Lab Assignment - 2 (IA2 - DOS: 1.2.22) DATE: 16.1.22

By: JONATHAN RUFUS SAMUEL (20BCT0332) - CSE3020 - Slot L43-L44

Q1:
```
x = seq (3, 6, by = 0.1)
expr = exp (x) * cos (x)
print ("value of data:")
print (expr)
```

Q2:
```
a = c (2.1, 3, 4, 2.5, 2.7, 2.9)
b = c (0.3, 0.5, 0.6, 0.9, 1.1)

co = cor (a, b)
print (co)
vol = c()
for (i in 1: length (a)
 { vol[i] = 3.14 * (b[i]/2) * a[i]
  }
print (vol)
```

Q3:
```
library (expm)
vector1 <- c (NA, NA, NA, NA, NA)
vector2 <- c (NA, NA, NA, NA, NA)
arr = array (c (vector1, vector2), dim = c (5, 5, 2))
print (arr)
for (k in 1:2)
 {
    for (i in 1:5)
    {
       for (j in 1:5)
       {
          x = floor (runif (1, min = 2, max = 15))
          arr [i, j, k] = x
       }
    }
}
```

```
print (arr[,1] * arr[,2])
print (arr[,1] %*% arr[,1])
print (arr[,1] %*% arr[,2])

arr[2,4,1] = 0
arr[5,3,1] = 0
print (arr[,1])
rotate = t(apply(arr[,1], 2, rev))
print (rotate)
print (arr[1,3,1])
```

Q4:

```
m = floor (rnorm (100, 1, 100))
print (m)   # List of random numbers in normal distribution
t = table (m)
print (t)   # Count of each value's occurences
```

Q5:

```
a = c (5,3,4,-1,-3,0)
print (a)
print (typeof (a))
b = c ("Happy", "Sad")
print (b)
print (typeof (b))
c = c (True, True, True, False, True, False)
print (c)
print (typeof (c))
```

Q6:

```
m = floor (rnorm (100000, 500, 100))
t = table (m)
barplot (t)
```

Q7:

```
list_data = list ("Greg", "C++", TRUE, c(5,6,3), 125.17)
print (list_data)
```

Q8:

```
num = as.integer(readline(prompt = "Enter a Number : "))
sum = 0
temp = num
while (temp > 0) {
    digit = temp %% 10
    sum = sum + (digit ^ 3)
    temp = floor(temp / 10)
}
if (num == sum) {
    print("Armstrong") }
else {
    print("Not Armstrong") }

x = as.integer(readline(prompt = "Enter number of terms : "))
Fibonacci = numeric(x)
Fibonacci[1] = 0
Fibonacci[2] = Fibonacci[3] = 1
for (i in 4:x) Fibonacci[i] = Fibonacci[i-2] + Fibonacci[i-1]
print(Fibonacci)
```

Q9:

```
a = array(seq(from = 50, length.out = 15, by = 2), c(5,3))
print(a)
```

Q10:

```
x = c(1,2,3)
y = c(0,1,4)
print("Original Vectors")
print(x)
print(y)
print("Addition of 2 Vectors")   z = x + y
print(z)
```