CHRIST(Deemed to be University), Bengaluru

DEPARTMENT OF MATHEMATICS

Workshop on "Basic Programming using Python" – A Report

Department of Mathematics, CHRIST (Deemed to be University) Bengaluru, in collaboration with FOSSEE (Free and Open Source Software and Education) project funded by the National Mission on Education through ICT, MHRD, Government of India conducted three day workshop on 'Basic Programming using Python' for students during 3-6 March 2018.

The FOSSEE team works on 'Adaptation and development of Open Source simulation packages equivalent to proprietary software', and is based at Indian Institute of Technology, Bombay. The training programs in Python are live assisted remote, interactive workshops. Participants gain hands-on experience in Python through a series of practice sessions and quizzes.

This three-day workshop provided a birds-eye view to participants on the basics of programming and its applications. Canopy, a Python distributor, was used extensively for the workshop. The unique feature of this workshop was that it was conducted entirely through the online portal 'Yaksh'. The coordinator from FOSSEE team was first-year Engineering student Akshen Doke from IIT Bombay. Previously recorded videos of Professor Prabhu Ramachandran, faculty at IIT Bombay, was played.

The first day provided students with the opportunity to get acquainted with the various functions that Canopy provided, which included plots, opening a file, saving a script, plotting lists, numpy arrays, changing the directory, altering the pixels and cropping an image using matrices and slicing of data. The students were later given some theoretical knowledge on the different kinds of variables. They also came to know about the various uses of Python- who uses it and how it works (various libraries, different programs, etc.). So as to reinforce the concepts that were explained, the students attempted three quizzes using the online portal Yaksh, which the FOSSEE group used to evaluate and interact with the participants.

On the second day, a practice session was conducted on the topics that were covered on the previous day. The practice sessions were conducted in a systematic manner- Professor Prabhu Ramachandran would explain the concept through a video lecture and allot a certain time period to solve questions. After the stipulated time had elapsed, he himself would perform the coding and commit certain common errors that students make so that the participants could avoid them in the future. Instead of using the virtual Python platform, the problems could be solved on the online Yaksh portal itself, which had an added benefit of providing students with an error prompt that helped them rectify the mistakes they committed on their own. There was also an incentive offered to the first five students who completed the problems. Two more practice sessions were conducted after the students were taught the concepts of control flow and data structures.

On the final day of the workshop, students were taught the functions of Python, writing scriptures and modules, exceptions and formation of dictionaries. Practice sessions were held as well, along with a final quiz that evaluated students on the concepts learnt on the first and third day.

The session was extremely informative, and the students actively participated throughout the workshop. Feedback of the workshop was taken and the successful students received e-certificates with grading on the Yaksh Portal, which was highly appreciated. The participants also made up their minds to try their best to enroll for an upcoming Advanced Python workshop from FOSSE, IIT Bombay.

Total number of participants: 72

(I & II BSc, II BBA, Research Scholars(Management studies)

Schedule For 3-Day workshop

Time Topic (day 1) Duration
09:00 - 09:10 1: Introduction to Python 10 mins
09:10 - 09:20 2: Preliminaries 10 mins
09:20 - 10:15   3: IPython & Plotting 55 mins
10:15 - 10:25   Q&A 10 mins
10:25 - 10:40   Quiz 1 (Yaksh portal) 15 mins
10:40 - 10:50 BREAK 10 mins
10:50 - 11:30 4: Saving Scripts 40 mins
11:30 - 12:20 5: Plotting, Lists and Numpy Arrays 50 mins
12:20 - 13:20 BREAK / Q&A 60 mins
13:20 - 13:35 Quiz 2 (Yaksh portal) 15 mins
13:35 - 14:25 6: Numpy Arrays 50 mins
14:25 - 14:55 7: More on NumPy Arrays 30 mins
14:55 - 15:05 Q&A 10 mins
15:05 - 15:25 Quiz 3 (Yaksh portal) 20 mins
15:25 - 15:35 BREAK 10 mins
15:35 - 17:00 8: Basic data-types 80 mins
Time Topic (day 2) Duration
09:00 - 10:10 1: Practice basics (Yaksh portal) 70 mins
10:10 - 10:20 Break 10 mins
10:20 - 11:20 2: Control flow 60 mins
11:20 - 11:30 Q&A 10 mins
11:30 - 12:35 3: Practice control flow (Yaksh portal) 65 mins
12:35 - 13:25 Lunch 50 mins
13:30 - 14:45 4: Core data structures 75 mins
14:45 - 14:55 Q&A 10 mins
14:55 - 16:30 5: Practice data structures (Yaksh portal) 90 mins
Time Topic (day 3) Duration
09:00 - 09:45 Quiz 4 (Yaksh portal) 45 mins
09:45 - 10:40 1: Functions 55 mins
10:40 - 10:50 Break 10 mins
10:50 - 11:40 2: Practice functions (Yaksh portal) 50 mins
11:40 - 11:50 Break 10 mins
11:50 - 12:25 3: Files 35 mins
12:25 - 13:30 Lunch / Q&A 60 mins
13:30 - 13:50 4: Modules 20 mins
13:50 - 14:25 5: Exceptions 35 mins
14:25 - 15:10 6: Practice files and exceptions (Yaksh portal) 45 mins
15:10 - 15:20 Break 10 mins
15:20 - 15:40 Self study / Q&A 20 mins
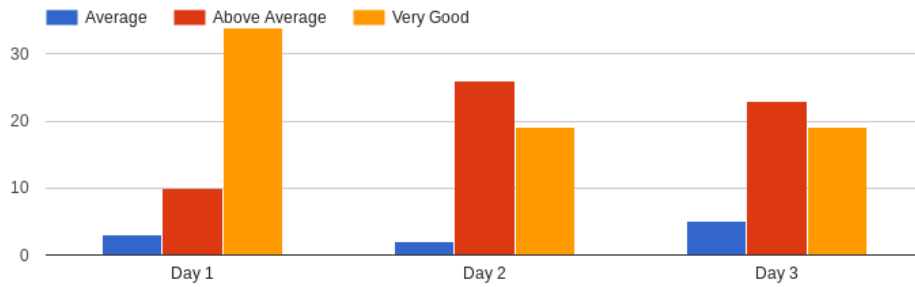15:40 - 16:40 Quiz 5 (Yaksh portal) 60 mins

Feedback

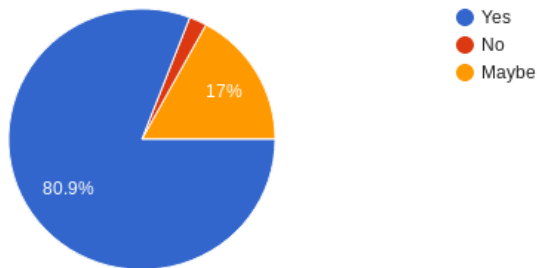## On a scale from one to five, how would you rate your overall experience.
47 responses
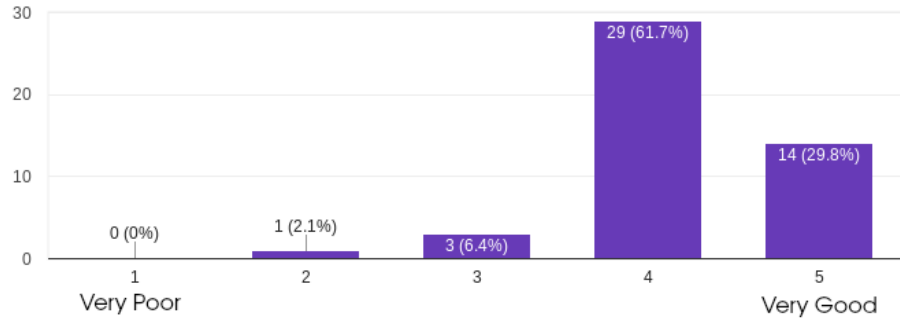
How would you rate each day

Would you like to participate in the other workshops on Python from Math Department?
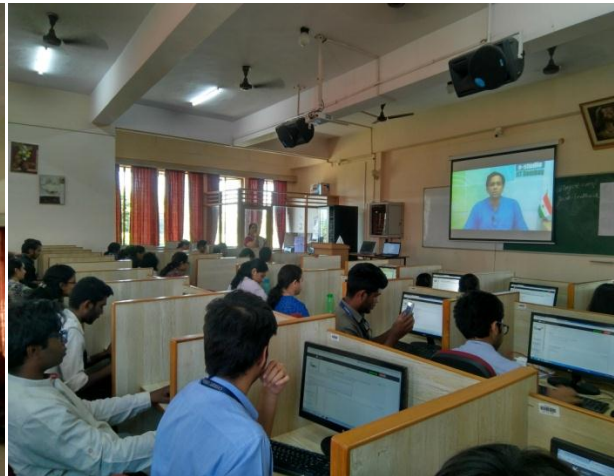47 responses

Beginning with a prayer

Previously recorded videos of Professor Prabhu Ramachandran, faculty at IIT Bombay

Students with hands-on experience

First-year Engineering student, Akshen Doke from IIT Bombay, live from Bombay for clearing doubts