Assignment 1 **Due Date: Apr.14.2020**

$e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \cdots + \frac{x^{10}}{10!} + h$ (there are $n = 11$ terms)

$\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \frac{x^9}{9!} - \frac{x^{11}}{11!} + h$ (there are $n = 6$ terms)

$\cos(x) = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \frac{x^8}{8!} - \frac{x^{10}}{10!} + h$ (there are $n = 6$ terms)

h as higher order terms

1. Given Taylor expansions of some mathematical functions above, write codes for each of expansions up to the given degree above (h is given as the higher order terms, so write codes considering the terms up to the term h)

- Test each functions with some values number of terms n as {10, 50, 100}

  e^x with x = {0.1, 0.5, 1}
  $\sin(x)$, $\cos(x)$ with x = {-π/6, π/4, π/3}

- Compare the results with related math functions of cpp, display approximation error for each value. (Make a table as an example)
- Submit your .cpp code, your table, and a screen image of a run in one zipped folder.
- A suitable name for the folder can be KOM3550_YourName_YourNumber_Assignment1.{zip/rar}. Write a relevant title for the email you are sending. KOM3550_YourName_YourNumber_Assignment1 is a good option.

"No other e-mails will be even opened".

Dr. Muharrem Mercimek

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a. The due date is firm and it is the midnight just before the next class. The files should be submitted by the end of the due date.
b. Submit your documents via e-mail to programming.kom@gmail.com