that use control structures and functions

2 Prior to Laboratory

- Review the laboratory handout
- Read execution controls and functions

3 Topics Covered in Lab

- Trace code that uses control structures
- Simple Applications

4 Activities/Exercises

- Trace code
- Control structures and arrays
- Functions

Practice

Trace the following code fragments *by hand*, and report the values of each variable.

```
1 v = [ 0 1 2 3 4 ];
2 for k = 1 : 5
3     switch( k - 1 )
4         case {1,3}
5             v( k ) = v( k ) + v( k + 1 );
6         case {2,4}
7             v( k ) = new + 1;
8         otherwise
9             v( k ) = k + 1;
10    end
11    new = v( k );
12 end
```

Before You Begin

- Download code from <http://cse.unl.edu/~cse155n/labs/05> to your Z:\csce155n directory

4.1 Word Find

- Modify `makeWordFind.m`, so that the function correctly returns an $n \times n$ grid of supplied capital letters.

4.1.1 Example

```
H Q G V
Z S I P
C X W V
G P A L
```

4.2 Taylor Series

- Modify `myTaylorApproximation.m`, so that the function returns the Taylor Series approximation of the value $\cos(x)$, where x is supplied in Degrees.

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$$\text{Radians} = \text{Degrees} \times \frac{\pi}{180}$$

-

$$\cos(x) = \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n)!} x^{2n}$$

, for values of x in Radians

- Calculate your approximation using the first 6 terms of the series
- Use `findFactorial` from Lab 04 in `myTaylorApproximation`.

4.3 Smallest Number That...

- Modify `ourSmallest.m`, so that the function returns the smallest value n that is even, divisible by 7, and larger than the supplied `lowerLimit` value.

5 Code Documentation

Remember to document your files in the way that we did for the previous labs. It will come in handy when you look back at code after a long time, or when someone else is trying to understand what your code does.

6 What to Submit

You will be submitting six (6) files (`makeWordFind.m`, `myTaylorApproximation.m`, `findFactorial.m`, `ourSmallest.m`, `members05lab`, and `contributions05lab.txt`).

7 Additional Resources

Online MATLAB Documentation
CSE Webhandin
CSE webgrader

8 Point Allocation

Component	Points
makeWordFind.m	20
myTaylorApproximation.m	20
findFactorial.m	20
ourSmallest.m	20
members05lab.txt	5
contributions05lab.txt	5
webgrader PDF	10
Total	100