

Automated Gear Design

Getting Started:

1. Please use Remote Desktop Connection and connect to **elabs.wpi.edu**
2. This program works with SolidWorks 2020

Step 0: Survey

1. Before starting the tutorial, please go <http://bit.ly/GearGenTest-1> and complete the pre-survey. This will ask some basic questions about you like your major and your experience with gears. Please fill out your WPI email address so that we can link your results.
 - a. The survey will ask you to enter a code. The code is generated as follows:

1 2 3 4 5 6

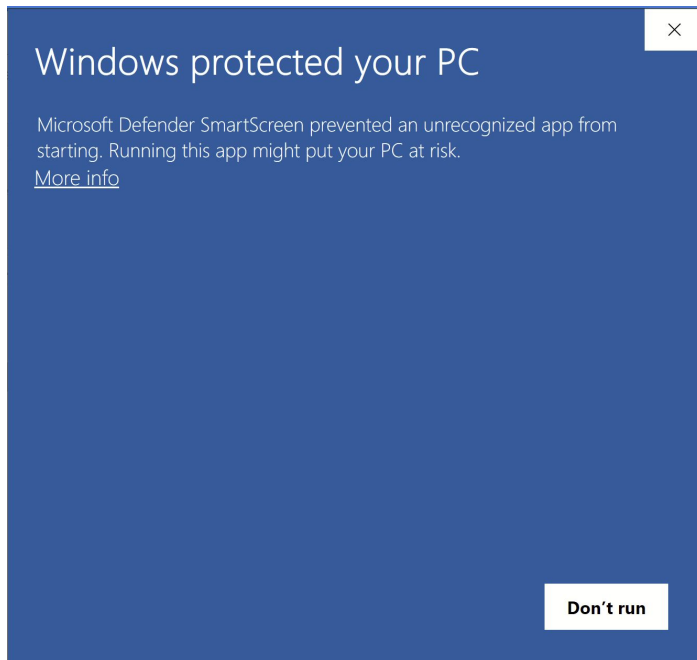
- 1: Middle initial
- 2: First letter of your mother's first name
- 3: First letter of your father's first name
- 4 and 5: Your two-digit birth month
- 6: The number of older siblings you have

(use 0 for any unknown values)

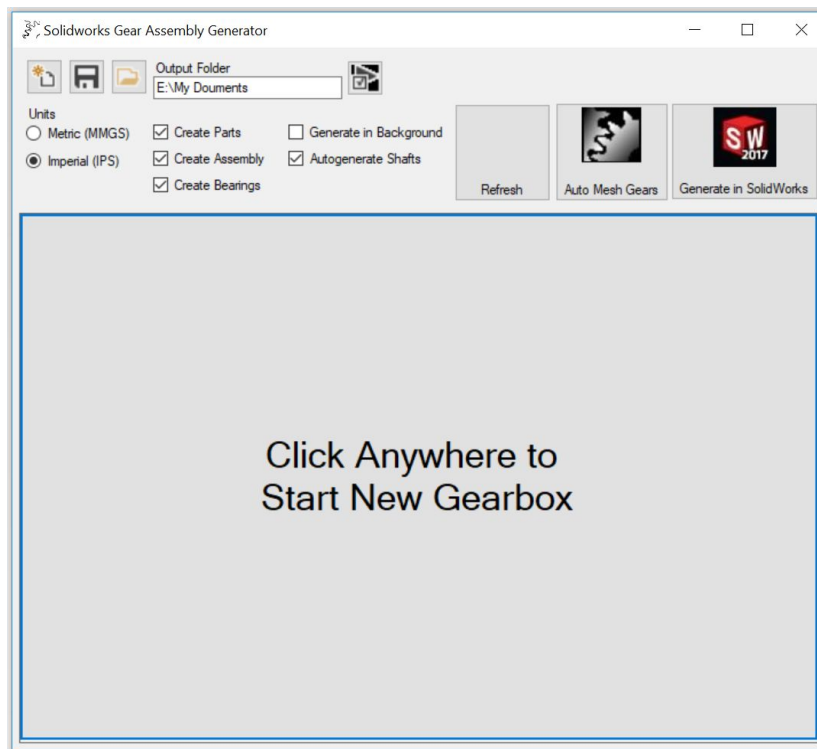
Step 1: Download and Install

1. Go to <http://tiny.cc/GearGenProg> and download the zip file.
2. Once downloaded, extract the contents of the zip file into a folder.
3. Then, click on the SW Gear Generation GUI.exe file.

4. You will see a notice shown below:



Click on “More Info” and then Select “Run Anyway.” You will see the following screen.



Step 2: Design Gearbox

1. You will be designing the following gearbox.

a. Gear Information

Gear	Type	Pitch	# of Teeth	Orient ation	(X, Y, Z)	Shaft	Bore Diame ter	Face Width
A	Spur	48	12	Z	0, 0, 1.45	Shaft 1	0.125	0.125
B			56	Z	0.72, 0, 2.93	Shaft 2	0.125	0.125
C	Spur	48	24	Z	0.72, 0, 2.93	Shaft 2	0.125	0.25
D			48	Z	0.72, -0.75, 2.93	Shaft 3	0.125	0.25

- b. With the program open, click where it says “Click Anywhere to Start New Gearbox” and the gear information will appear:

Solidworks Gear Assembly Generator

Output Folder: E:\My Documents

Units:
☐ Metric (MMGS)
☒ Imperial (IPS)

☒ Create Parts
☐ Generate in Background
☒ Create Assembly
☒ Autogenerate Shafts
☒ Create Bearings

Refresh Auto Mesh Gears Generate in SolidWorks

GearSet 1

Type: Spur Ratio: 32 : 32
 Pitch: 48 Material: Plain Carbon Steel

Gear A

of Teeth: 32 teeth
 Orientation: X axis
 { X, Y, Z } 0 0 0
 Shaft: Shaft 1 Edit Shaft
 Bore Diameter: 0.25 in.
 Face Width: 0.5 in.

Gear B

of Teeth: 32 teeth
 Orientation: X axis
 { X, Y, Z } 0 0.66 0
 Shaft: Shaft 2 Edit Shaft
 Bore Diameter: 0.25 in.
 Face Width: 0.5 in.

Click to Add Gear Set

- c. Using the information in the tables above, fill in the information for each gear set. Gears A+B are GearSet 1 and C+D are GearSet 2.
- d. GearSet 1 should look like this:

GearSet 1

Type: Spur Pressure Angle: 20
 Pitch: 48 Material: Plain Carbon Steel

Gear A

of Teeth: 12 teeth
 Orientation: Z axis
 { X, Y, Z } 0 0 1.45
 Shaft: Shaft 1 Edit Shaft
 Bore Diameter: 0.125 in.
 Face Width: 0.25 in.

Gear B

of Teeth: 56 teeth
 Orientation: Z axis
 { X, Y, Z } 0.72 0 2.93
 Shaft: Shaft 2 Edit Shaft
 Bore Diameter: 0.125 in.
 Face Width: 0.25 in.

Click to Add Gear Set

- e. To add another gear-set, click on the “Click to Add Gear Set” button.
GearSet 2 should look like this:

GearSet 2

Type: Pressure Angle:
Pitch: Material:

Gear C

of Teeth: teeth
Orientation: axis
{ X, Y, Z }
Shaft:
Bore Diameter: in.
Face Width: in.

Gear D

of Teeth: teeth
Orientation: axis
{ X, Y, Z }
Shaft:
Bore Diameter: in.
Face Width: in.

- f. Press “Auto Mesh Gears” at the top right so that the distances between the gears are automatically calculated to adjust the positioning, if needed.
- g. Once all this information is put in, press “Generate in Solidworks”.
- h. Select your output folder.
- i. A menu will pop up asking to specify additional options. For this tutorial, you will press “Input Shaft Crank”, which will tell SolidWorks to add a crank to the input shaft.
- j. Click “Generate” and SolidWorks will open. Once it is fully open, go back to the gearbox design software and indicate that SolidWorks is open (there will be a popup saying “Press OK once SolidWorks has loaded”). Once you press OK, SolidWorks will start generating the gearbox.
- k. Once SolidWorks is done, please take a screenshot of your resulting gearbox (to be uploaded in the survey in the next step).

Step 3: Survey

1. Once you have completed the task, please go <http://bit.ly/GearGenTest-2> and fill out the post survey. This survey will ask questions about your experience using the software and whether you have any feedback about the program.