

Computations of Numerical Integrations Through PHP With MYSQL

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Abstract

The main emphasis of this paper is to calculate numerical integrations like Trapezoidal and Simpsons' rule with server side scripting. PHP is a server-side scripting language designed for web development but also used for general purpose programming language. PHP with MySQL fulfills computations of numerical integrations with reference to database created by the researcher. This paper is an interdisciplinary activity in terms of Mathematics and computer language.

Keywords: Numerical integration, PHP, MySQL

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INTRODUCTION

Numerical Integration: Numerical integration is the approximate computation of an integral using numerical technique.

The most straightforward numerical integration technique uses the Newton-Cotes formulas (also called quadrature formulas), which approximate a function tabulated at a sequence of regularly spaced intervals by various degree polynomials.

If the endpoints are tabulated, then the 2- and 3-point formulas are called the trapezoidal rule and Simpson's rule respectively.

Trapezoidal Rule

$$\int_a^b y(x) dx = \frac{h}{2} ((y_0 + y_n) + 2(y_1 + y_2 + y_3 + \dots + y_{n-1}))$$

Simpson's 1/3 rd Rule

$$\int_a^b Y(x) dx = \frac{h}{3} ((y_0 + y_n) + 2(y_2 + y_4 + y_6 + \dots) + 4(y_1 + y_3 + y_5 + \dots))$$

Simpson's 3/8 th Rule

$$\int_a^b Y(x) dx = \frac{3h}{8} ((y_0 + y_n) + 2(y_3 + y_6 + y_9 + \dots) + 3(y_1 + y_2 + y_5 + \dots))$$

PHP with MySQL: Interacting with MYSQL makes PHP a far powerful tool to create and edit database and apply mathematical logic to fetch array.

OBJECTIVES

1. To create suitable database.
2. To provide a supporting e-teaching and e-learning material at server side.
3. To provide another platform instead of existing coding like C, C++, Matlab, etc.
4. To find out area and volume of irregular shape of objects.

METHODOLOGY

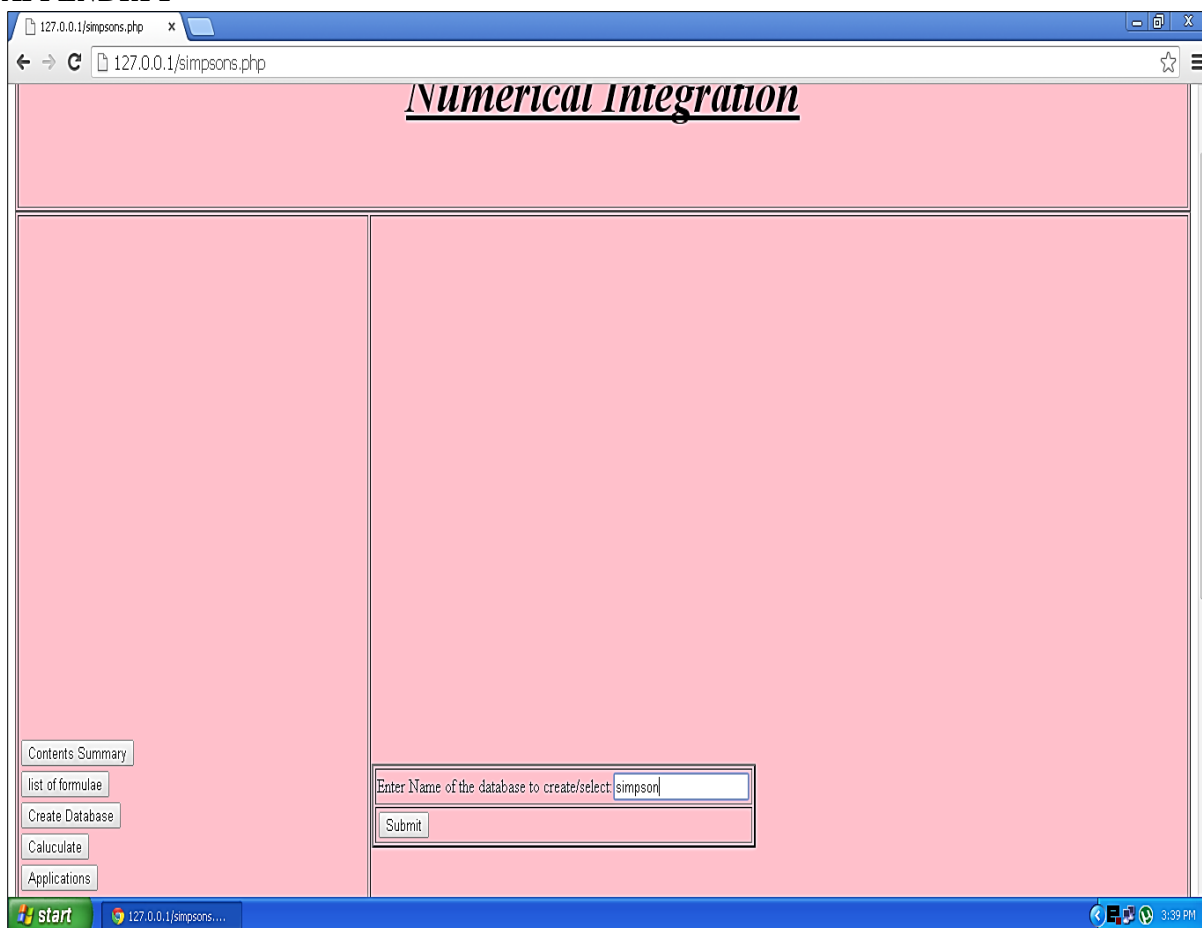
Work flow of computations on Numerical Integrations using PHP with MySQL

1. Created Database(Ref:Appendx1)
2. Created Table(Ref:Appendx2)
3. Calculated values of Trapezoidal, Simpson's 1/3 rd and 3/8 th rule(Ref:Appendx3 &4).

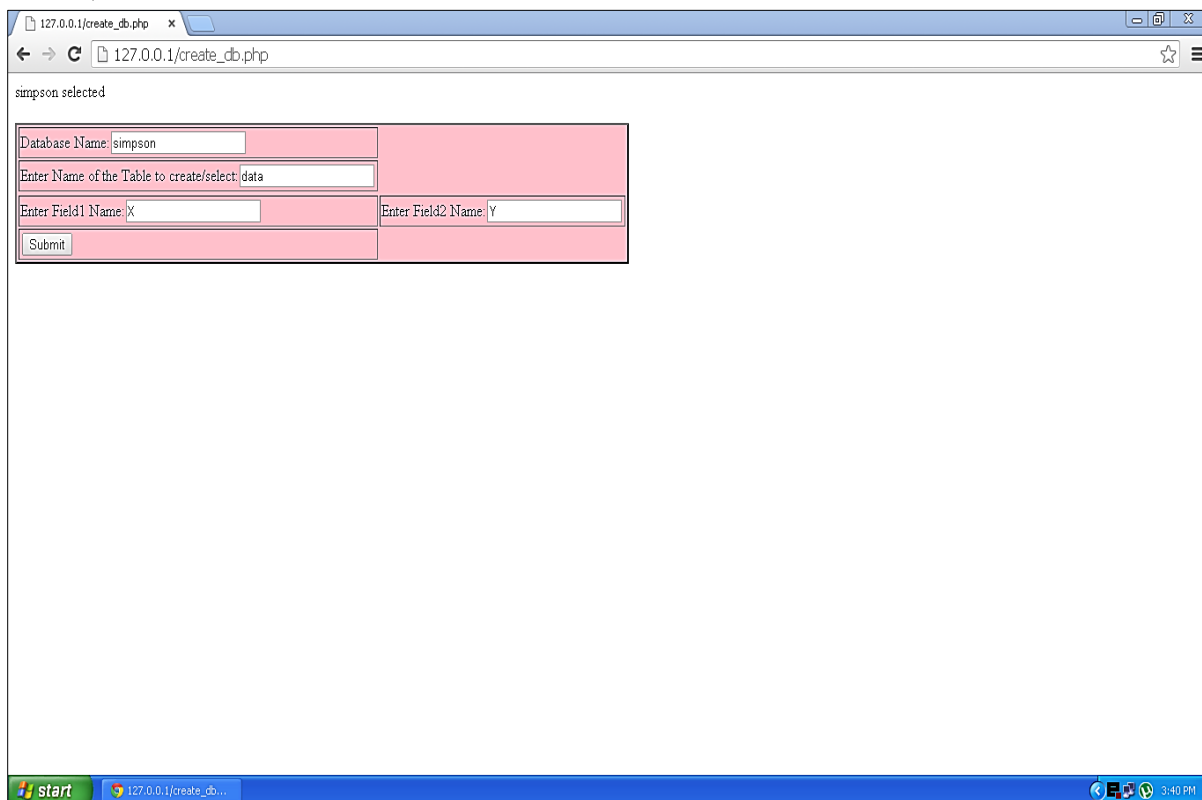
CONCLUSION

Researcher ambition is to find out the area and volume of irregular shape of objects using these Webpages APPENDIX 1, 2, 3 and 4.

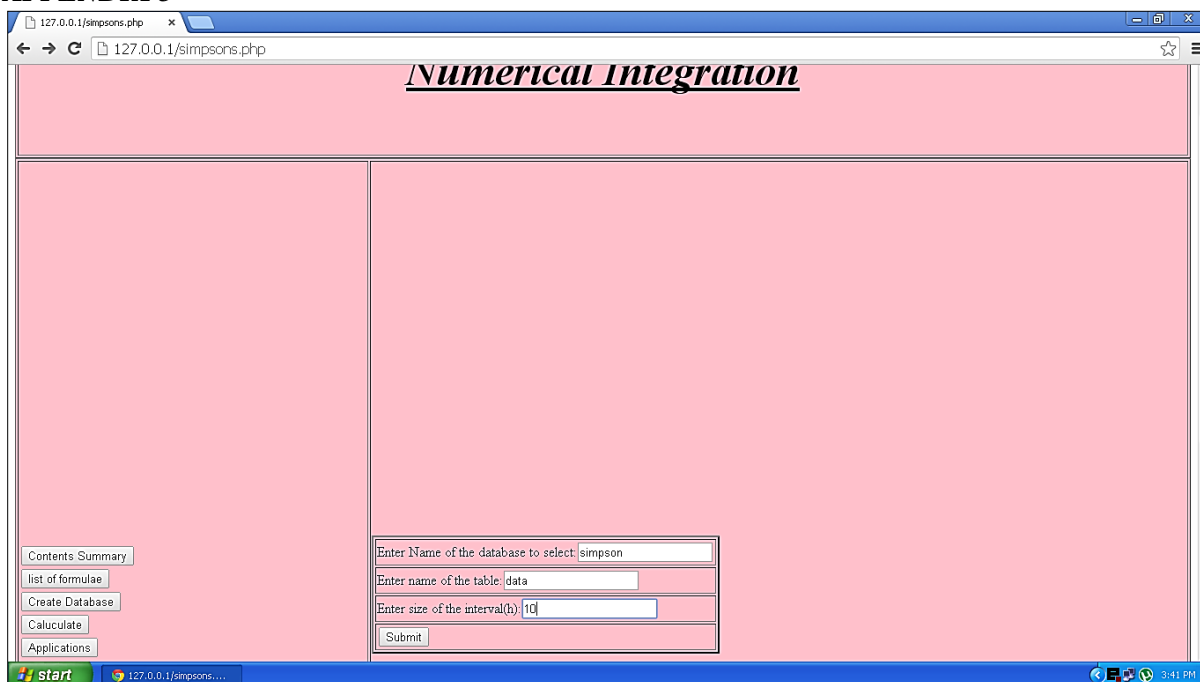
APPENDIX 1



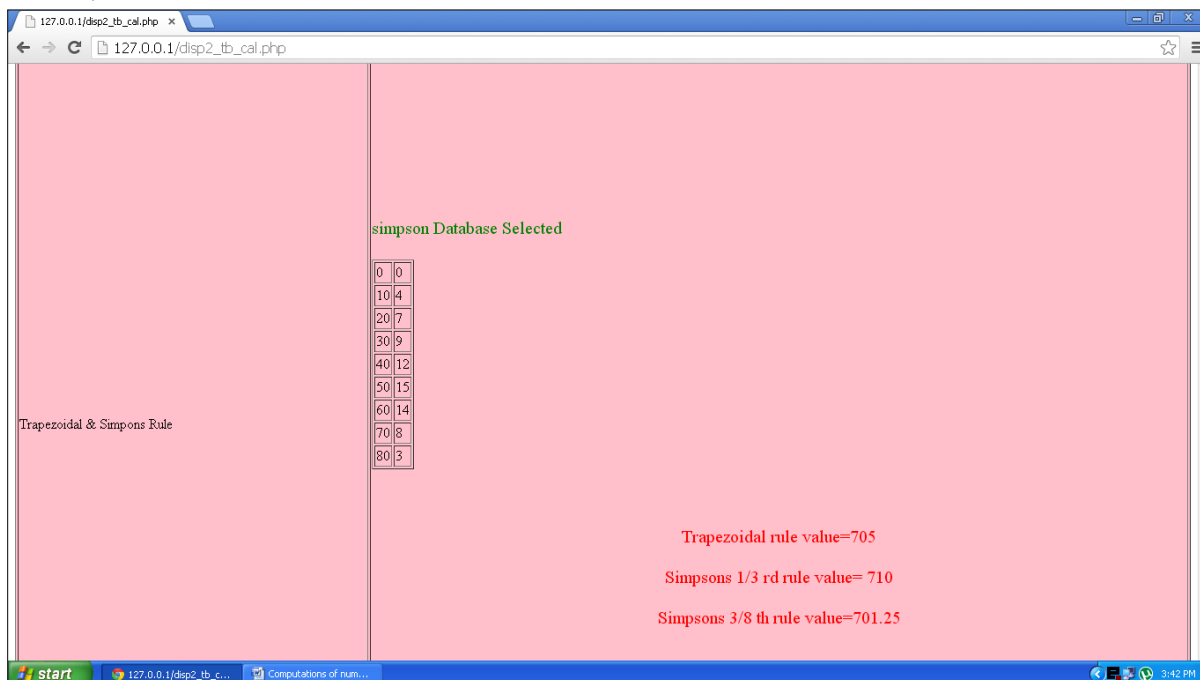
APPENDIX 2



APPENDIX 3



APPENDIX 4



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