BUILDING DATABASES OF MATHEMATICAL OBJECTS USING SAGEMATH

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BY

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Research
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1 INTRODUCTION

A mathematical objects is an abstract object arising in mathematics. In mathematical practice, an object is anything that has been (or could be) formally defined, and with which one may do deductive reasoning and mathematical proofs.

Examples inclide: numbers, permutations,partitions, matrices, sets, functions, and relations. categories such as algebra and geometry are simultaneously homes to mathematical objects and are mathematical objects in their own right.

A Mathematical Objects Database can be like a museum with all of best mathematical specimens in an intricate catalog and the connections between them.

SageMath is a free open-source mathematics software system licensed under the General Public License. It builds on top of many existing open-source accessing a combined power through a common Python based language.

2 PROBLEM STATEMENT

Due to an increased large-scale cloud computing which is one of the ways to provide sophisticated web interfaces that allow both experts and amateur to easily navigate their contents, there is a problem of uncharted mathematical terrain which requires online resources that provides detailed maps for mathematics.

This can be solved by building databases of mathematical objects for charting the terrain of rich, new mathematical worlds, and sharing of discoveries of the best mathematicians over the web.[**?**]

3 MAIN OBJECTIVE

To build a database of Mathematical Objects that provides detailed maps for mathematics in computers both locally and remotely.

3.1 SPECIFIC OBJECTIVES

To collect information regarding the different types of mathematical objects.
To collect information on how to buld databases in python.

4 METHODOLOGY

4.1 Data collection

As the first stage of the database development, it will involve the collection and gathering data for the database system and user requirements. This will help us obtain the rightful information to use during the project development.
The techniques mainly to be used include interviews, observations, questionnaires and document review. Tools such as pens, recorders, papers and cameras will be used during the data collection process.

4.2 System Analysis

The system analysis phase will involve analysis of the gathered user requirements and needs for the proposed database.
The analysis will help to establish the functional and the nonfunctional requirements. System analysis will help to establish the users' needs and requirements.
The data that will be collected will be screened, inspected, transformed and modeled with the goal of highlighting useful information with the help of data analysis tools like document flow diagrams. Data analysis methods on the collected information will be used, such as the use of SPSS software tool to do analysis on questionnaires and this will help in modelling the design according to data collected. Data collected will be analysed in form of graphs and charts for easy understanding

4.3 System Design

System design is the process of defining the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements.The design phase will be concerned with how the processes will be modelled for example using flow charts, and description of the architectural design of the proposed system.

The system design will bring out the key entities and interaction with in the system and how the input, output will be generated.Data modelling tools will be used in order to show the flow of processes within the system.
For data modeling, Data flow diagrams and ERD's will be used since they clearly represent relationship between entities involved in the system together with their respective attributes in the respective models.

4.4   System Implementation

The implementation phase in concerned with the physical construction of the system and environment that will support the system. The interfaces of the web system will be developed using bootstrap or java. Bootstrap files will contain Html and CSS for styling the interfaces. Bootstrap will enhance responsiveness of the interfaces.

PHP will also be used in order to create a secure and dynamic web system.
TheMySQL software will be used for database development that will store the system data.
We shall get data from sources like text books and implement most of the infinite families of graphs listed there in the open-source software Sagemath, as well as provided constructions of the sporadic cases, to obtain a graph for each set of parameters with known examples.

5   REFERENCES

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