

## ANPA Python School for High-schoolers

**Section: Grade 10 & Above**

**Homework: 3**

**Due: July 08, 2021**

### 1. Plot

Using the program we learnt from previous class, calculate first 25 Fibonacci Number and make a scatter plot showing item number vs Fibonacci Number.

### 2. Class

Create a class to calculate total surface area and volume of a cylinder of radius  $r$  and height  $h$ . Determine values for  $(r=10+j, h=7+j)$  where  $j$  is a range from 0 to 5.

Hint: See note book from last class where I have calculated area and volume for a chosen range.

Hint: Total surface area of a cylinder  $= 2\pi r(r + h)$  and volume of a cylinder  $= \pi r^2 h$

### 3. Word count in a text

- Look into the code for word count given in the provided notebook. Plot a bar chart showing the 12 most used word in A\_Tale\_of\_Two\_Cities story by Charles Dickens. Find the story attached.
- Find any story book online whose text is available. Change the text into txt format and repeat problem 3 (i).

### 4. Built your own python calculator

At first define the six mathematical operators using 'def' function (add, sub, multiply, division, modulo, floor) and ask the user for the numbers. Then make your calculator on by defining new function (cal\_run), then ask the user for (add, sub, multiply, division, modulo, floor). Use your conditional statements if, elif and else to print the mathematical operator.

### 5. Find inverse of the following matrices

$$(a) A = \begin{pmatrix} 7 & 13 \\ 11 & 9 \end{pmatrix} \quad (b) B = \begin{pmatrix} 10 & 23 & 18 \\ 34 & 12 & 23 \\ 21 & 29 & 15 \end{pmatrix}$$

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