2D Graph Plotter

Team Id : 225

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Problem Statement

Goal 1

- The basic goal of this project was to develop a better understanding with certain basic mathematical functions . Thus now we are able to understand the functions graphically.
- We wanted to understand the shape as well as the nature of the graph which is very useful in understanding the basic concepts of that particular function.For example ,for any basic function we can make out how many times the function goes from positive to negative or vice versa.

Goal 2

- Our main objective was to be able to take input from the user by simply clicking on the functions available through the given options and present the desired output in the defined range.
- Also we intended to form all the complex functions through the options available whose graph needs to be plotted.So we wanted to make it as user friendly as possible.
- And we were successfull in fulfilling all these goals.

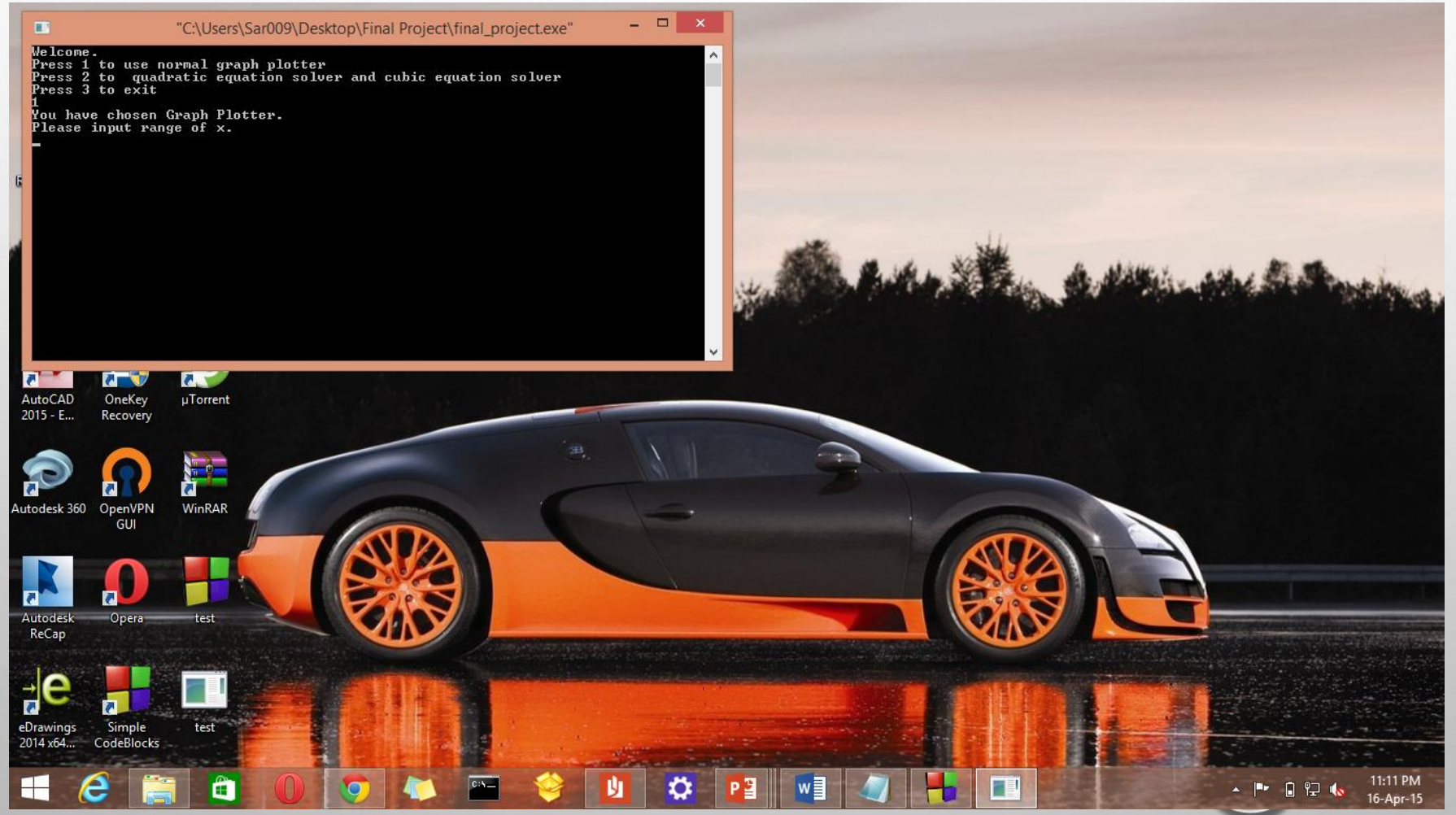
Goal 3

After user is able to give his input with ease our main target was execution of the program.We used basic simplecpp graphics for this purpose.

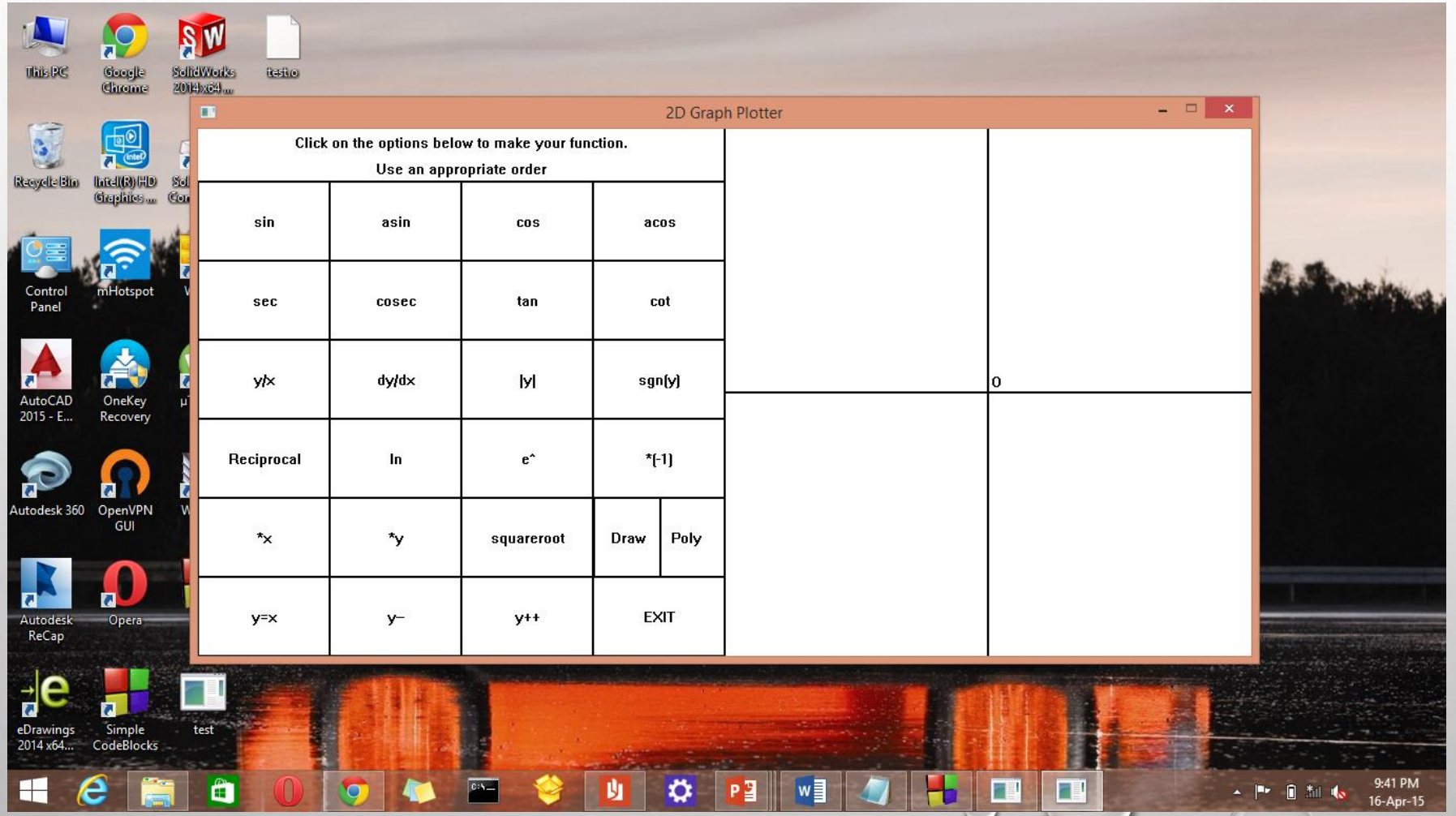
Thus we wanted to deliver the exact curve and nature of graph without over speeding or any flaws and we were sucessfull to deliver it and plot graph wherever the function is defined in the given range by the user.

Screenshots

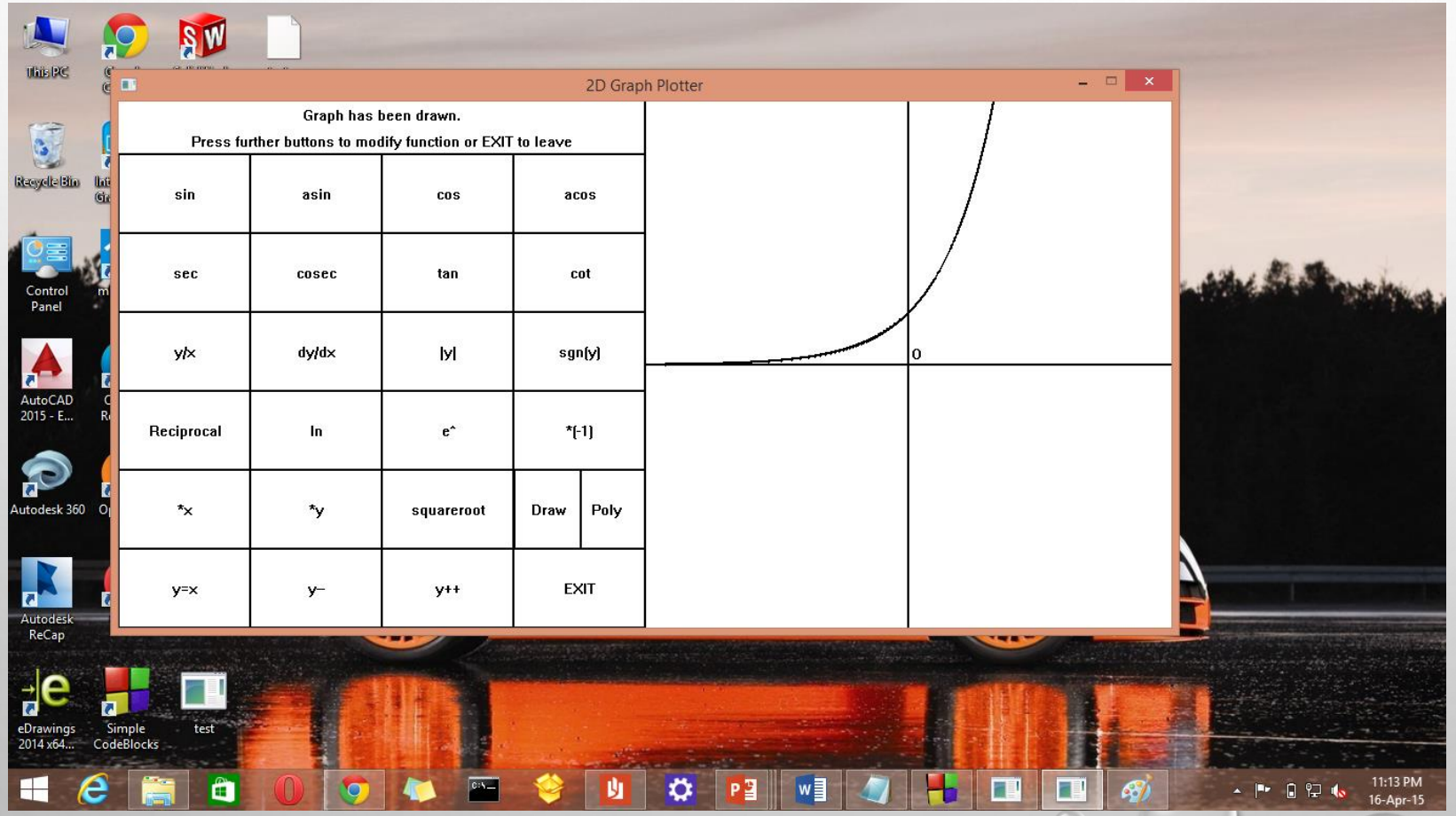
Console



Screenshots
Interface

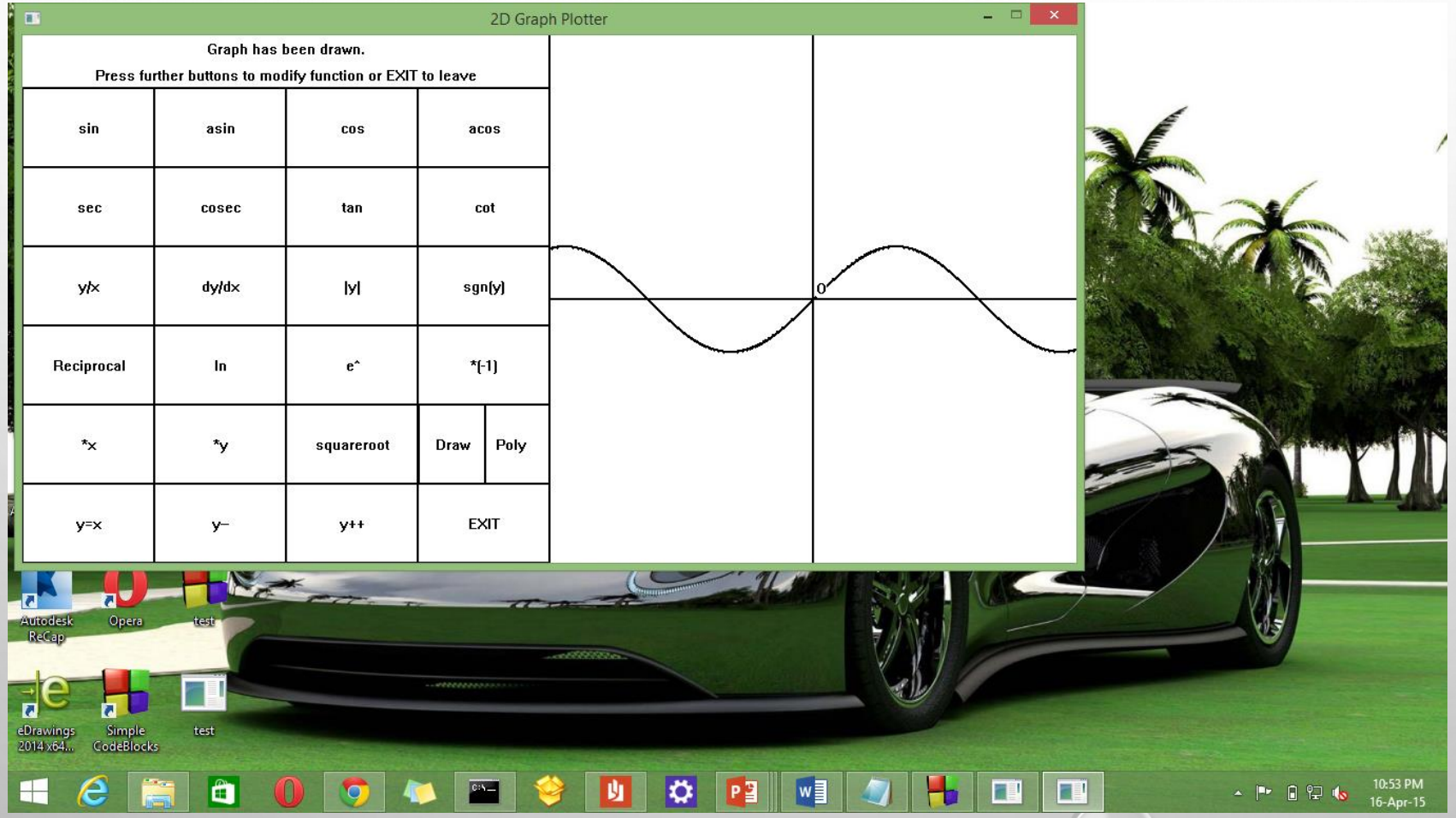


Screenshots
Exponential function



Screenshots

Sine Function



Challenges Faced

The major challenge faced in the beginning was that we were unable to decide whether in what range we should plot the graph since the functions are well defined over different sets of range.

So we have provided an option which enables the user to define a range of his choice and the user can change as required to plot the required graph

Another important challenge was we were not able to prepare algorithm required for the cubic quadratic solver. So we learned the basics and implemented it by forming algorithm using trigonometric and hyperbolic methods. Reference :http://en.wikipedia.org/wiki/Cubic_function

Innovations

Our major innovation was being able to form a complex function very easily . Thus we tried to make our program very user friendly which can take the input with lot of ease from the user.

This was simply achieved by defining a function y1=f(x) later if we want to add a further function to it we can easily do so just by clicking on that button which takes the input as y2=f(y1).

We added an extra feature to our project ,that is now we can get the roots of the quadratic and cubic equation as well.

Also our important innovation was that we came up with the algorithm to solve the cubic equations after learning trigonometric and hyperbolic methods to solve the equation.

Future Work

- The 2DGraphplotter made by our team is definitely of immense importance as it makes understanding of some basic as well as complex mathematical functions more better.
- But the next stage would have been the plotting of graph with the actual coordinates and defining it more precisely.
- Our project can help you to find out the nature of curve as well as its positive and negative range and if the user has basic mathematical knowledge can also make out whether function is differentiable or not at all points.
- This can be made even more better if we could actually know the coordinates and this will surely be the epitome of our project.
- To find area between two different curves.
- Also if possible a 3D graph plotter will take this project to a next level.

Thank You