PROJECT PROPOSAL

DELHI TECHNOLOGICAL UNIVERSITY
Department of Applied Mathematics
III Semester

➢ Project Details

Topic: Mandelbrot Set and Fractals
Subject: Mathematics III (MC 203)

➢ Project by

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➢ Project Introduction

In this project we will discuss about Mandelbrot Set and visualize them by using basic programming knowledge.

We will go through some of the properties of Mandelbrot Set, Fractals as well and will try to figure out some amazing conclusions from our study as the outcomes of the project.

Mandelbrot set and Fractals are as follows:

(i) The Mandelbrot set is generated by iteration, which means to repeat a process over and over again. In mathematics this process is most often the application of a mathematical function.

For the Mandelbrot set, the functions involved are some of the simplest imaginable: they all are what is called quadratic polynomials and have the form f(x) = x^2 + c, where c is a constant number (can be real or complex).

Mandelbrot set is a particular set of complex numbers which has a highly convoluted fractal boundary when plotted.

(ii) A fractal is a curve or geometrical figure, each part of which has the same statistical character as the whole. They are useful in modelling structures (such as snowflakes) in which similar patterns recur at progressively smaller scales, and in describing partly random or chaotic phenomena such as crystal growth and galaxy formation.

➤ **Project Objective**

Objective of this project is to study about the **Mandelbrot Set** and **Fractals**. Mandelbrot set is used to study about Fractals as Fractals are created by recurring small parts.

We will study about the uses of Fractals and how Fractals are changing the world (in general and day to day both). Fractals are very useful to study complex phenomenon and modelling.

We will be using a common programming language to visualize the Mandelbrot Set and Fractals for this project.

Learning and understanding the Fractals using Mandelbrot set and their uses is our main and focussed objective for the project.

We will be going through definitions, properties and codes to understand Mandelbrot Set and Fractals.

❖ **Date:**

October 25, 2021