



Assignment01

CSE474: Simulation and Modeling

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Today's "third pillar of science," next to theoretical analysis and experiments for scientific discovery, is scientific computing. Irrespective of their current degree of computational skill, every researcher should embrace the appropriate computing techniques presented in this study. These practices includes data management, programming, teamwork, project organization, task tracking, and writing manuscripts, are taken from a wide range of published sources, our day-to-day activities. The paper provided a collection of computer tools and methods that every researcher can use or at least should think about using. The suggestions described in this paper are specially directed at those who are unfamiliar with research computing.

While computing has become a major element of science for all researchers, a growing number of people are still learning about it. This paper focused on the "good enough" practices for scientific computing—the widely accessible expertise and perceptions minimal set of tools and methods that every researcher can and should take into consideration. This paper is inspired by a wide range of sources. For instance - from personal experience and from the experiences of the thousands of people who have taken part in software and data carpentry workshop over the past 6 years.

The recommendations also left out many good tools like branches, build tools, unit tests, coverage, continuous integration, profiling and performance tuning, the semantic web, documentation, a bibliography manager, code reviews and pair programming etc. Although many programmers already do some or all of these for small projects. The problem arises when researchers with less experience are advised by experienced developers as they do not realize the importance of using these tools to increase productivity. So, the paper claimed an observation that these tools and practices might overwhelm the inexperienced ones rather than helping them out.

To conclude, Time and skills which are needed for these practices to be increased is not given here as they are not valued enough. Although at a local level, principal investigators can influence by letting the students show their codes in the lab meetings. Training is also an option for mastering in computing for new researchers which can be provided by the principal investigators. Training is part of the underlying cost of implementing these plans. It is the high time for funders to spend money on this kind of training, and we hope that our suggestions will contribute to a general understanding of what "good enough" is and how to attain it.