# Basics of Python/Julia Programming

A Summer training initative by

The Free and Open Source Software (FOSS) Group

*Indian Institute of Space Science and Technology, Thiruvananthapuram*

**IMPORTANT INSTRUCTIONS — READ CAREFULLY**

Answer **both** of the following questions. You can use any one of the programming languages (Python or Julia), Submissions must be made as a zip file named as "`<student_name>_<question_number>.zip`" containing similarly named .py/.jl or .pdf files containing the TEX source and the output respectively. For example, `Nidish_2.zip`.

**Submissions may be made only through email to `fossgroup.iist@gmail.com` on or before July 18, 2017**

## QUESTIONS

1. Write a code to find all the prime numbers less than a number n using the method of **Sieve of Eratosthenes**. Follow this URL for more info :

   `https://en.wikipedia.org/wiki/Sieve_of_Eratosthenes`

2. Write a code to generate the lorenz attractor, by solving the following system of ODEs

$$\frac{dx}{dt} = \sigma(y - x) \tag{1}$$

$$\frac{dy}{dt} = x(\rho - z) - y \tag{2}$$

$$\frac{dz}{dt} = xy - \beta z \tag{3}$$

$$\sigma = 11,\ \beta = 8/3,\ \rho = 28$$

**You can assume any initial values**