

Evaluation Form 4: Visualizing Complex Functions

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Milestone 4 Task Matrix

Task	Completion %	Paul G	Branden D	Bradley W	To do
Forward Mapping Fixes	80%	50%	25%	25%	20%
Accept User Input	90%	20%	40%	40%	10%
Scaleable Axes	100%	20%	40%	40%	0%
Consult Mathematician	70%	33%	33%	33%	30%

Milestone 4 Summary

Forward Mapping Fixes

We wanted to improve the output process in our forward mapping algorithm. To start, we fixed an off by one error that was highly noticeable in our identity function ($w = z$) to eliminate some jagged edges. Two variables were then added, internal width and internal height, that represent the available grid space in pixels. By making these two values larger, we increase the amount of pixels that are mapped to the output grid, eliminating the remaining jagged edges. We also added sliders to the domain and range grids to zoom in and out; a zoomed in domain grid causes the range grid to look better. However, this creates a “viewpoint effect” (Explained in Milestone 5).

Accept User Input

This process was simply allowing the user to upload their own image that could then be mapped. This uses the same method of mapping that we currently have. Accepted input is in the format of png or jpg.

Scaleable Axes

We wanted both graphs to be scaleable in case if the input or output image was larger than a 10x10 grid. As of now, the grid size ranges between 1-100, which is most likely going to be altered in the future. The tick marks can be adjusted by the user. We may want these marking to be auto

adjusted according to the graph size.

Consult Mathematician

Our sponsor wanted us to get user input on our program, so we contacted a person that has a PhD in mathematics. They thought our program was very useful for our grid pattern, but was unsure about a filled in image. This was because some functions have multiple pixel points mapping to the same location. He said that he needed to research the mapping process more to determine if our current way of mapping was correct. He also made a suggestion that by hovering the mouse over a point on the domain grid, that the applet would show where that pixel was being mapped to in the range grid.

Milestone 5 Task Matrix

Task	Paul G	Branden D	Bradley W
Improve Error Handling	33%	33%	33%
Website Features	20%	60%	20%
Save Images	25%	25%	50%
Viewpoint Effect	50%	25%	25%
Infinite domain	33%	33%	33%
Poster	33%	33%	33%

Milestone 5 Summary

Improve Error Handling

We want to catch and display errors in a better fashion. The main area to look at is where the user inputs a function. We need to check for any characters that should not belong, and also check to see if the function is entered properly (e.g. $2*z$ instead of $2z$). We also need to look at where setting tick mark intervals, setting width, and setting height could be 0. The last value to look at is setting the center point for the image to be outside the range of a double.

Website Features

We are adding the applet to a website, and also including several help dialogs and descriptions.

Save Images

We want to be able to take a screenshot of the applet and save the image to the user's computer as a png file. The screenshot is to allow the user to remember all of their current settings.

Viewpoint Effect

The viewpoint effect is where the input image partly lies outside the boundaries in the domain grid.

When you zoom out in the range grid, the parts that aren't on the domain grid aren't mapped to the range grid. We want to increase the size internally and remember where the picture should be on the domain grid. This is partly related to increasing the grid size to be "infinite".

Infinite domain

This is partly adding in another pattern and fixing the viewpoint effect. The pattern would be to make each quadrant its own color and have that extend as far as possible. The image would then be graphed according to a function. We have to determine how to graph our images without using a finite domain, and in doing so, would help us solve the viewpoint effect.

Poster

Creating a poster for the senior design showcase.

Sponsor Feedback

Signature _____ Date _____

Sponsor Evaluation

Sponsor: detach and return this page to Dr. Chan (HC 322)

- Score (0-10) for each member: circle a score (or circle two adjacent scores for .25 or write down a real/float number between 0 and 10)

Paul G	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Branden D	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Bradley W	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10

Additional Comments (if any)

Signature _____ Date _____