You need write code with your group, at minimum:

A customized bridge designing function that accepts parameters as arguments and returns a completed bridge design as a truss object.

This function will implement a design strategy\* to design bridges more effectively than the basic example

The strategy will be described in the documentation string of the function

In line comments will explain the way the code executes the strategy

The function(s) must be able to meet all possible combinations of design requirements\*\*

Sub-functions are allowed and encouraged where helpful, but each must have a documentation string and comments.

An easy-to-use interactive function that guides the user through inputting the parameters, making design choices, and submitting the correct file.

The interactive function should be simple to use correctly, on the first try, without prior analysis of the code

Instructions must be provided to the user for every step from starting the notebook to submitting the .pickle file on canvas.

The interactive function must process user input to protect against user error (typos, mis-interpreted instructions, etc.)

The interactive function must be fully featured, so that the user can meet any allowed design requirements

The interactive function must work with the design function(s) to implement the design strategy

\*\*The design requirements will always include:t

The road must begin at (0, 0) and continue towards positive x

There must be 4 or more road segments

The road segments must cover the entire length of the bridge without jumps or gaps

The length must equal a specific value from 4 to 12 (imagine m, but the units are made-up here)

The bridge will be evaluated based on the minimum safety factor of the members of the truss: FinternalPmax, internal force / maximum allowed load

Each round will also require a random combination of the following:

Maximum Height: no nodes are allowed above h max, such that for all nodes, y≤hmax where hmax≥max(hexit,hclear)

Exit Height: The right most node of the road sections must be at a given height, y(finalnode)=hexit, and −4≤hexit≤4

Minimum Clearance: Along the bottom of your bridge, there must be a node higher than a minimum, max(row0(nodes))≥hclear, and hclear≤3

Different Vehicle Mass: The mass of the crossing vehicle can be changed from the default 50 to anywhere up to 500.