

# Assignment 2

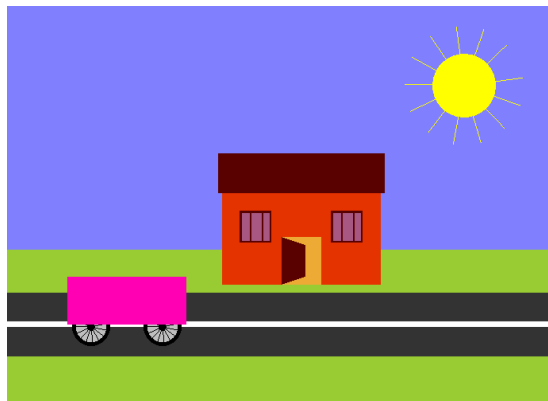
## Computer Graphics, Spring'23

### IIT Kharagpur

Posted: 3rd March 2023  
Due: 17th March 2023, 11:55 PM

## Description

In this assignment you will be developing a simple animation of a cartoon scene made up of basic geometric primitives. The scene will contain a house with a door and two windows, yellow colored Sun (with rays coming out of it) in the sky background, greenish grass-land, a black long road with white divider at the middle, and a wagon with two wheels having spokes in it. The static scene should look similar to this:



You may use the basic OpenGL geometric primitives to draw the objects (or approximate the actual shape if that primitive is not available in the library). For example, the Sun can be drawn using a polygon with many sides.

The animation part of the assignment will be on two objects: the Sun and the wagon. The Sun will be continuously rotating around itself (along with the rays), and the wagon will be moving forward (and wrap around from the other side) while the wheels will be rotating around themselves (as shown in the demo in the class). You can use `glutTimerFunc()` for the animation.

Your task is to implement the scene and the animation in OpenGL using C/C++. Marks are distributed for different components of the scene (see the marking scheme). Your developed scene need not be exactly same as what is shown in the above figure, but similar objects should be present in the scene. Also, feel free to use your own color choice and design to model the objects (there are some marks for the aesthetic aspect!).

## Weightage

This assignment carries 15% of the total mark.

## What to submit?

Submit the program file(s) you have implemented. You must use OpenGL with C/C++ to implement the assignment. Put all the file(s) into a zip and submit in Moodle (no files will be accepted by email). Please do not submit any unnecessary files (such as the whole project).

## Plagiarism

Copying the code is a serious academic offence, which will be treated with zero tolerance. Remind that changing variable names and white spaces do not make your code unique, it's very easy to detect these cases using softwares.

## General marking scheme

The marks will be distributed as follows:

- Working program: 80%
  - Drawing the house with a door and two windows: 5%
  - Drawing the Sun: 5%
  - Animating the Sun: 20%
  - Drawing the street with white divider: 3%
  - Drawing the grassland and sky background: 2%
  - Drawing the wagon with wheel: 5%
  - Animating the wagon and wheel: 30%
  - Aesthetic aspect of the output: 10%
- Documentation: 10%
  - Main comment block identifying the student (name, roll number, email address): 4%
  - Defining input and output parameters for a function: 3%
  - Purpose of functions/blocks of code: 3%
- Program style: 5%
  - Meaningful variable names: 1%
  - Constants instead of “magic numbers”: 1%
  - Readability (complete sentences, indentation, white spaces, etc): 2%
  - Code flows “nicely”: 1%
- Program structure: 5%
  - Modular code: 1%
  - Uses appropriate data structure: 2%
  - Loops when needed/no loops when not needed: 2%