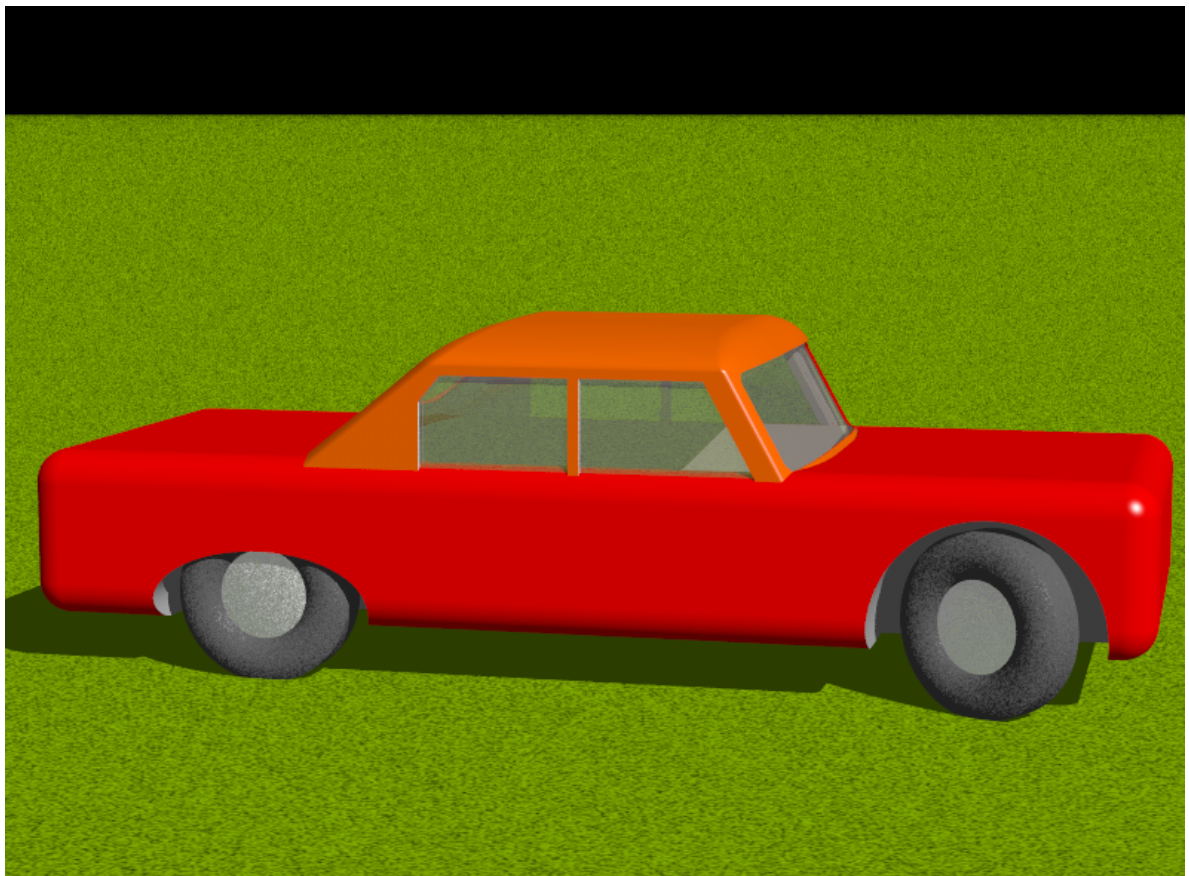# Homwork5

- 姓名：郭炅
- 学号：3170105370
- 专业：计算机科学与技术
- 授课老师：张宏鑫

Requirement

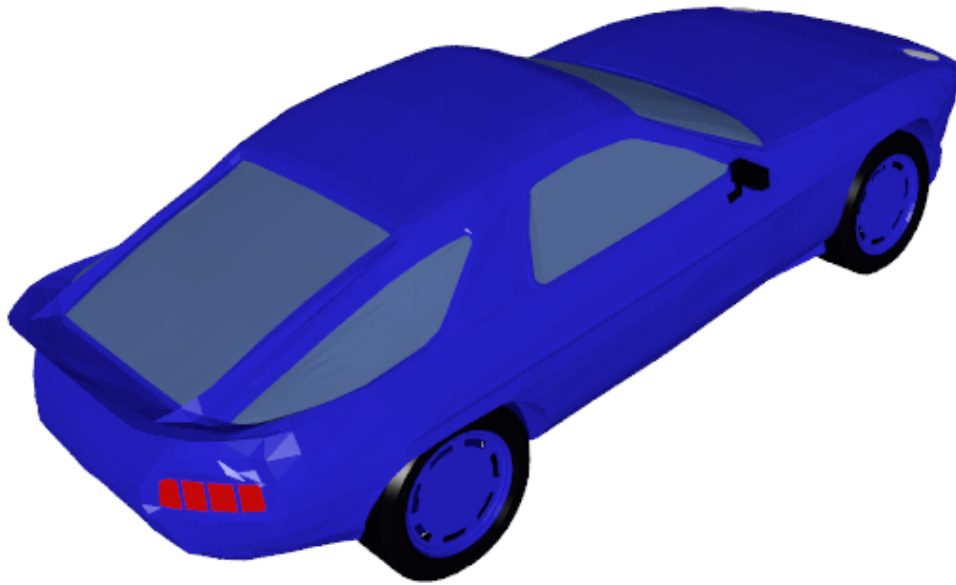- Render a car with POVRAY
- Resolution: > 640 × 480

Result

1st Method

- A red car with inside space
- Four wheels combined with some basic solid figures
- draw by use some CSG method with basic graphes

2nd Method

- A blue car with more details
- The geometric relationship is normal and surface is more smooth

Details

1st Structure

graph

|--ground

    |--plane with grass texture
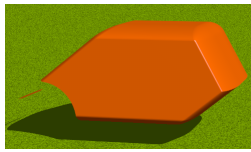

|--car

    |--Top part of car
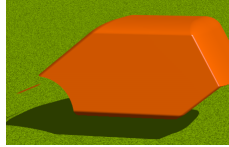

       |--entity combined by two intersected round boxes
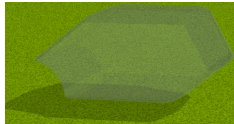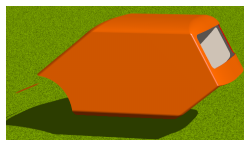

       |--(difference) front and back axles

|--(difference) inside space in entity combined by two intersected round boxes(all in the inside space, so pic cannot show this procedure until next step)
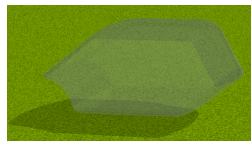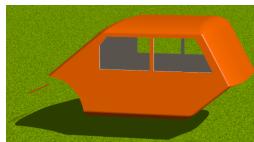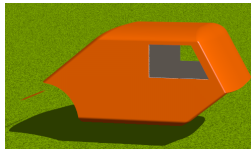

|--(difference, then intersection)side windows

|--two prisms intersected with inside space
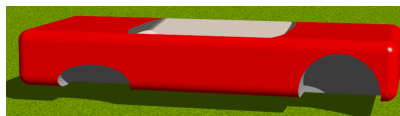

|--(difference, then intersection)font and back windows

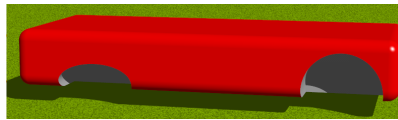|--two round boxes intersected with inside space
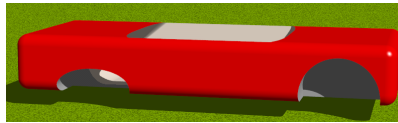

|--Middle part of car
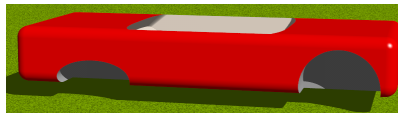

|--base entity, a round box

|--(difference)space for wheels

|--(difference)inside space in entity combined by two intersected round boxes
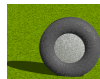

|--(plus) front and back axles, part of two cylinders(intersected with inside sapce). The reason is that simple difference will poduce hole, so must front and back axles.

|--wheels

|--single wheel

|--tire, intersection combined by torus and cylinder

|--wheel hub, which is sphere

2nd Structure

This method uses obj's data and draws the many meshes to construct smooth surfaces. Towards different meshes, give them different color.