

Oblique Projection

3D Computer Graphics and Animation Programming Assignment 2



Ida Bagus Bhaskara (001201500076)

Vera Debora Vitamas (001201500076)

Jonathan Surya Sandjaya (001201500055)

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**Table of Contents**

Cover Page 1

**Table of Contents 2**

[Chapter 1 Introduction 1](#_Toc505375854)

[Chapter 2 Basic Theory 1](#_Toc505375855)

[2.1 Animation 1](#_Toc505375856)

[Chapter 3 Implementation 1](#_Toc505375857)

[3.1 Main Interface of the Application 1](#_Toc505375858)

[3.2 Features of the Applicaton 2](#_Toc505375859)

[Chapter 4 Design 2](#_Toc505375860)

[4.1 Variables used in the Program 2](#_Toc505375861)

[Chapter 5 Evaluation 2](#_Toc505375862)

[5.1 Test 2](#_Toc505375863)

[Chapter 6 Work Log 2](#_Toc505375864)

[Chapter 7 Conclusion and Remarks 2](#_Toc505375865)

# Introduction

1. About The Program

This is a 3d oblique projection simulator. It applies the oblique projection which uses computer graphic animation algorithms to rotate and to create an oblique view of a cube. This simulator allows the user to initialize the alpha and theta of the view, rotating the cube in 3 different coordinates (x,y, and z), and stop the cube rotation.

This program uses Microsoft Visual Studio as the programming platform and Visual Basic as the programming language. This report covers the basic theory, implementation, design, evalution, work log, and conclusion.

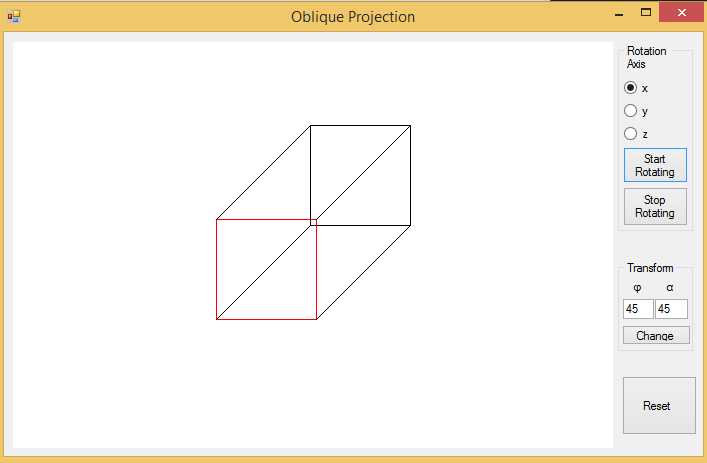
# Basic Theory

## Animation

# Implementation

## Main Interface of the Application

This application has one interface, which it uses as its main interface. The interface is pictured below:



8

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The interface consists of the following components:

1. Canvas Picture Box

The canvas is used to display the cube using the application.

1. Rotation Axis Radio Buttons

The radio button is used to change the x,y, and z coordinate of cube rotation.

1. Start Rotating Button

The button is used to rotate the cube in the canvas.

1. Stop Rotating Button

The button is used to stop the rotation of the cube.

1. Theta Textbox

The input box is used to determine a value of the theta.

1. Alpha Textbox

The input box is used to determine a value of the alpha.

1. Change button

The button is used to change the value of alpha and theta based on textboxes

1. Reset button

The button is used to reset the cube into the original position.

## Features of the Applicaton

The application has several features, namely:

1. Rotate the 3d cube around the x,y, and z axes

To rotate the cube user must choose 1 out of 3 axes that exist in the radio button, and the user must click the start rotating button in order to rotate the 3d cube.

1. Change the values of alpha and theta

To change the value of alpha and theta the user must input the values in the textboxes and click change button.

1. Stopping the rotation of the cube

To stop the cube rotation the user must click the stop rotating button.

1. Reset the position of the cube

To reset the cube position the user must click the reset button

# Design

## Variables used in the Program

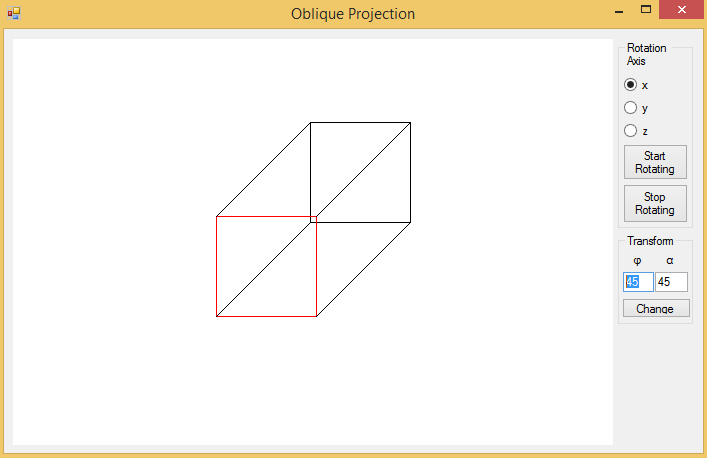
The following variables are used in this program:

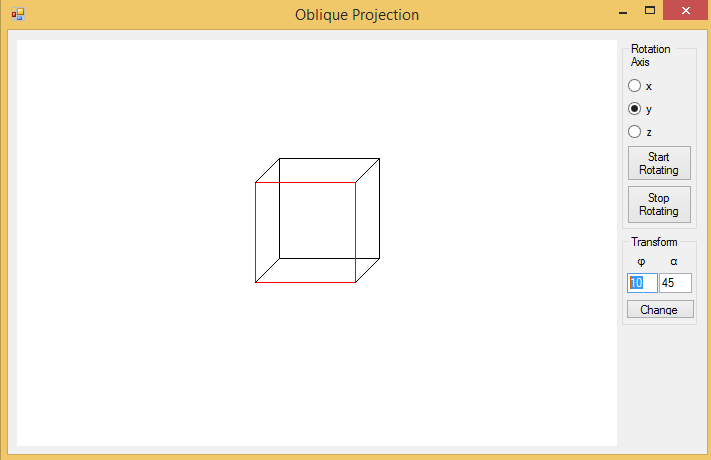
# Evaluation

To ensure that the application works as it is designed, test cases are conducted. These test cases are as follows:

## Display the oblique projection with different value of theta

In this case, the user tries to change the theta value in the projection.

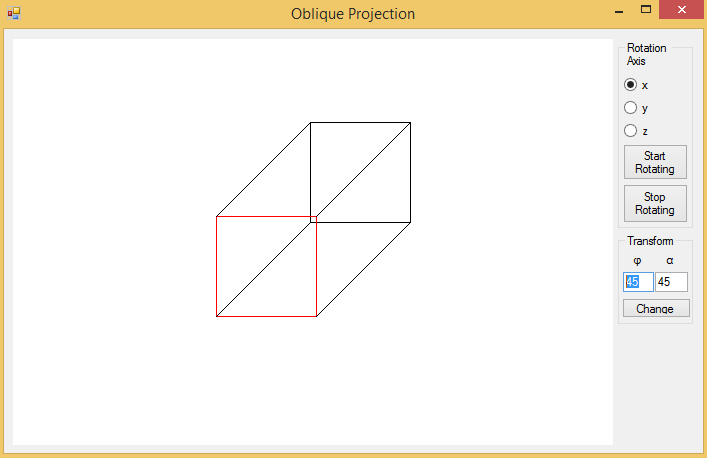


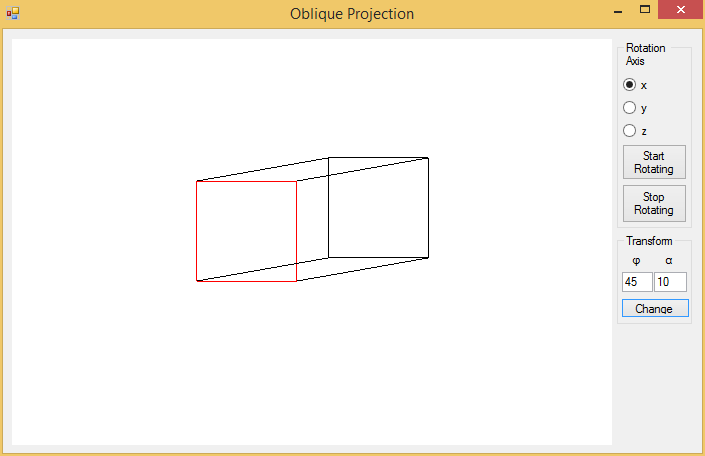


This case is successful because the program is able to change the view of the cube.

1. Display the oblique projections with different values of alpha

In this case, the user tries to change the alpha value in the projection.





This case is successful because the program is able to change the view of the cube.

# Work Log

The work log is extracted directly from Visual Studio’s Git Log History, which is also available publicly at <https://github.com/bakanui/ObliqueProjection/commits/master>.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Author | Date | Time | Commit Message |
| 1 | Bhaskara Ida Bagus | 1/26/2018 | 5:39:49 PM | Initialized project |
| 2 | Vera Debora Vitamas | 1/29/2018 | 1:57:02 PM | Trying to create matrix structure |
| 3 | Vera Debora Vitamas | 1/29/2018 | 3:30:21 PM | Trying Matrix Multiplication |
| 4 | Vera Debora Vitamas | 1/29/2018 | 7:05:34 PM | Trying to initialize cube |
| 5 | Bhaskara Ida Bagus | 2/2/2018 | 11:05:35 PM | Add report template |
| 6 | Bhaskara Ida Bagus | 2/3/2018 | 3:24:05 PM | Buggy cube; shows a square instead of a cube |
| 7 | Bhaskara Ida Bagus | 2/3/2018 | 3:50:18 PM | Square is now a Cube, but not Oblique |
| 8 | Jonathan Surya Sandjaya | 2/4/2018 | 8:12:53 PM | Cube is now oblique |
| 9 | Bhaskara Ida Bagus | 2/4/2018 | 9:14:46 PM | Phi and Theta can now be set by user, buggy rotation |
| 10 | Bhaskara Ida Bagus | 2/4/2018 | 10:19:30 PM | Declaring DegToRad as a function |
| 11 | Bhaskara Ida Bagus | 2/5/2018 | 11:26:05 PM | Rotation in the x axis works |
| 12 | Bhaskara Ida Bagus | 2/6/2018 | 6:30:29 PM | Beautifying UI, Rotation on x, y, and z axis can now be done |
| 13 | Bhaskara Ida Bagus | 2/6/2018 | 6:45:40 PM | Fix Rot Matrix, Renaming theta to alpha |
| 14 | Bhaskara Ida Bagus | 2/6/2018 |  | Update work log in report |

# Conclusion and Remarks

The program works well. The 3d cube rotation, oblique projection, and reset work as expected. This can be proven by the success of the program in conducting each test case. Overall, this program doesn’t have anything bug.

Through this programming assignment, we learn some important things such as it’s definitely hard to do this programming assignment in 2 weeks , we can know the ability and work ethic of each member, how to dividen the time efficiently between doing this programming assignment and other assignments, and the most important thing is through this programming assignment, we can improve our coding skill where we are forced to work harder in order to reach a goal in the certain limit time.