BUILDING MATHEMATICAL OBJECTS DATABASES

COLLEGE OF COMPUTING AND INFORMATICS

TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

RESEARCH METHODOLOGY

BY

GROUP 204

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1 INTRODUCTION

We have been studying about a lot of staff in computer science here at Makerere for years now, but we have never come up with any practically working model of any application of what we have covered so far. This project intends to discover the uncharted mathematical worlds.

2 BACKGROUND

For a while there has been no computerized online collection of mathematics objects for students to browse and just like explorers, mathematicians seek to discover paths between apparently unrelated areas. Such discoveries can lead to breakthroughs when the connections are made explicit. For example, in the 17th century Rene Descartes forged a revolutionary connection between geometry and algebra. There is an enormous amount of information on constructing various sorts of interesting, in one or another way, mathematical objects, e.g. block designs, linear and non-linear codes, Hadamard matrices, elliptic curves, etc. There is considerable interest in having this information available in computer-ready form. However, usually the only available form is a paper describing the construction, while no computer code and often no detailed description of a possible implementation is provided. This provides interesting algorithmic and software engineering challenges in creating verifiable implementations; properly structured and documented code, supplemented by unit tests, has to be provided, preferably in functional programming style.