# graphics-final-project

SBE306B_Spring20_Project_Group_04

Team Members:

- Name : Adel Refat Ali | Sec : 2 | Seat No.: 3 | Email: adel.elmala2025@gmail.com
- Name : Ahmed Nabil Salem | Sec: 1 | Seat No.: 10 | Email: ahmednaza7@gmail.com
- Name : Mahmoud Abdel Monem | Sec: 2 | Seat No.: 26 | Email: hooodamonem111@gmail.com
- Name : Ahmed Osama Mohamed| Sec: 1 | Seat No.: 2 | Email: ahmedosamam.negm@gmail.com
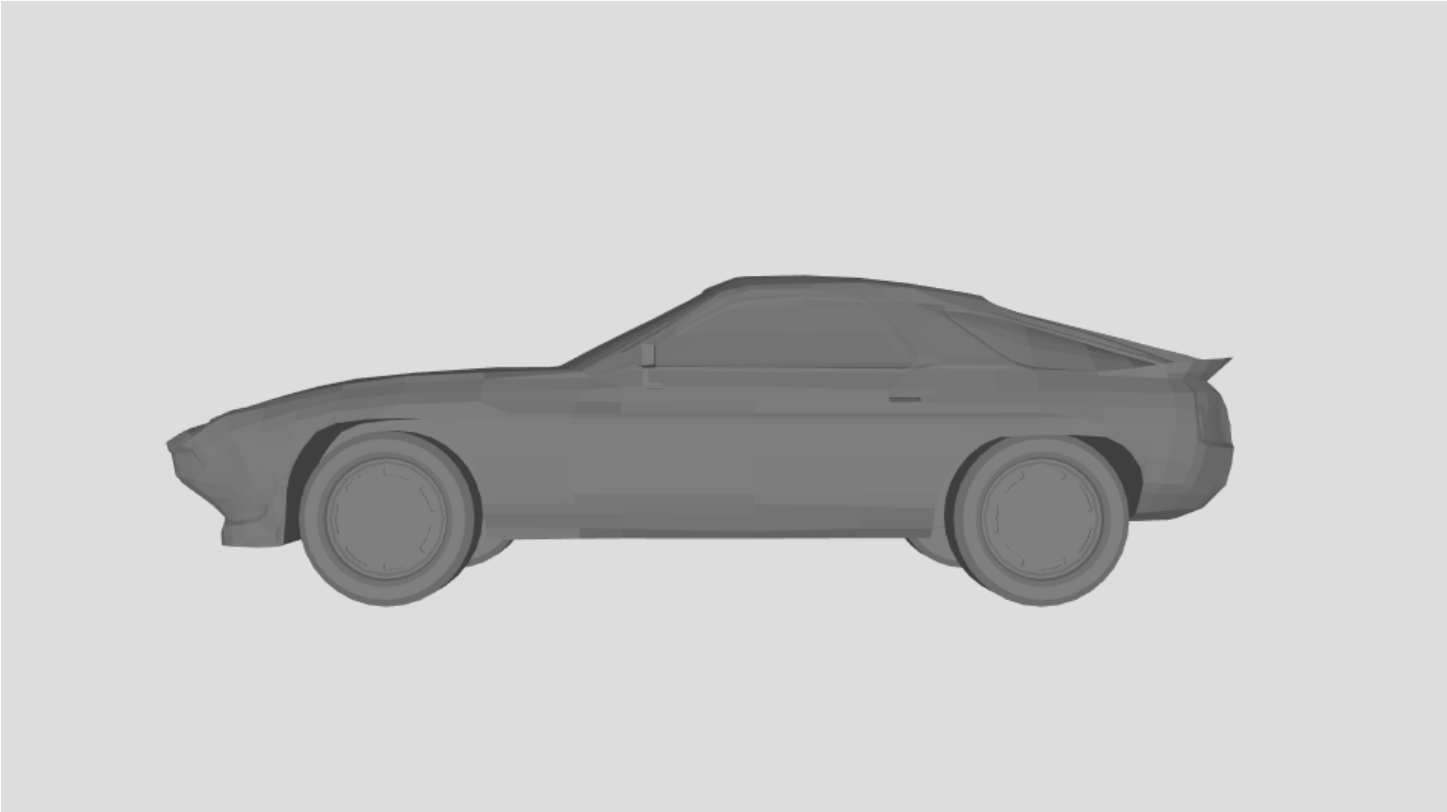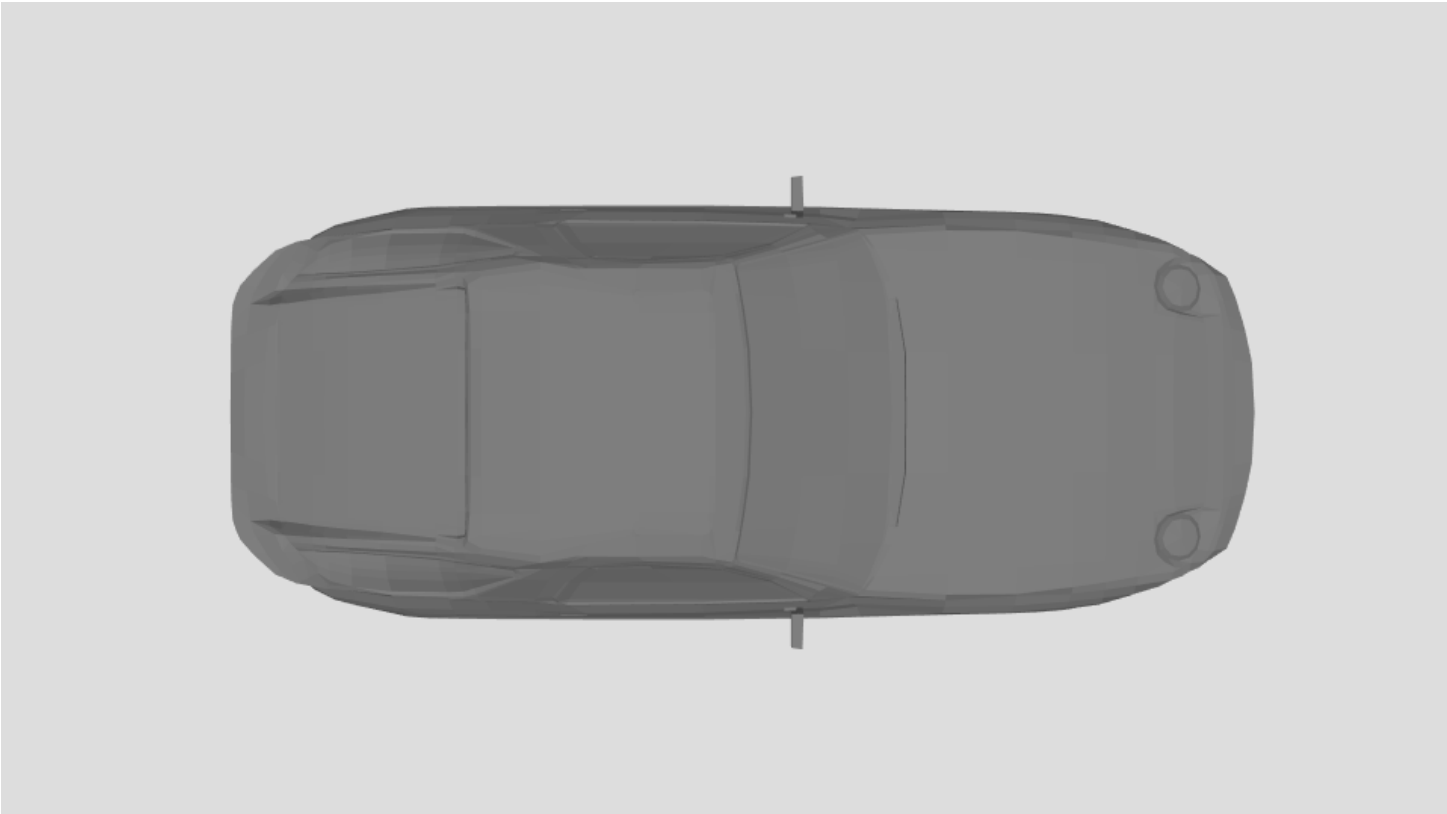- Name : Shaden Ahmed | Sec: 1 | Seat No.: 44 | Email: shaden.ahmedbaki@gmail.com

Implementation:
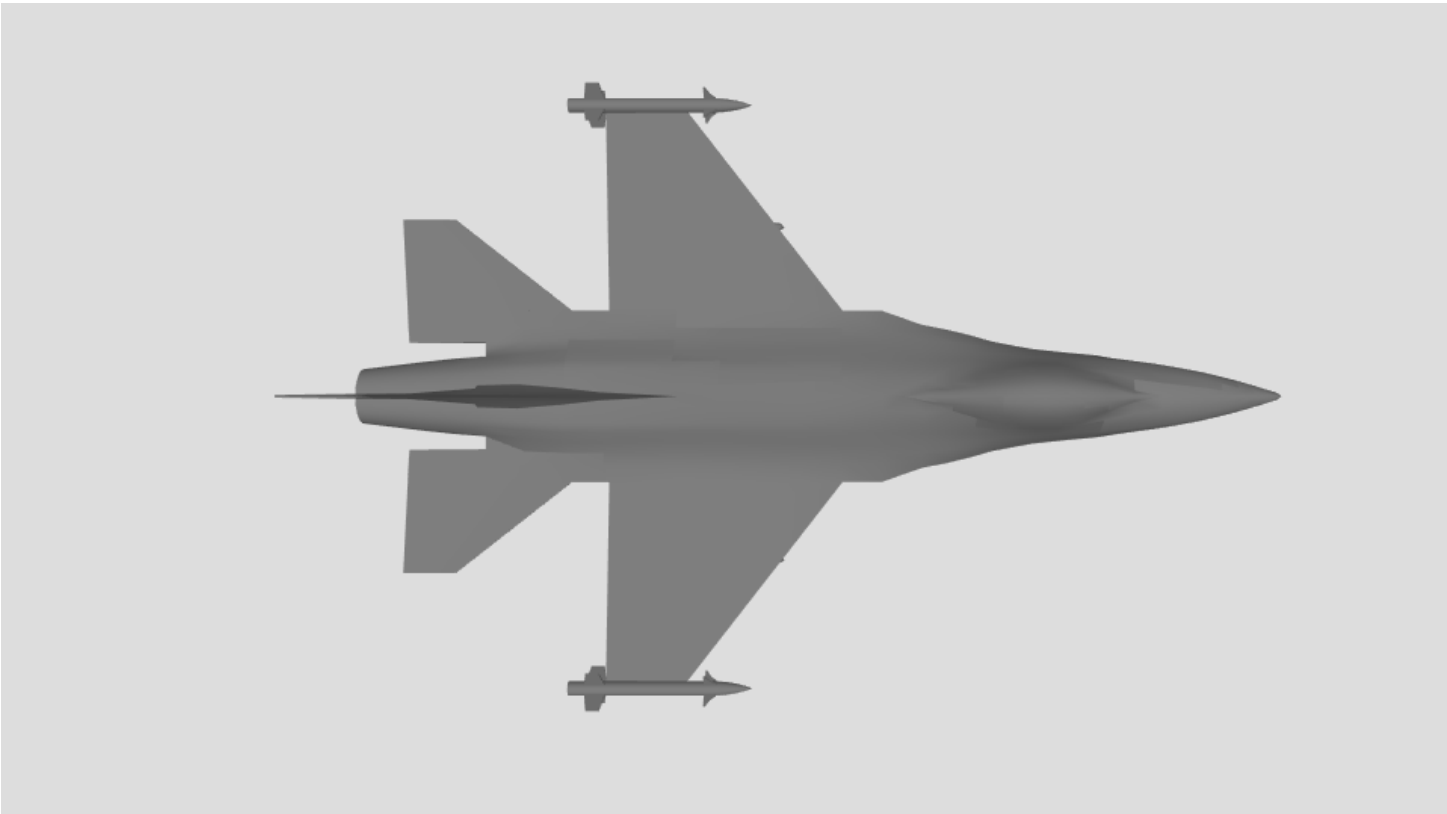
Final result
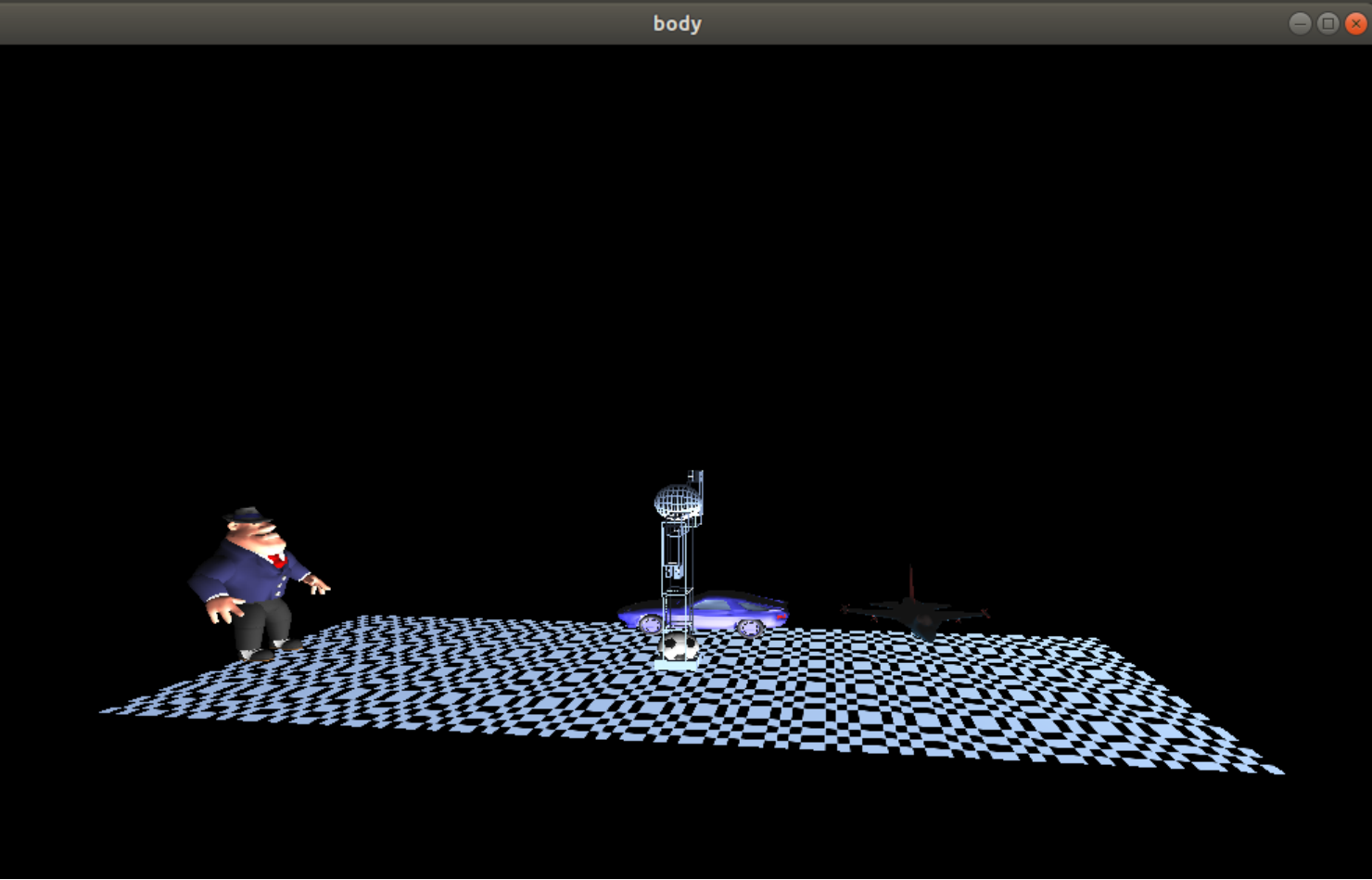
Loaded objects

object 1

object 2

object 3

object 4
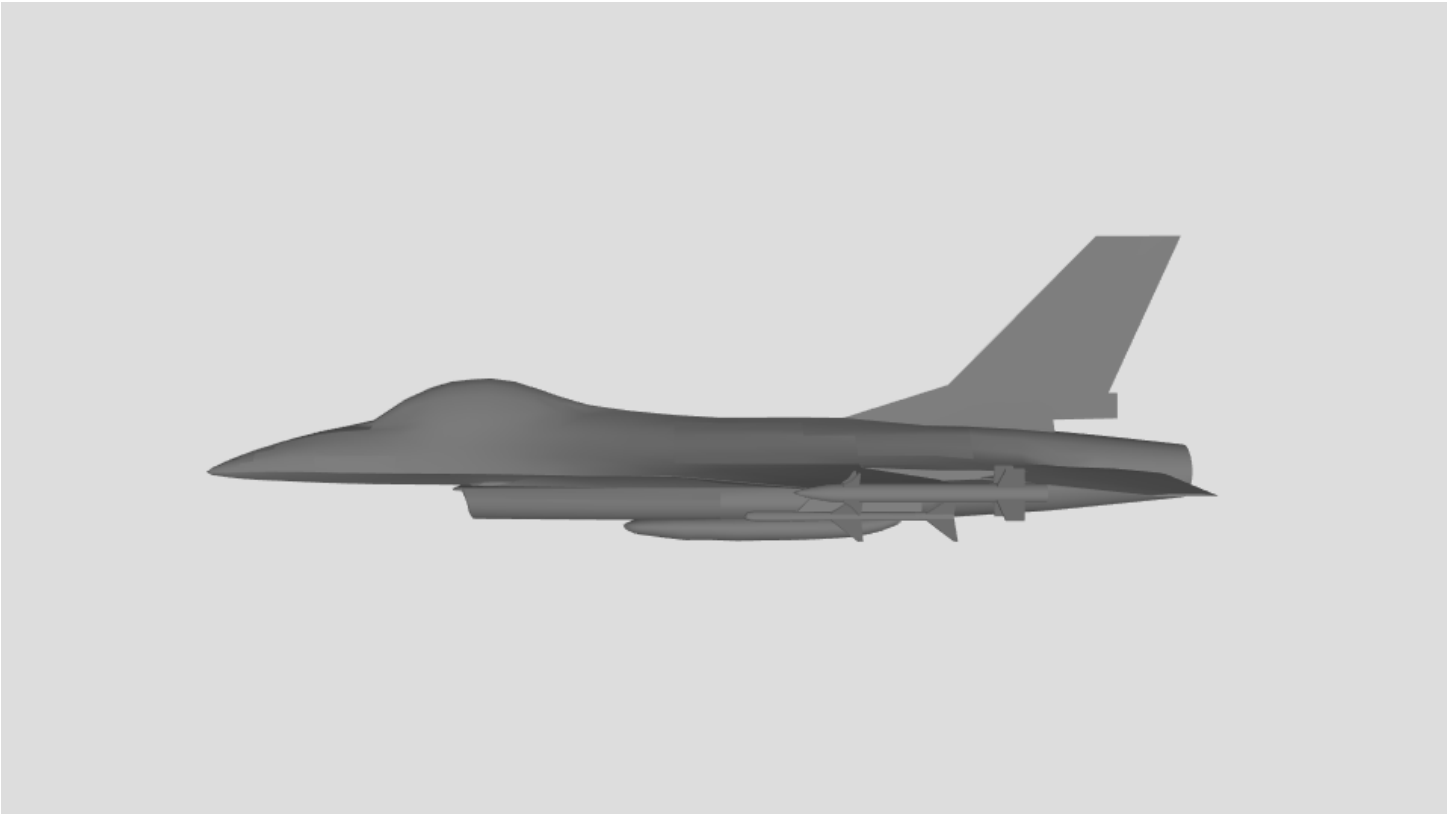
animations

Robot wave
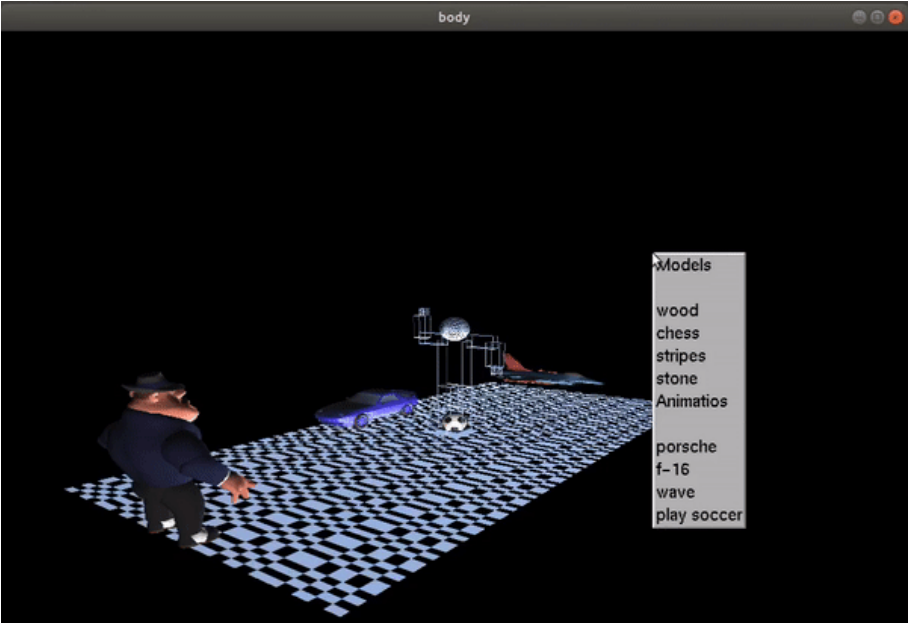
Robot play soccer
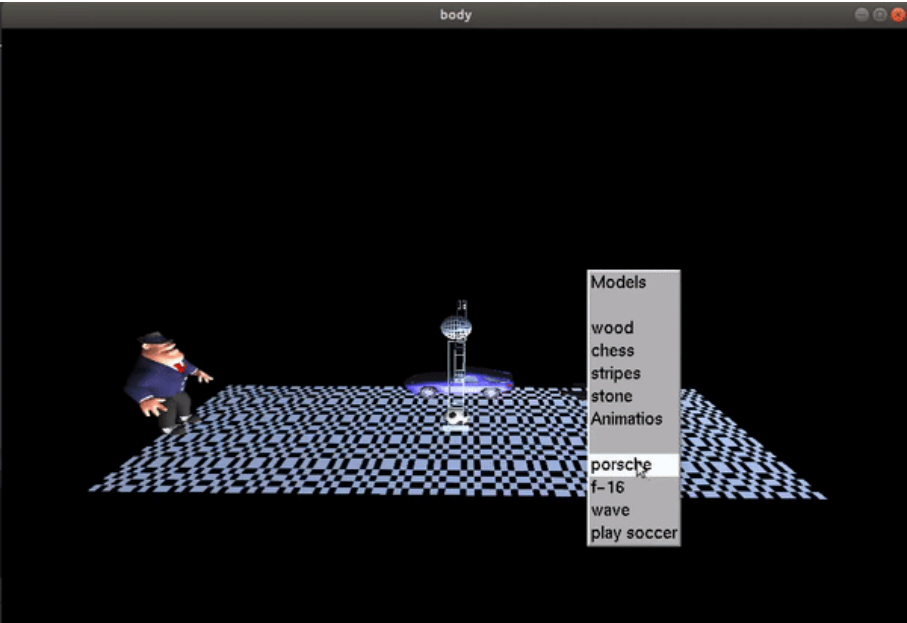
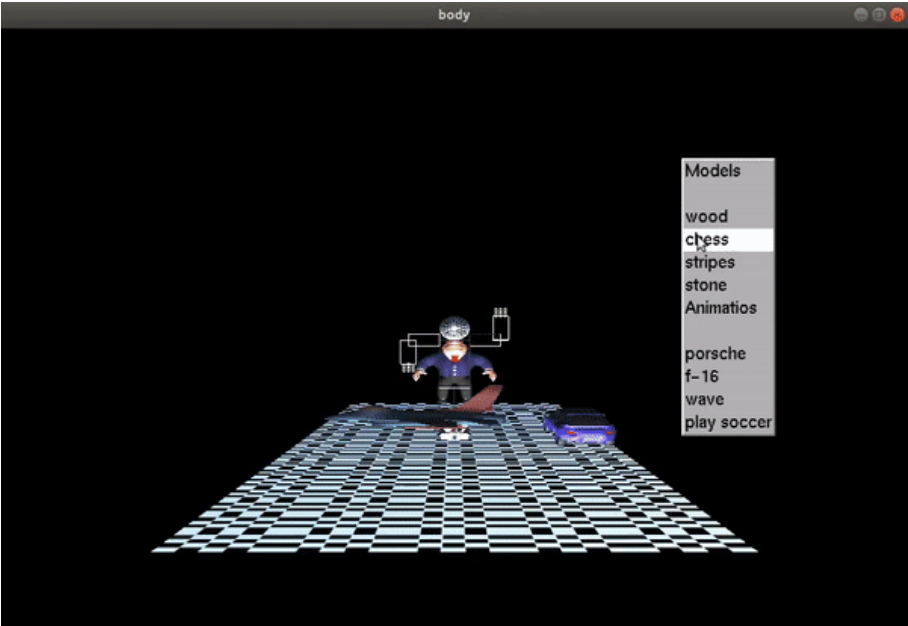## Car Movement
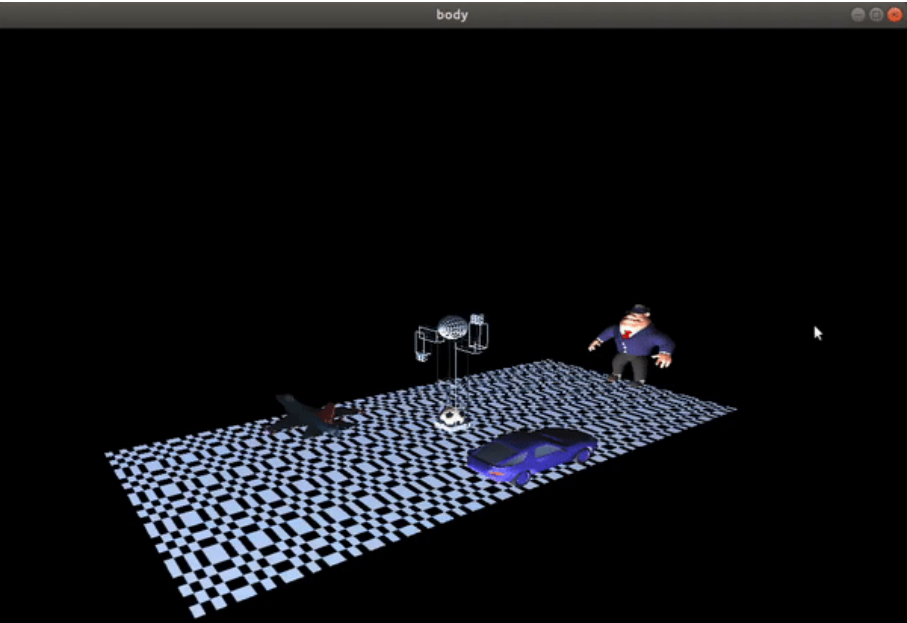
Plane Movement

Texture Mapping

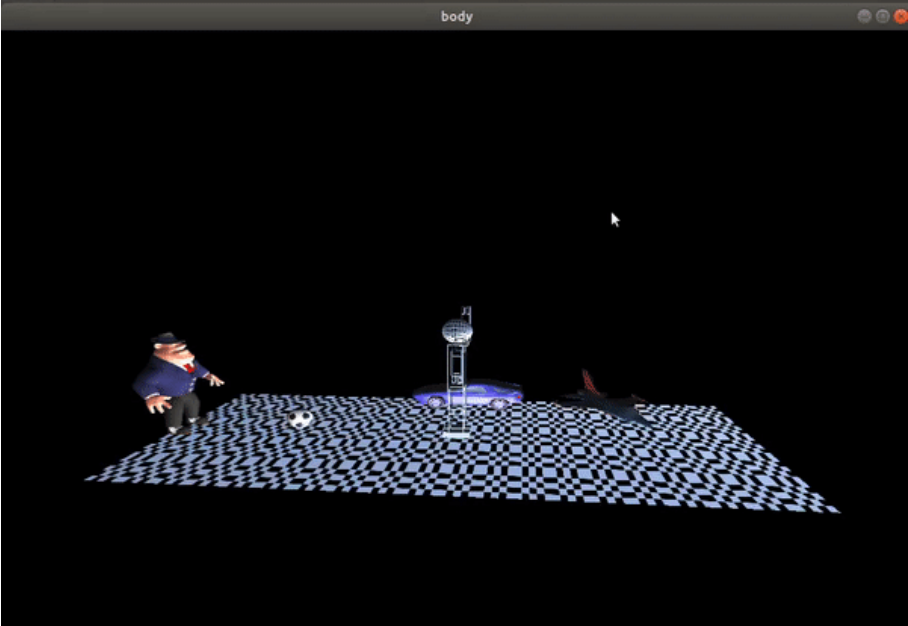### View 1

View 2

Issues

Texture Mapping

- not any images can be mapped and still look nice , it has to be cropped to it's smallest element to look better.

Lighting

- had to figure out where to position the light source in respect to the floor to be illuminated properly.

Idea of the animations

1. the 'car' moves along the z axis of the floor and turns around every time it reaches the edge
2. the 'plane' spin around it's Y axis
3. the 'Robot' waves his BOTH hands
4. the 'Robot' moves his leg to kick the ball and the ball bounces every time it reaches either the 'robor' or 'al Capone'.

Conclusion

- the scene is controlled from the menu, you can gradually choose objects to start moving.
- Beside the animations controls, you can choose the texture mapping of the floor from the same menu.

Use in biomedical field

- it can be used to import objects constructed from several scans like mri or other imaging machines, then the user can view it in 3d scene for better view , looking to it from different angles and positions.

Controls

Robot controls

Body Part	key	Body Part	key
Left Arm	z - Z	Right Arm	a - A
Left Shoulder	x - X	Right Shoulder	s - S
Left Elbow	d - D	Right Elbow	e - E
Left Hip	y -Y	Right Hip	h - H
Left leg	o - O	Right leg	l -L
Left Knee	i - I	Right Knee	k - K
Left Base	f - F	Right Base	f - F
Left Flang	v - V	Right Flang	v - V

Camera controls

Action	Key	Action	key
Zoom In	B	Zoom out	b
left	<-- OR mouse	Right	--> OR mouse
Down	down-arrow	UP	up-arrow

Animation Controls

Left Click and Choose

Compile

```
g++ -o out SBE306B_Spring20_Project_Group_04.cpp ./srcs/imageloader.cpp ./srcs/glm.cpp -lGL -lglut -lGLU -lm
```

Run

```
./out
```