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Title: A Roadmap to Integrate PDC Topics in Introductory Programming Classes: An US Experience

Abstract

In this talk, I will present how an instructor can integrate Parallel Distributed Computing (PDC) topics into introductory programming classes (CS0/CS1/CS2). I will talk about our experience of integrating PDC topics and will go over the readily adoptable active learning modules that we have developed in this process. Following topics are highlights of the talk:

- What PDC concepts from NSF/TCPP curriculum recommendation should (may) be covered in early programming classes and at what depth?
- Unplugged activities that can help students understand PDC concepts easily.
- Hands on programming activity examples to reinforce the concepts.
- Challenges and how to mitigate them.
- Do's and don'ts for the instructor.
- How an instructor can access freely available resources (lecture slides, labs exercises, software and hardware) to aid in course preparation.

Bio

Sheikh Ghafoor is a Professor in the Department of Computer Science at Tennessee Tech University. He studied at Dhaka University and Mississippi State University. From 1988-1996, he was on the faculty in Computer Science at Dhaka University. From 1999-2006 he worked as a research staff at Engineering Research Center at Mississippi State University where his group was involved in developing middleware for running computationally intensive simulations related to weather and climate in HPC environment for the Office of Naval Research. His current research projects involve programming models and tools for cellular automata applications in heterogeneous HPC environment, high performance linear algebra libraries for machine learning, secure resource management in HPC environment, in-vehicle network security, smart grid security, and computational earth science. He is also very interested, and actively engaged in, research in the area of computer science education. He has been the principal investigator on grants from National Science Foundation, Department of Energy, NASA, and other agencies totaling more than 2.5 million dollars.