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This is a user manual for the Digital Circuit Application. It contains general practices and rules on using the digital circuit application

User Manual

Digital Circuit Application

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# Application rules and requirements.

In order to use the application without problems, there is a set of rules that it is advisable to be followed.

* The application is developed to be used in a Windows 7 or 8 environment. It is not advisable to use any other operating system.
* An input can only have one connection.
* In order for the circuit to display the proper logical states, the inputs and outputs of the logical gates, sources and sinks should be connected correctly. If there is an unconnected element in the circuit, then the logical value might not be a correct one.
* In order to calculate the circuit all of the starting gates should be connected to a source.
* When choosing different colors for the logical states, make sure that all colors are assigned and are not the same for two cases.
* Before adding a connection, you need to click on the connection button every time you want to add a new connection even if one addition follows the other.
* You can only delete a connection after you created it, using the undo button.

# User Manual

## Adding logical elements to the workspace.

### When adding elements to the workspace please make sure that the area is clear, otherwise you will not be able to add an element if one is already in that space.

### Source:

1. Press on the source icon (  ) button.
2. Drag the mouse to the workspace area.
3. Press the mouse button to place the source element.

### Sink

1. Press on the sink icon () button.
2. Drag the mouse to the workspace area.
3. Press the mouse button to place the sink element.

### AND Gate

1. Press on the AND Gate icon () button.
2. Drag the mouse to the workspace area.
3. Press the mouse button to place the AND Gate.

### OR Gate

1. Press on the OR Gate icon ( ) button.
2. Drag the mouse to the workspace area.
3. Press the mouse button to place the OR gate.

### NOT Gate

1. Press on the source icon ( ) button.
2. Drag the mouse to the workspace area.
3. Press the mouse button to place the NOT Gate.

## Adding Connection between logical elements in the workspace.

Before adding a connection between elements, you should make sure that the starting element has a free output and the ending element has at least one input free. Trying to connect two occupied elements will result in an error message.

1. Click on the connection () button.
2. Click on the first element you would like to connect. This element will be the starting element.
3. Click on the second element you would like to connect. This element will be the ending element.
4. The two elements are now connected.

## Calculating the logical value of the circuit.

Once you have finished your circuit and connected all the desired elements, press the calculate button. Once the calculation is over the circuit will change the colors of the connections to show the logical values. By default, the color values are: Green – represents the logical value 1 (5V). Red – represents the logical value 0 (0V). Grey – represents an unknown state. This happens only in the case that the circuit is missing an essential connection.

## Saving and Loading Circuit.

These specific actions will result in either saving a circuit as an editable file or loading an already available file with an editable circuit.

### Save

1. Press File.
2. Press Save File.
3. Choose a name and a location for your file.
4. Click OK to save the file.

### Load

1. Press File
2. Press Open File.
3. Search and choose the file that you want to open in the dialog window.
4. Select the file and click OK to load it.

## Exporting Circuit to image file.

This function will export a specific circuit to an image file.

1. Press File
2. Press Export File.
3. In the dialog window click the location and a name for your file.
4. Press OK to export the image.

## Undoing and redoing actions.

In the case that you made a mistake you can choose to undo or redo a certain action. To undo a specific action press the Undo Button. To redo an action that was undone, press the Redo button.

## Changing colors for values.

1. Press Tools in the menu.
2. In the drop down menu press Preferences.
3. In the new window you can choose the colors that you would like for the values.
4. Press OK to select.