
22.Computational Thinking

Computational Thinking - Workshop Details

Prakash Hegade, CSE

One Day Workshop on

**"COMPUTATIONAL
THINKING"**

**03 June 2019, 10.00am to 5.00pm
C-lite Building, KLE TU, Hubballi.**



More info and registration form at:

<https://tinyurl.com/knit-ct-2019>



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Objectives:

- To understand and appreciate the four major components of computational thinking
- To adapt human thinking principles to be an effective problem solver
- To realize problem solving with computational advantage and inculcate in course delivery

Background Knowledge Expected:

- Anyone who wants to solve a problem
- Computer Science would be an added advantage

Participant Activities:

The entire session will be activity based. There will be no slide show in the workshop. The participants will be required to be seated in teams of 3-4. Every team must be supplied with charts and sketch pens for the activities.

Qualification of Instructor Prakash Hegade:

- M. Tech. from IIT-Bangalore
- PGSSP and research experience from IIT-Hyderabad
- Director of Knit Arena Software Research and Services Private Limited
- Technical Lead for Transil Technologies
- 3 years of industry experience and 6 years of academic experience

Abstract:

We encounter problems on a daily basis and problem solving skill is one of the fundamental skill that everyone must hone. To be an effective problem solver one of the important skill is to understand and solve large, complex and poorly defined problems. One might know how to devise algorithms, analyse solutions, implement and solve problems; with a wealth of tools at disposal. But the real world has a lot of other challenges which need more than the routine thinking. The computing world has yet a lot of challenging problems that need to be solved and they go beyond traditional algorithmic thinking. Human thinking, which inspires computational thinking, on knowing helps us realize and make effective use of computational capabilities. Computational thinking involves four major steps: decomposition, abstraction, pattern recognition, and algorithms. Decomposition involves breaking down bigger problem into smaller ones. Pattern recognition helps us to look for similarities among and within the problems. It helps us recognize the internal problem patterns. We abstract the patterns to put through future use. It helps us focus on important information and discard the irrelevant ones. Algorithm brings in the design techniques to further solve the problem. This

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workshop enlightens the first three aspects of computational thinking in the REAL sense of it.

Detailed Outline of the Workshop:

Session No.	Description	Time
1.	Welcome, Motivation, Introduction and overview.	60 mins
2.	Activity: Representation System Activity discussion Theme: Pattern Recognition	60 mins
3.	Activity: Zombie Parents Activity discussion Theme: Decomposition	60 mins
4.	Activity: Shapes and Colors Activity discussion Theme: Abstraction	60 mins
5.	Activity: 12 Rules of Life (Sanskrit Adaptation) Activity discussion Theme: Pattern recognition, decomposition, abstraction Understanding generic machine learning	60 mins
6.	5 mini activities and discussion Theme: Computational thinking	60 mins
7.	Case Study for Homework and discussion: Natural Order	30 mins
8.	Winding up: report writing on take-away	30 mins

Photographs:



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Student Registration List:

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