RESEARCH ARTICLE OPEN ACCESS

Preparation of Paper for International Conference on"Develo ment of Virtual Dieital Electronics Laborator using LabVIEW"

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ABSTRACT
For the student the purpose of the engineering laboratory is to "practice" and laboratory studies help them gain an understanding of the real world they are learning in their theories and ideas of innovation. In the field of education, especially in the field of engineering, teaching requires laboratory equipment, which, because of its cost, creates difficulties in obtaining certain practices. For this reason, laboratory detection is considered, a practical and economical method in the development of laboratory practices. LabView software from National Instruments is used to develop a visual laboratory, where the mathematical model of the test program is used for transfer tasks. The simulation laboratory is a digital laboratory that operates with digital binary cycles that are "0" and "1". Switches are used for input and lead on the output side, and intermediate circuits are used to implement the required function such as sensible gates, additives, output and other integration circuits. Real-time signal values for inputs and outputs can also be seen on the oscilloscope.
Keywords: Circuit Launch, Digital electronics, LabVIEW, Virtualization, Virtual Laboratory.

I. INTRODUCTION

In the digital and internet age, teaching methods and learning style have changed dramatically, leading to the growth of online education where anyone can learn anything, anytime, anywhere and at no cost.

Web laboratories change course behavior, make laboratory tests easier and provide open access (from anywhere, anytime). The most important contribution of modern distance education is that "teaching" and "learning" methods have fundamentally changed. That is to say, switch from "teacher" and "classroom" to "student" focus. Content-based teaching methods are replaced by student-centered ones.LABVIEW The programming language is flexible, open- ended, uses software to replace metal work, has the advantages of user interface, easy operation, visualization, and equivalent to having a personal lab. The Digital Electronics course is designed for electronic or trained students to integrate critical curriculum theory, build a virtual laboratory on a computer, using the LabVIEW development platform design visual tool that can detect common tests in that subject, including logical gate construction, interactive circuit, student learning, make up the absence of old learning hardware, improve the quality of instructional learning curriculum, improve teaching effect, can expand the student practice platform, electric classroom lessons teaching test to provide a new kind of practical methods, i.e. a visual tool as a source, real practice integrated with the teaching method computer.

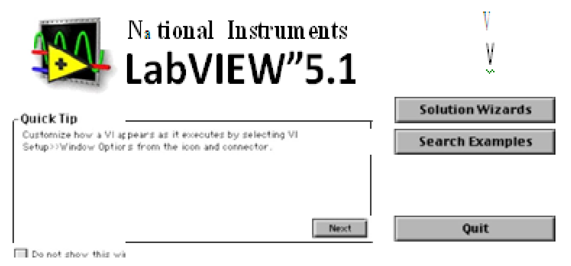

Figure l.

1.1 VIRTUAL INSTRUMENT PROGRAM-MING PLATFORM

Visual instrument computer computer development using software, as well as editing paradigms, integrated closely with test technology, in-strument technology. LABVIEW is an instu-ment engineering, called Laboratory Laboratory Virtual Instrument Engineering Work-bench (Laboratory virtual instrument inte- gration environment) .It is the development of NI com-pany based on G language (Graphics Language) virtual instru- ment development tool, is the first tool to use a graphical programming tech-nology tool for 32-bit system development software, currently the most widely used and fastest growing site, the most powerful for creating software integrations. Create the core of the LabVIEW visual object by VI, including the Front Panel and Diagram and the icon / connector.

1.2 GETTING STARTED WITH LABVIEW

The example is explained in a step-by- step manner. LabVIEW can be started with a double click on the LabVIEW icon. The first step is to create a new VI, which can be done by selecting a file and then a new VI in the menu. This results in the creation of a blank front panel (FP) and a blank (block diagram) BD. The next step involves performing the input value and the results of the VI which is highly dependent on its performance. This is followed by labeling input. It is well-known that for the best looking, items in the FP window can be aligned, distributed, and enlarged in size using the appropriate buttons from the FP toolbar. In addition, a click-through program on BD is performed. In order to have the right data flow, functions, structures, and storage symbols in BD need to be wired. This is achieved with a cable tool. In the next step, BD is written. Finally, the created VI is maintained and the functionality of the VI can be evaluated and verified. By building SubVI, which is VI which is used as part of a higher VI level, its connection windowneeds to be fixed.

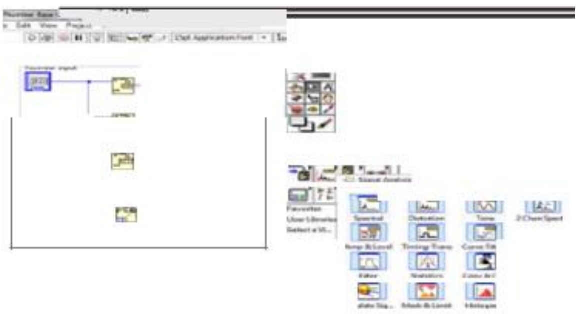

Figure 2. LabVIEW Block Diagram Window

1.3 IMPLEMENTATION ON LABVIEW

LabVIEW enables real-time simulation, such as simulation of logic gates. Simulate a well-presented addition as the user can interact directly. The LABVIEW program is called a visual tool (Vi). Setting up a vir-tual tool can create an ex-periment. The moth exercise has been chosen as the basis for the topic and the complexity of the circuit itself. Figure 1 shows the block drawing window in which the visual system is created. In a block diagram, com- ponents are dragged and connected by connecting wires that can be found on the tool palette. There are color codes that represent a different function, e.g. the blue strings and the drawing box represent the complete data type, the pink boxes representing the strings. Parts or instruments can be added to the block diagram with the right click and select the instrument you want. These metals or parts are a true representation of real metal. To use LabVIEW, Vi must be stored in a standalone application. A standalone application is an application that does not require a parent program to run. In this case, the independent LabVIEW application in the form of .exe files can be run without installing LabVIEW on the target computer. To produce an independent application, we have to build a new Vi specific project. The option can be found under the "File"> "New project" tab. To create an app, an option can be found under the "Specified Build" tab as shown in Fig. 2. However, LabVIEW Runtime Engine is required for the specified computer. The timeline engine contains the en-tire database and the required library of items in LABVIEW for it to work. Therefore, the user must install the operating time engine first before performing the test. The entire region is inserted into the "while loop" to keep the system open until the user stops manually. All sensible gates have a sample output following this method in LABVIEW.

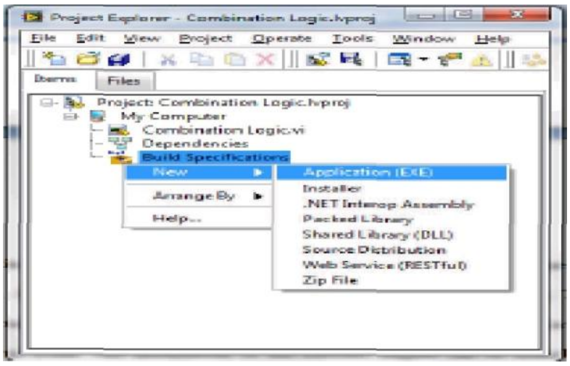

Figure3. Building Lab VIEW standaloneapplication

1.4 INTEGRATION OF LABVIEW IN LOGIC GATES

There are a few sensible gates discussed in this article, namely NO gate, AND gate, OR gate, NOD gate, NAND gate and XNOR gate. A sensible gate has two or more inputs outside of that gate, with only one input. At any given moment, all logic gate terminals are in the same binary problem, low (0) or high (1), represented by different power levels. The minimum is approximately zero volts (0 V) and the maximum is about five volts (+ 5V) per circuit. In this section, sensible gates are defined by their basic knowledge, symbols, proportions and their true table. Figure 7 shows an example of an OR logic gate. The sample extraction request, as shown in Figure 8 was developed using LabVIEW. The app shows the output change in the time drawing mode. In the LABVIEW program, inputs are A and B. The output of the concept gate is A B, which means OR function. If there is 1 input, or HIGH, the result will be 1, because 1 + 0 - 1. If and only if both results are 0, the result will be 0.The output region is built on block dia LABVIEW gram, as shown in Figure 9. Both inputs are in "Boolean Array Input" mode. Both inputs are wired to a digital waveform converter because both inputs are in the same state. They need to be converted into digital signals first before they can be connected to a digital wave graph and the OR gate.

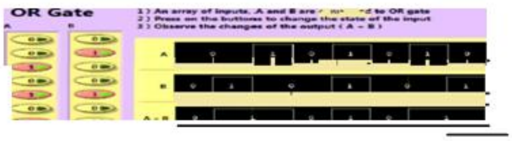

Figure 4. OR logic gate sample output in LABVIEW

1.5 PUBLISHING THE EXPERIMENT

Click on tools> web publishing tool> select checkbox to monitor or control changes, copy the link made there and click ok. Now, open that link in the online explorer to view your test from the mote panel. For example, Link has generated our test: LabVIEW web publishing tool generates the html code needed for VI output to appear in the browser when the generated http URL is provided as the browser address. This URL also contains an IP address information which is why it makes it local to Local Area Network [LAN]. This browser page shows the front VI panel that works only on the same device [which is the local file] where the VI is built and stored or devices on the same LAN. LABVIEW software and extensions are mandatory for the file to work. To make VI accessible and remotely controlled, a computer assigned a public IP converts it into a server that can be accessed from any device whether local or non-local. As mentioned earlier, there are a number of support software / plug-ins required for VI to be remotely accessed via the Internet [using http URL] as well as the user-to-browser interface such as the LabVIEW Run Engine Timer [RTE].

II. CONCLUSION

Using the resources that control the rich widget in front of the LABVIEW panel, complete the connectors for all types of instruments brightly; relying on the powerful functioning of the LabVIEW library, consider many types of programs well; using the independent laboratory structure of the LABVIEW client side, with VI extracted from LABVIEW, enter the web page and complete remote access. For university teachers, a virtual laboratory becomes a project that can be quickly discovered and completed easily. In these roles the virtual instrumentation lab offers outstanding production profits.The project results show that LabView is an effective and reliable tool for creating a visual laboratory process, which offers the opportunity to use a large number of practical visual development applications. In addition to the opportunity to use a variety of simulation methods, it prefers independent learning work, offers an alternative to strengthening disciplinary skills from independent work, increasing learning opportunities by providing the opportunity to calculate with "home laboratory".

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