Unit1_Rprogramming_Assignment

1. Calculate the following

   a. $\Sigma_{a=5}^{a=100} (a^4 + 5a^3)$ with and without loop.

   b.Calculate U_{40} which is a series, $U_n = U_{n-1} + U_{n-2}$, with $U_1 = 1$ and $U_2 = 2$?

   c. Write a program to calculate cos x, sin x(Taylor series) , Get the input(x) from the user and n=45.

   d. Create a vector of the values of e^x cos(x) at x = 3, 3.1, 3.2, . . . , 6.

   e. x <- 1:300. How many numbers in x are divisible by 2?
   (Use the modulo operator : %%)

2. Solve the following system of linear equations using Gaussian elimination (A**x**=y)

   x + 2y + 3x = 9
   2x - y + 2z = −3
   3x + 3y + z = 5

3. Use **outer function** to create the following matrix

0	1	2	3	4
1	2	3	4	5
2	3	4	5	6
3	4	5	6	7
4	5	6	7	8

4. Get the COVID-19 Dataset from the data sources. Number of observations should be more than 100.Then, report the following informations
   a. Data Source detail(Ex: Link)
   b. Explain the Unit & Necessity of each variable
   c. Find the missing values(rows & columns) and replace them with mean(Tidy Dataset)
   d. Generate the two new variables(Var1:Mean, Var2: Median from available variable)
   e. Rename the two existing variables
   f. Create a plot using following instructions (using 7 layers of Grammar of Graphics)
      i. Choose x and y axis(aes)
      ii. geom_**point()** - specify the parameters, size : 5, color: red, alpha: ⅛
      iii. Use Facet grid, cartesian coordinates & geom_smooth()
      iv. Assign the title to x, y and graph
      v. Export the graph to your working directory with the title called “covid_19_ dataset.png”