Classifying Program Visualization Tools to Facilitate Informed Choices: Teaching and Learning Computer Programming

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Abstract– Program Visualization (PV) is a technique that has been found useful in teaching computing programming. This has seen proliferation in development of PV tools with an aim of enhancing teaching/learning programming over the last two decades. However, the tools usage has remained minimal. Perhaps because it becomes challenging to ascertain the appropriate tool for the right task. This paper presents a classification of program visualization tools with the focus of aiding teachers and students in choosing the most appropriate tool for an interesting experience in the classroom. The paper is based on six various PV tools evaluated over a period of two consecutive academic years in a Kenyan public University. The classification augments the Price's taxonomy of software visualization arm of PV by presenting four basic levels which are further subdivided into lower levels.

Index Terms– Classification, Pedagogy, Program Visualization and Taxonomy