**Part 1 – Steam Engine**

1. To set the material of the container, click the “Material of Container” drop down menu and select desired option.
2. To set the maximum volume of the container, in liters, use “Volume of Container” slider and select desired value.
3. To set the thickness of the container, in meters, use “Thickness of Container” slider and select desired value.
4. To set the type of liquid to be used in the engine, click the “Type of Liquid” drop down menu and select desired option.
5. To set the volume of the liquid to be used in the engine, in liters, enter a numerical value in the text box found next to “Volume of Liquid”.
   1. Please note that this value must be less than or equal to the maximum volume of the container.
      1. Should the value exceed that of the maximum volume of the container, it will automatically be set to the maximum volume of the container.
6. To set the material to be combusted, click the “Material of Combustion” drop down menu and select desired option.
7. Click the “Click to run engine simulation!” button to launch the animation of the engine and to obtain the calculated values from the user selection.
   1. Summative values for “Vaporization Time” and “Engine Power” will be displayed.
   2. Dynamic values for “Current Pressure” and “Current Temperature” will be displayed.
   3. Note that any possible errors will be indicated to the user at the center bottom of the screen.
8. The train simulation can now be launched by clicking the button “Click to run train simulation!”
   1. Note that this button will be disactivated until the engine is running and all its inputs and outputs are valid.

**Part 2 – Steam Engine**

1. To set the mass of the train, in kilograms, use “Mass of Train” slider and select desired value.
2. To set the time during which the train will be in motion, in seconds, use “Train Run Time” slider and select desired value.
3. To set the angle of incline for the ramp, in degrees, enter a numerical value in the text box found next to “Angle of the Ramp”.
   1. Please note that this value must be less than or equal to 52 degrees.
      1. Should the value exceed 52 degrees, it will automatically be set to the maximum angle.
4. Click the “Click to run train simulation!” button to launch the animation of the train running on a flat surface and on an incline, and to obtain the calculated values from the user selection.
   1. Summative values for the train on the flat surface including, “Distance travelled on flat surface”, “Maximum velocity on flat surface”, and “Acceleration on flat surface”, will be displayed.
   2. Dynamic value for the train on the flat surface, “Current speed on flat surface”, will be displayed.
   3. Summative values for the train on inclined surface including, “Maximum distance travelled on ramp”, and “Maximum height reached on ramp”, will be displayed.
   4. Dynamic value for the train on inclined surface, “Current speed on ramp”, will be displayed.
   5. Note that any possible errors will be indicated to the user at the center bottom of the screen.