# CUNY MSDS Bridge Program-Assignment 1

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## Week 1 Homework-CUNY MSDS

### Q1. Write a loop that calculates 12-factorial

```r
getwd()
```

```
## [1] "C:/Users/Emahayz_Pro/Desktop"
```

```r
setwd("C:/Users/Emahayz_Pro/Desktop")

Calc_factorial <- function (n){
  if (n < 0) return (-1) # This will check that n is not negative
  if (n == 0) return (1) # This will reurn 1 if n is zero
  m <- 1
  # Calculating the factorial using Loop
  for(i in 1:n){
    m <-m*((1:n)[i])
    print(m)
  }

}
# For any given value such as 12 and the factorial is calculated.
Calc_factorial(12)
```

```
## [1] 1
## [1] 2
## [1] 6
## [1] 24
## [1] 120
## [1] 720
## [1] 5040
## [1] 40320
## [1] 362880
## [1] 3628800
## [1] 39916800
## [1] 479001600
```

### Q2. Show how to create a numeric vector that contains the sequence from 20 to 50 by5.

```r
Sequence_numb <- vector() #This is an  empty numeric vector
for(i in 20:50){
```

```r
  if(i %% 5 == 0)
  {
    Sequence_numb <-append(Sequence_numb, i)

  }

}
Sequence_numb #Shows sequence of numeric vector from 20 to 50

## [1] 20 25 30 35 40 45 50
```

## Q3. Create the function "factorial"that takes a trio of input numbers a, b, and c and solve the quadratic equation. The function should print as output the two solutions.

```r
Quad_factorial <- function (a, b, c){
  theta <- (b^2) - (4*a*c)
  if(theta > 0)
  {x1_positive <- (-b + sqrt(theta)) / (2*a)
  x1_negative <- (-b - sqrt(theta)) / (2*a)
  return(paste("The solution are", x1_positive, "and", x1_negative, "."))}
  else if(theta < 0)
  {return(paste("No possible solution exist for the equation"))}
  else x2_oneanswer <- (-b) / (2*a)
  return(paste("The solution is", x2_oneanswer))}

# Check with Examples

Quad_factorial (1,1,-2)

## [1] "The solution are 1 and -2 ."

Quad_factorial (4,3,-7)

## [1] "The solution are 1 and -1.75 ."

Quad_factorial (2,-1,-5)

## [1] "The solution are 1.85078105935821 and -1.35078105935821 ."

Quad_factorial (4,5,2)

## [1] "No possible solution exist for the equation"
```