

Instructions: Work on homework assignments to further familiarize yourself with the topics in the class. The answers are provided for these problems. You can work with other students as desired. Turn in your work on canvas to be given a grade for completion (homework will not be checked for correctness; you need to verify this yourself.)

Upload each homework assignment to its own “dropbox” on Canvas.

This document is not formatted to be written on; do your homework on a separate sheet of paper.

4.1: Introduction

Write algorithms for the following operations. It is best to test out your algorithm in an actual programming language, as a function.

1. Find the maximum number between two numbers passed in.
2. Find the minimum number between two numbers passed in.
3. Find the maximum number out of a list of numbers passed in.
4. Given two numbers x and y passed in, return -1 if $x < y$, 1 if $x > y$, and 0 if they're the same.
5. Find the sum of all numbers in a list of numbers passed in.
6. Find the absolute value of a number passed in.
7. Find the value of $n!$ (n factorial) for some value n passed in.

Answer key

1. Find the maximum number between two numbers passed in.

```
def GetMax( a, b ):
    if ( a > b ): return a
    else:        return b
```

2. Find the minimum number between two numbers passed in.

```
def GetMin( a, b ):
    if ( a < b ): return a
    else:        return b
```

3. Find the maximum number out of a list of numbers passed in.

```
def GetListMax( myList ):
    maxVal = myList[0]

    for i in range( 1, len( myList ) ):
        if myList[i] > maxVal:
            maxVal = myList[i]

    return maxVal
```

4. Given two numbers x and y passed in, return -1 if $x < y$, 1 if $x > y$, and 0 if they're the same.

```
def GetOrder( x, y ):
    if( x < y ): return -1
    elif ( x > y ): return 1
    else:        return 0
```

5. Find the sum of all numbers in a list of numbers passed in.

```
def Sum( myList ):
    sumVal = 0

    for num in myList:
        sumVal += num

    return sumVal
```

6. Find the absolute value of a number passed in.

```
def AbsVal( num ):
    if ( num < 0 ): return -num
    else:          return num
```

7. Find the value of $n!$ (n factorial) for some value n passed in.

```
def Factorial( n ):
    product = 1

    for i in range( n, 1, -1 ):
        product *= i

    return product
```

Or recursive:

```
def Factorial( n ):
    if n == 0:    return 1
    else:        return n * Factorial( n - 1 )
```