

Multiplexing and De Multiplexing using Visual Basic Program

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ABSTRACT

The strategy of the global telecommunications companies always provide the best services to users is the high speed in the transfer of reliable data and a large amount of data (calls) with the least effort and cost. This study focuses on the use of simulations for the implementation of Multiplexing technique and DE Multiplexing technique through programming using Visual Basic language. The simulation helps to give an easy and clear idea of how Multiplexing technique and DE Multiplexing technique work. The system was created and implemented using the Visual Basic 8.0.

Keywords:- Multiplexer technique, De Multiplexer technique, Visual Basic language.

1 Introduction

1.1 Multiplexer

Multiplexer circuits find many different implementations in digital systems of various kinds. These implementations include data selection, data routing, process sequence, parallel conversion to serial, waveform generation, generation logic function.[1]. Multiplexer works like a multi-digit digitally controlled switch where a numeric code is applied to selective input control that input data will be converted to an output. This is called multiplexing.[2]. The Multiplexer is a synthesized circuit which identifies binary data from one of the many input lines and directs it to a one output line .The selection of a specific input line is controlled by the set of selection lines.[3]. Typically, there are 2^n input lines and n lines of selection which bit sets define which inputs are selected .

1.2 Demultiplexer

A Demultiplexer is a logical circle with an input line, and $2n$ and n output lines specify lines[4]. It directs the information on the input line to any of the production lines [5]. The output line that obtains information on the input line is determined by the bit status of the selection lines [6]

1.3 Visual Basic Language

Visual Basic first appeared in 1991, and since then changes have been made to this language with the emergence of different versions. Visual Basic is a Windows programming language. It is used to design programs running under Windows.

Therefore, those who want to learn this language must be familiar with the Windows operating system, preferably familiar with Basic programming language In Visual Basic, the similarities are very similar to those in Basic [7]. Visual Basic is an event- oriented language, as are most Windows programming languages (Delphi and Visual C ++). Event-driven language is the language in which the idea of partitioning the program is based on partial programs execute when an event occurs, such as pressing the button or moving a mouse pointer over a window or the passage of time. Therefore, the program have to determine the events and how to respond to them [8].

2 Related Work

The authors in [9] presented a new technique that simulation process of interfering with the package using the OPTI system. The multiplexing process of multiplexing is an extension of the technique known as multiplexing by dividing the electrical time in the optical field. Where optical data streams are created by multiplexing the transmission time by the number of optical streams at a lower bit rate.

The authors in [10] suggested an approach for designing four users Optical Time Division Multiplexing OTDM on single mode fiber (SMF) for different bit rates have been successfully evaluated. The performance of the system depends on both the bit rate and the length of the fiber. The use of EDFAs enhances system performance and link length. The simulation was implemented using Optisystem 7 and Matlab R2011a.

The authors in [11] The strategy provided by Optical Time Division Multiplexing (OTDM) is to increase the bit rate of the digital fiber opticl system over the bandwidth capacity of the electronics engine. Different fiber parameters and different shaping patterns were used with the determination of transmission performance after the OTDM interface analysis showing the effect of the inbound signal capability And the signal strength control on the error rate in the bits (BER).

3 Proposed System

Here we present the proposed system for the application of multiplexing technique and De multiplexing using the visual basic programming language. The importance of the program in the implementation of simulation to facilitate and explain how to implement the technology of multiplexing technique and De multiplexing, where we have a computer network of nine computers. Fig.3.1.General definition interface for multiplexing technique and De multiplexing technique.

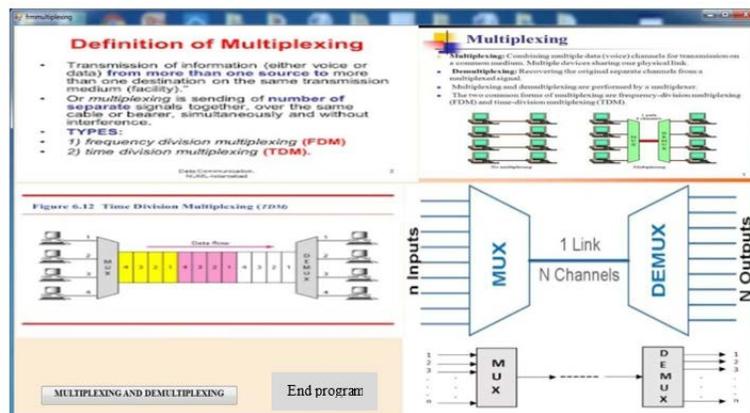


Figure 1 General definition interface for multiplexing technique and De multiplexing technique.

4 Experiments and Results

The set-up parameter for the experiments and the results produced are discussed in detail here. Experiments were conducted to demonstrate the effectiveness of the proposed system. The technology presented in this study is applied to a laptop with the following specifications of the Intel® Core (iM) i5 2430M CPU @ 2.40 GHz 2.40 GHz with 8 GB of RAM, 64-bit system type operating system. This device is equipped with Windows 7 Ultimate operating system. Access to the application program (simulation) after registration of the correct user name and password . And steps to implement the program as following . Fig 1.Login to program

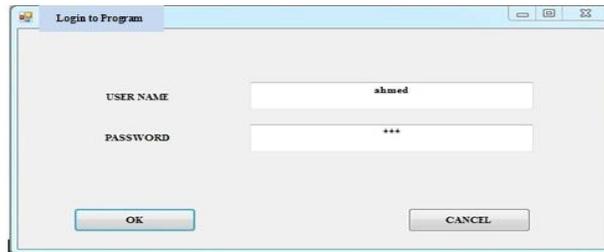


Figure 2 Login to program

1-Write the user name and password correctly for the purpose of entering the program and in the case of wrong entry and three times, the program is closed immediately and is considered a person is not authorized (intruder) as shown in Fig. 2. Attempts login to the program.



Figure 3 Attempts login to the program

2 The Fig. 3. Represents the user name and password correctly .

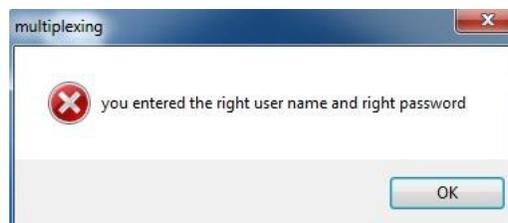


Figure 4 shown user name and password correctly .

3 The Fig.4. Shows the interface of the main application simulation program.

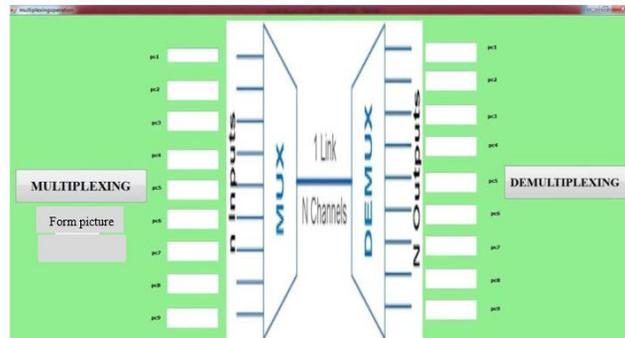


Figure 5 represents the main simulation program interface

4 The Fig. 5. shows the start of data entry in PC1&PC2. Fig. 6. shows the continuous data entry in the computers used in the program from PC1 to PC9.

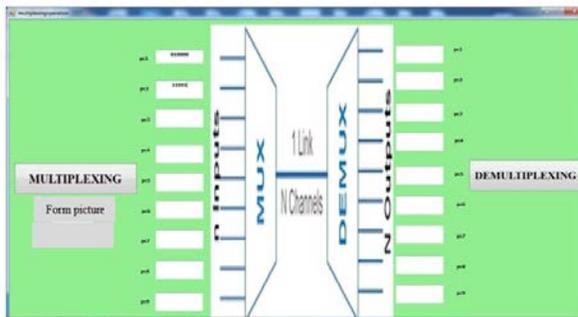


Figure 6 start of data entry in PC 1& PC2

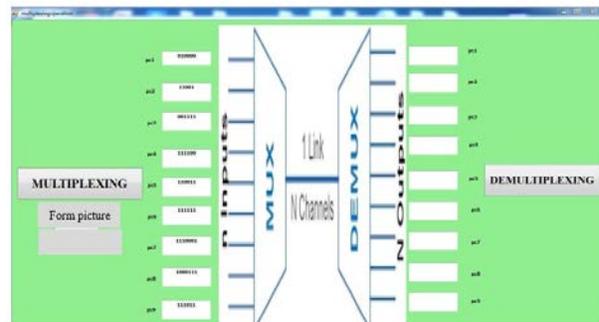


Figure 7 entry the data for all computers

After completing data entry for all computers. Fig. 7. shows start of process loading data in the PC1 to transmission line using multiplexing technique. Fig. 8. shows the complete loading data on all computers from PC1 to PC9 into transmission line using multiplexing technique.



Figure 8 start of process of loading data in the PC1 to transmission line

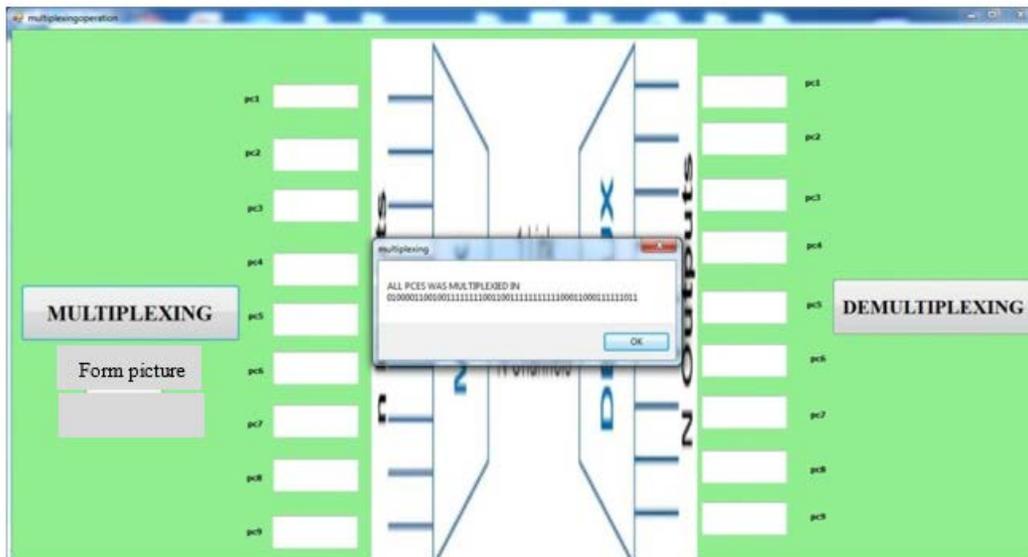


Figure 9 complete loading data for all computers from PC1 to PC9 to transmission line.

5- After completion of the data load to the transmission line (transmitter) begins to use the technique of DE multiplexing where the technique to separate these data from each other and send to the PC required to deliver data to them (PC target)

6- Fig. 9. shows beginning of the transmission data received in the transmission line to PC 1 after separation from each other using a Demultiplexing technique. The distribution of data received via the transmission line to all computers from PC1 to PC9 is completed using Demultiplexing technique as shown in Fig. 10.

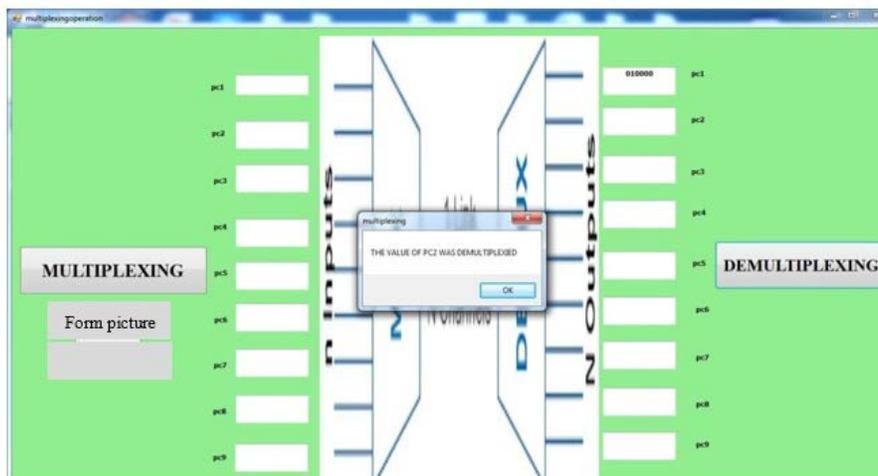


Figure 10 start transmission data received to PC1 using Demultiplexing technique.



Figure 11 Data received in transmission line are distributed to all computers

5 Conclusion

The research focuses on use of simulations for purpose of developing multiplexing technique and Demultiplexing technique using Visual Basic language. The results obtained from the experiments concluded that:

- ❖ Using log-in to the program and for a specified number of times gives the importance of maintaining data security.
- ❖ Implementing the program using the simulation becomes clear that it provides better performance and easier understanding of the steps implemented by learners in the area of communication networks.
- ❖ Explain how to load a large amount of data (calls) into a single transmission line (transmission line) using multicast technology.
- ❖ Explain how to separate these data (calls) from each other and send them to the target (s) using the technique of multicast.
- ❖ In conclusion, I say: programming in Visual Basic was really fun language. In very little time we can make good and valuable programs, especially since Visual Basic is a simple to understand matched with other languages such as Visual C ++ and Java.

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