

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Results

For hardware part, there is 2 hardware boxes that made in this system. The bigger sized box is for WiDSTAC, the smaller sized box is used by circuit of device for Receiving or Transmitting from/to PC. For software part, there is 3 type of results : 6 form from Visual Basic, around 650 lines 8051 program code and database (Microsoft Access).

4.1.1 System Operation

Before the user (tutor/lecturer) want to key-in mark to system. First need to start Visual Basic program first. Click on Password.exe to run it. After clicking on it, the first form will saw is Copyright form. It just an information about copyright this program.



Figure 4.0: Copyright form

After that 2 second, it will go to Menu form. This form have six buttons. User have to log in to system. As tutor in lab want log in, they have to click on Tutor Login button. The window look like figure 4.2 will ask to key in username. Beside that, need to key-in password like figure 4.3. If the username or password not valid, the form like figure 4.4 will pop out. Let login as Mr. Zaher Bin Ahmad. After login the form look like figure 4.5, have one welcome message ‘Welcome, Mr. Zaher Bin Ahmad. You are now logging in as Lecturer.’



Figure 4.1: Menu form

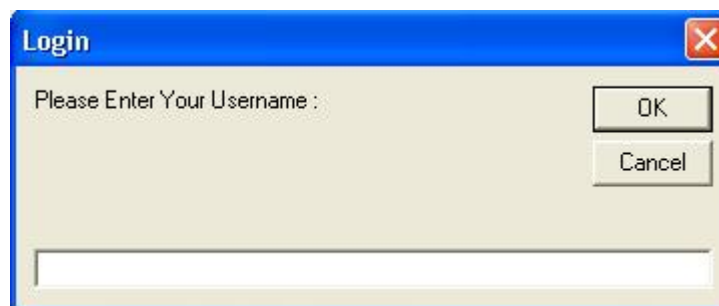


Figure 4.2: Username window

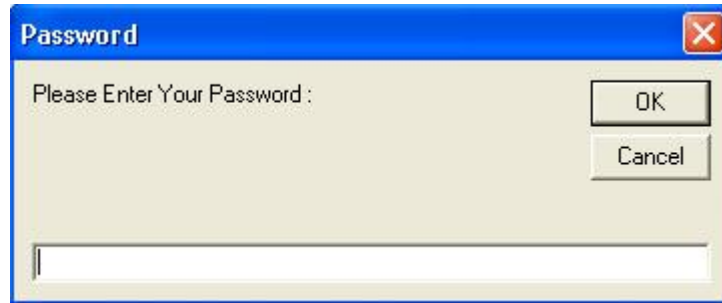


Figure 4.3: Password window



Figure 4.4: Invalid Login window

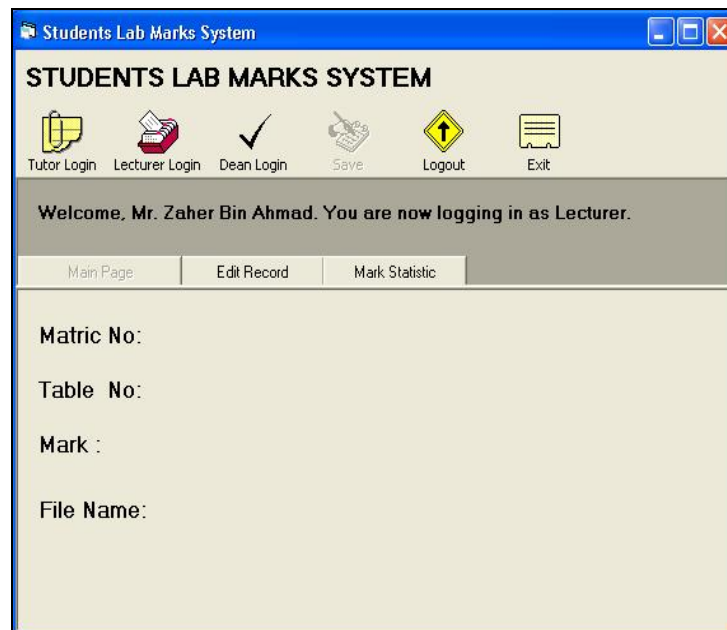


Figure 4.5: After login by Mr. Zaher Bin Ahmad

Now is the time turn on the WiDSTAC (figure 4.6). Turn on the red colour switch on left hand side of device. When the switch is on, the LED inside the box will light on. At the same time, make sure the device for receiving or transmitting from/to PC part (figure 4.7) is connected to PC and make sure the LED is on too (device is power on)

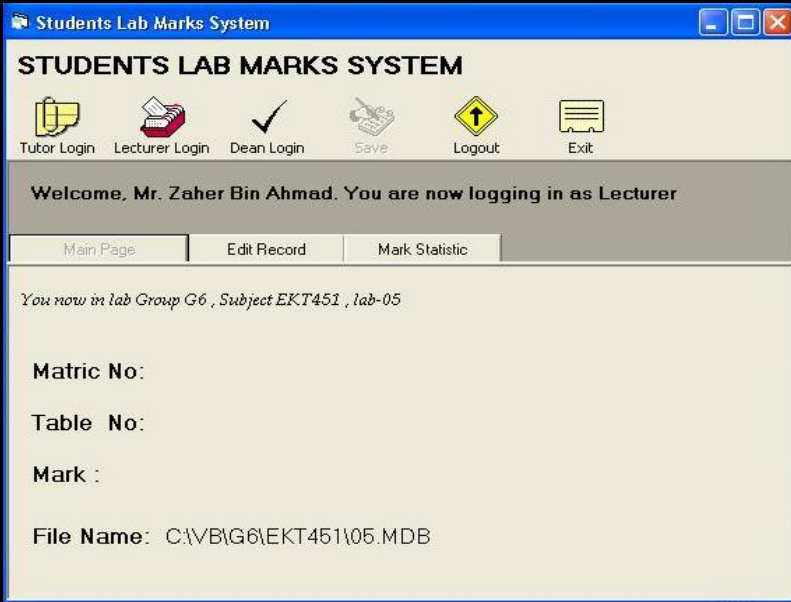


Figure 4.6: Top view of WiDSTAC



Figure 4.7: Side view of device for Receiving or Transmitting from/to PC.

After the two devices are ready, then key-in the program name of the students from, subject taking and the lab number.(please refer to figure 3.37) Let key-in program is G3, subject is EKT451 and lab 5. Once this 3 information been key-in. The first transmitting stream 'COURZG3EKT45101END123' will receive by Students Lab Marks System software and the form will look like figure 4.8. Once get this form, user can start to key-in marks to system. Let add record to system with student matric number 123456789, table number is 1, mark is 1. (please refer to figure 3.38). The second transmitting stream 'ADDZ1234567890101END123' will receive by Students Lab Marks System software and the form will look like figure 4.9. The data whether is adding or finding will wrote in the form so we know there is add function or find function is operating inWiDSTAC during that moment.



The screenshot shows a window titled "Students Lab Marks System". The main heading is "STUDENTS LAB MARKS SYSTEM". Below the heading are six icons with labels: "Tutor Login", "Lecturer Login", "Dean Login", "Save", "Logout", and "Exit". A message reads: "Welcome, Mr. Zaher Bin Ahmad. You are now logging in as Lecturer". Below this is a navigation bar with three buttons: "Main Page", "Edit Record", and "Mark Statistic". The main content area displays: "You now in lab Group G6 , Subject EKT451 , lab-05". There are three input fields labeled "Matric No:", "Table No:", and "Mark :". At the bottom, it shows "File Name: C:\VB\G6\EKT451\05.MDB".

Figure 4.8: The form look like after receiving 'COURZG6EKT45105END123'

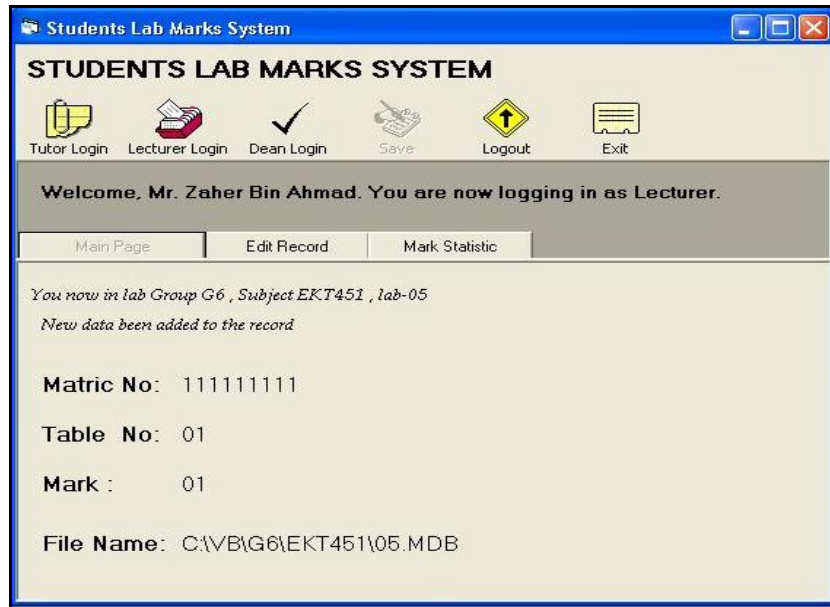


Figure 4.9: The form look like after receiving ‘ADDZ1234567890101END123’

When the user, want to look for the record in database using WiDSTAC is can done by choice 2-Find function. Let key-in matric number is 222222222(please refer to figure 3.38). The third transmitting stream ‘FINDZ222222222END123’ will receive by Students Lab Marks System software and the form will look like figure 4.10 if there is record of matric number is222222222, table number is 2, mark is 2. if there is no record of it the form will look like figure 4.11.

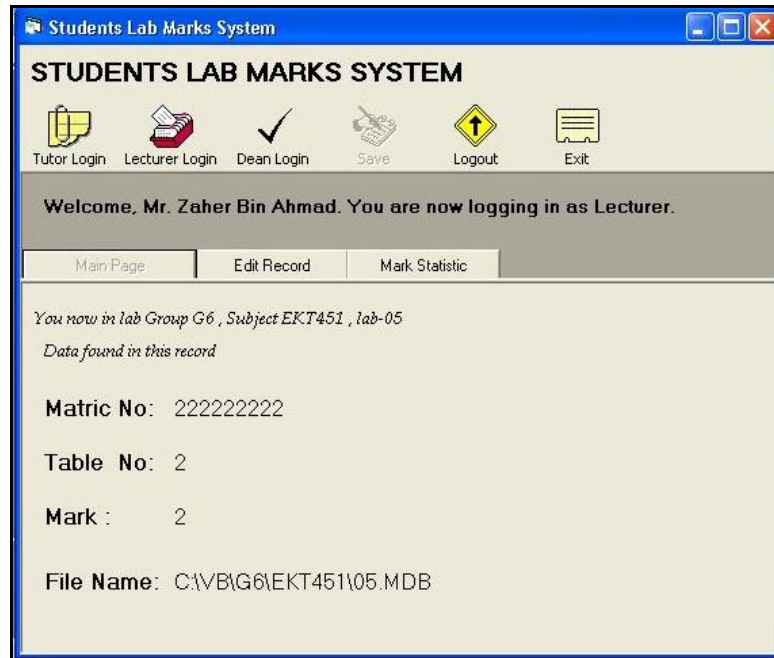


Figure 4.10: The form look like after found record in database

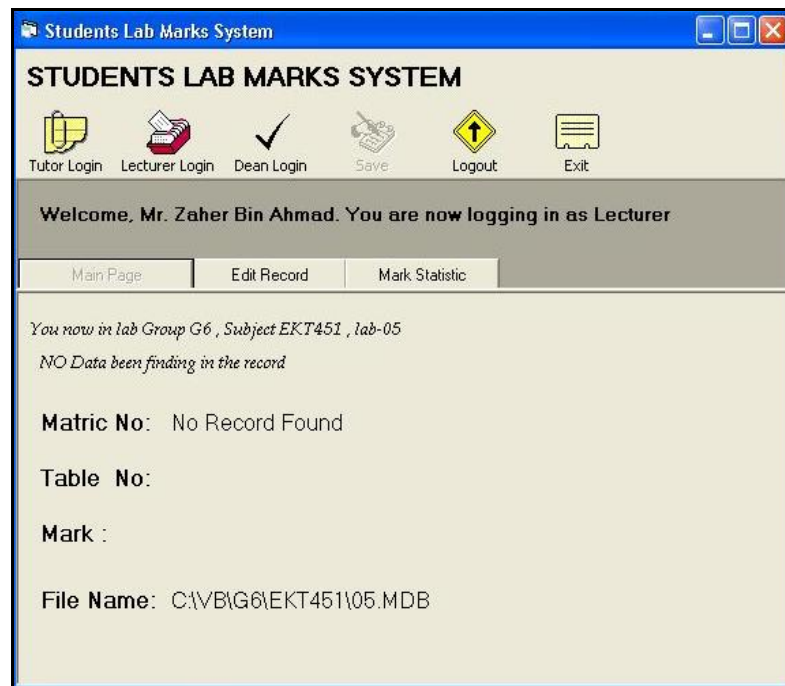


Figure 4.11: The form look like after can not find record in database

To edit the record can do it in Students Lab Marks System software. Just click on Edit Record button. But this button is password protected just the people who got username and password can open it. After login it look like figure 4.12. Because in Microsoft Access I set the matric number as primary key so the data that need to edit have to do in Students Lab Marks System software. When this button press, the Save button on the top will enable. Click on the save button to save the data to database file that just now been created (for this example the database will save to C:\VB\G3\EKT451\5.mdb) and another back up database also will automatic create in C:\database\xx_xxxxxx_x_backUPfile(for this example the database will save to C:\database\G3_EKT451_6.mdb).. If user forgot to click on this save button after close the Software Students Lab Marks System, they can find the record in C:\database\data.mdb and save the database to the directory they wanted.

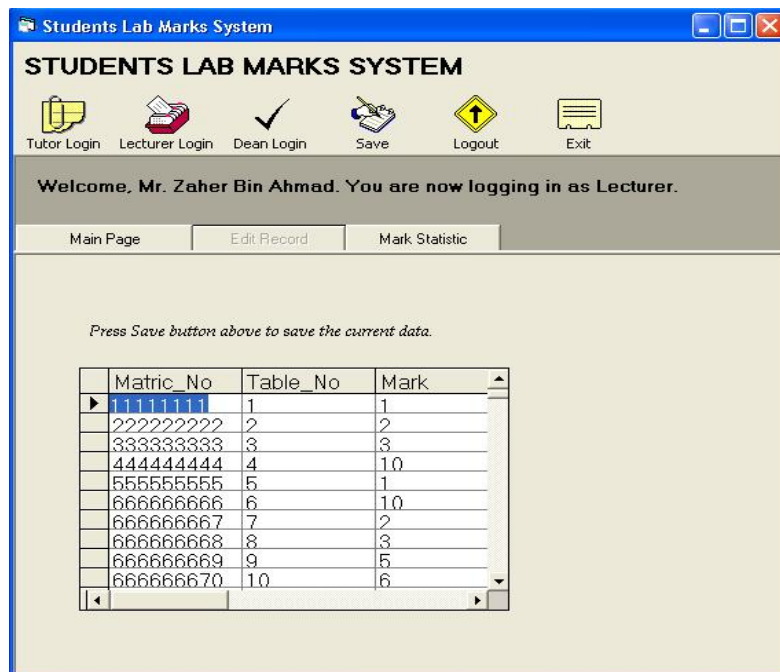


Figure 4.12: Edit record form

To know the marks statistic we can see it in Software Students Lab Marks System. There is simply statistic about lower mark, higher mark, mark range, total students and mean (total the marks/ total students) value. It also can see graft about Mark Versus Table Number. Just click on Mark Statistic button. But this button is password protected just the people who got username and password can open it. After login it look like figure 4.13. Click on Graph button to display Mark Vs. Table Number graph.

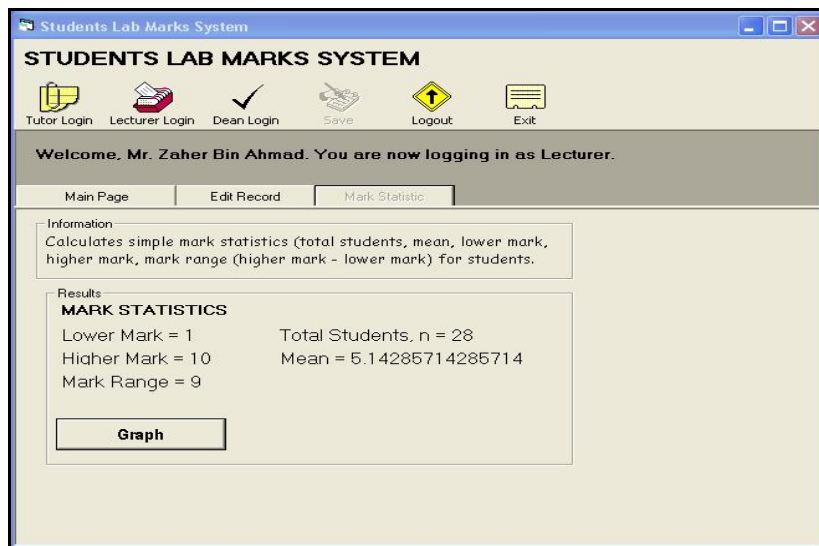


Figure 4.13: Statistic form

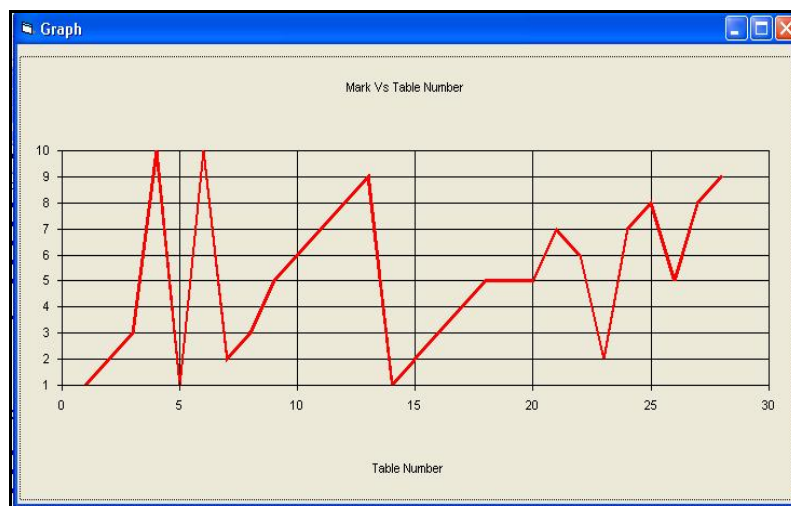


Figure 4.14: Graph of Mark Vs Table Number

Student : Table			
	Matric_No	Table_No	Mark
▶	111111111	1	1
	222222222	2	2
	333333333	3	3
	444444444	4	10
	555555555	5	1
	666666666	6	10
	666666667	7	2
	666666668	8	3
	666666669	9	5
	666666670	10	6
	666666671	11	7
	666666672	12	8
	666666673	13	9
	666666674	14	1
	666666675	15	2
	666666676	16	3
	666666677	17	4
	666666678	18	5
	666666679	19	5
	666666680	20	5
	666666681	21	7
	666666682	22	6
	666666683	23	2
	666666684	24	7
	666666685	25	8
	666666686	26	5
	666666687	27	8
	666666688	28	9
*			

Figure 4.15: Student table

User : Table					
	No	Username	Password	Identity	Name
▶	1	zah	1234	lecturer	Mr. Zaher Bin Ahmad
	2	yus	1234	tutor	Miss Yusnita Binti Ali
	3	badli	1234	dean	Dr. R. Badlishah

Figure 4.16: User table

4.2 Discussion

Let start the discussion part with software part first. In software part there is 8051 program code, Visual Basic program code and Microsoft Access (database).

In 8051 program code (please refer to Appendix A), every asking input from users already set in certain digit, like matric number must in 9 digits, table number is 1 or 2 digits, mark is 1 or 2 digits. (please refer to figure 3.37-3.39). Keypad is using keypad

scanning method where it can save to use keypad encoder IC and the method is easy to be understand. Use 300 baud rate to get more stable in system in term of receiving data.

Here the design is for 6 programs (Microelectronic, Electronic, Computer, Communication, Electronic Industry and System Electric) and the subjects that have need go to lab is set to (please refer figure 3.4-3.7) EMT, EKT, EET, ENT, EPT and EBT(in future upgrade purpose can add more coding in 8051 program) the subject numerical number is depend on the folder that create in directories. Like if want EKT451 or EKT111, the user just need to create the folder name as EKT451 or EKT111 in the c:\VB\EKT451\ or c:\VB\EKT111\. Here is mean the number of subject will create is not depend on 8051 program but is depend user to create the folder on that directories.

The program is using certain address location to save the data.(please refer to figure 3.37-3.39). Location that using in 50h-59h for keep data about program, subject, lab number. The transmitting stream for is COURZ 'program' 'subject' 'lab number' END123. The COURZ is a header of stream to use in Visual Basic to receive it as stream that know is was the stream that contained information about program, subject, lab number and END123 is to use as bit to state there is end of stream. Every stream that send to Visual Basic is repeat is 5 times. So this transmitting stream got 21 character. Every bits that send will follow up with delay routine to make sure the bit is successful receive bit by bit. There is two type of delay routine where have different delay time. Once is 0.02s another is 0.43s. (please refer 3.36) Location that using in 30h-38h for keep data about matric number, table number and mark. The transmitting stream for is ADDZ 'matric number' 'table number' 'mark' END123. So this transmitting stream got 23 character. Location that using in 42h-4ah is to keep matric number for finding in database. The stream is FIND 'matric number' END123, it contain 19 character.

For receiving information that after press find function in 8051 program .(please refer to figure 3.38-3.39). If there is a record of the student in database, the matric number will save in 60h-68h, table number in 3bh-3ch, mark in 3eh-3fh. The stream will send in Visual Basic format to 8051 program is in format LKC 'matric number' Chr\$(14) 'table number' Chr\$(14) 'mark' Chr\$(14) Chr\$(13). In program it will detect for Chr\$(13) first,

after that detect Chr\$(14) to put 60h-68h as matric number, 3bh-3ch as table number and 3eh-3fh as mark value. To differential the data between matric number or table number or mark, the Chr\$(14) is using. Chr\$(13) is use to detect end of the data. LKC is using as header to know there is started of stream. If there is no record to find function, the data (No Record Found) will save in 60h-6eh. The stream send in LKCNo Record Found format in Visual Basic part.

Let move to Visual Basic program (please refer Appendix B) part now. Timer is using to count the certain time in millisecond that need. Save button is just enable on Edit Record form only. The user that want to use this Students Lab Marks System software have to have username and password where the particular will keep in user table. The Edit Record and Mark Statistic buttons is password protected to anyone to read or edit it simply. There is special coding use in so when user key-in password, it just display * symbol only.

For serial communication part, the MSComm is using. There is certain properties have to set to use it. Like CommPort =1, Settings = "300,N,8,1", InputLen=0, PortOpen=true, RThreshold=0. The value can be 1 to 46 for CommPort. However, the MSComm control generates error 68 (Device unavailable) if the port does not exist when attempt to open it with the PortOpen property. For this communication it use Comm1 and 300 baud rate, none parity, 8 bits plus 1 stop bit. InputLen property is use to sets and returns the number of characters the Input property reads from the receive buffer. By set InputLen property is 0 it will causes the MSComm control to read the entire contents of the receive buffer when Input is used. Setting the PortOpen property to True opens the port. Setting it to False closes the port and clears the receive and transmit buffers. The MSComm control automatically closes the serial port when your application is terminated. Setting the RThreshold property to 0 to disables generating the OnComm event when characters are received. The OnComm event is generated whenever the value of the CommEvent property changes, indicating that either a communication event or an error occurred.

To send data from PC to device Wireless, just write in like : MSComm1.Output = "LKC" + lb_ma.Caption + Chr\$(14) + Str\$(lb_ta.Caption) + Chr\$(14) + Str\$(lb_mar.

Caption) + Chr\$(14) + Chr\$(13). Where value in lb_ma.Caption (matric number), lb_ta.Caption(table number), lb_mar.Caption(mark) will send to WiDSTAC. If we put the code this way : MSComm1.Output = "LKC" + Str\$(lb_ma.Caption) + Chr\$(14) + Str\$(lb_ta.Caption) + Chr\$(14) + Str\$(lb_mar.Caption) + Chr\$(14) + Chr\$(13). Then the value that display in LCD will have one empty space in front of the digit. Chr\$(int) is returns the ASCII character of argument. Str\$() is to converts its numeric argument to a string with numeric digits in the strings. The data form Visual Basic will send 15 times to WiDSTAC to sure the receiving data is success. As long as the Students Lab Marks System software is running, the processing of adding and finding in WiDSTAC can carry on, the data can receive or transmit that time. Visual Basic program will read data in every 1.8 second where it set in Timer.

Let get one example when MSComm receive data COURZ 'program' 'subject' 'lab number' END123. It will put the stream in sdata and start check the stream have header COURZ or ADDZ or FINDZ. If there have COURZ then it will take the data between COURZ and END123 where contained program, subject and lab number. And put the program information in s7, subject in s8 and lab number in s9. It is use InStr(), Mid(),StrComp(). InStr() use to find the header, StrComp() is to find the ending of stream. Mid() is use to differential the group of data in stream (like matric number, table number and mark).

In Mark Statistic form, to calculate the total students, higher mark, lower mark, range and mean. It needs to just take Mark column from table Student. So far I learn is made another table for Mark only and transfer it to mark.txt where keep in c:\database\mark.txt. All the calculation is base on the mark.txt file. Besides that, there is Graph button, where the value of mark is display regarding to table number in lab.

For the hardware part, last time the circuit for device for Receiving or Transmitting from/to PC is connected using USB to PC without using battery but the USB just can provided 5V. With 9V battery supply the transmission part of RF will coverage of network

(distance of receiving) will more far than using 5V supply. For 5V supply, the distance of transmission is around 28 feet, with 9V battery the distance transmission is around 50 feet.

When there is data from WiDSTAC want to send to PC. The bit 1 will send to Base of TIP31C to on it so the 9V supply will go to RF-TX. The RF-RX in WiDSTAC and device for Receiving or Transmitting from/to PC will sense the data ask they are receiver, since the RF-RX pin that connect to microcontroller did not program for that function so that the RF-RX in device for Receiving or Transmitting from/to PC will receive the data and send to Visual Basic via Comm1 port. Once the RF-RX in device for Receiving or Transmitting from/to PC received it in pin 11. Then the MAX232 will transfer it to serial output which connected to Pin 2 (Received Data) in DB 9.

When data in Visual Basic want send to WiDSTAC it come from Pin 3 (transmitted data) from DB 9 to Pin 14 (T1out) in MAX232. And it will go to Pin12 to change to TTL signal and the signal after that will invert and send to RF-TX to transmit it. When in RF-RX in WiDSTAC will invert the data back before it go to microcontroller to back the real data that just now sent. If did not use the transistor BC547 to invert the data, it have problem to receive in microcontroller part, it seen like hardware configuration problem.