Indian Institute of Technology Indore

GIANT WHEEL

Project Report

Proposed by:

Sahaj Khandelwal (160001052)

Rishabh Kumar Verma (160001048)

Supervised by:

Dr. Somnath Day

Discipline of Computer Science and Engineering

CS-352

TABLE OF CONTENTS:-

<u>Abstract -</u>

In our Computer Graphics project we have aimed at creating virtual Giant Wheel in Amusement Park. Giant Wheel is visualized using circular rings. Rotation effects are provided for Giant Wheel. The whole giant wheel is placed inside a texture mapped cube. There is also first person movement where the viewer can move around anywhere in the scene using up, down, left and right keys for movement on ground and keys 'w' and 's' for moving up and down in 3D. The mouse context menu helps the user in selecting various options,which can be obtained using right click. The colours of various objects can be changed as well as background and ground can also be changed. The user can control various camera positions like Free Movement and inside both of the Giant Wheels. Objects like disc, cube, sphere and cylinders are used to implement our giant wheel with an object and bench inside it.

FUNCTIONALITY-

- ## Free Movement :

We have enabled first person movement in our project where viewer can move anywhere using keyboard keys

- Key Up - Moves ahead horizontally
- Key Down - Move behind horizontally
- Key Left - Rotates in left direction horizontally
- Key Right - Rotates in right direction horizontally
- "W" - Moves up vertically
- "S" - Moves down vertically.(It won't move down after a particular point as technically we can't go inside the ground.

- ## Changing the Features of Giant Wheel:

By right clicking on screen,and choosing giant wheel option, we are able to change some features of giant wheel like -

- **To start or stop rotation of giant wheel** : If giant wheel is stationary that it will start moving and will become stationary if was earlier moving.
- **Changing the number of trolleys** : We can choose number of wagons on giant wheel as 12 or 6. Initially there are 12 wagons but can be made 6 by clicking this option and again 12 by again clicking this option.
- Similarly, we can change the no. Of wagons in 2nd wheel by 8 and 4.
- **Changing the direction of spin** : We can choose direction of rotation of our wheel. If it is stationary initially then it will start moving else it will move in opposite direction from which it was moving.
- **Changing the colors** : We have 5 color choices for wagon and giant wheel stand to choose from Change Color option.
- **Changing the Background and Ground** : We have 2 background scenery choices which can be changed from

change background option, and same goes for ground color as well.

- ○ **Changing the speed** : Increasing speed, as speed of wagon can be increased up to 3 folds. It will start moving if was stationary.Decreasing speed, as we can decrease the speeds in three folds just like we increased in opposite manner. It will stop moving if decreased further.

● Mouse Movement :

By clicking and moving our mouse the wheel will start if was earlier stationary. Else its speed will increase in the direction of movement. If we move mouse in opposite direction of the movement of wheel than the direction of rotation will change.

● Object Inside Giant Wheel :

We have put an Object resembling like a human wearing red t-shirt inside each wagon. The human like object is sitting on a bench.

● Displaying Speed :

We are showing the speed of giant wheel on screen which will change as we change speed. It is showing positive speed in clockwise direction and negative in anti-clockwise direction.

● Opening And Closing Of Gates :

Initially as the giant wheel is in stop position its gates are open, but as soon as we start our giant wheel its gates are closed. So whenever the giant wheel is moving its gates are closed and opened when stopped. Whichever way we use to start or stop our wheel i.e. start/stop wheel or increase/decrease speed or through mouse movement or rotate wheel in opposite direction the gates will be opened when stationary and closed otherwise.

- Position Inside Giant Wheel :

We can choose to view from the Giant Wheels also. The menu available on the right click, offers this feature to sit in the Giant wheel, and view. We can also choose to sit in different Giant wheels.

STEPS TO EXECUTE :

g++ final.cpp -lGL -lGLU -lglut -w

./a.out