IET Winter 2016
Embedded Systems Design
LAB 6

Objective:

At completion of the lab, student will be able to:

1. Get basic understanding of serial communication.
2. Understand serial port programming with Atmega32.

Components Required for the Lab:

1. EasyAvr7 from MikroElectronika
2. USB cable for programming Atmega 32
3. DB-9 cable
4. Wires

LAB – 6 Resources:

1. Example Programs
2. Datasheet Atmega32 (Page: 140 -168)

Some useful Registers for this lab:

UCSRA	– USART Control and Status Register A
UCSRB	– USART Control and Status Register B
UCSRC	– USART Control and Status Register C
UDR	– USART I/O Data Register
UBRR	- USART Baud Rate Registers

Lab Assignment:

Write and test following programs:

1. Write and test programs that sends "Hello World!" to PC with following settings:

Data Bits :	8
Parity:	None
Stop Bit:	1
Baud Rate:	9600

Check the code by changing baud rates to 2400 and 57,600.

2. Echo

a. Send characters from hyperterminal (PC) to microcontroller (uC) and send the received characters back to hyperterminal.

b. Send characters from hyperterminal (PC) to uC. Change the case of the received character and send it back to hyperterminal. If the received character is not a letter display "Error!"
i.e. if 'a' is sent to uC, '**A**' will be received at hyperterminal.
if 'A' is sent to uC, '**a**' will be received at hyperterminal.
if '1' is sent to uC, "**Error!**" will be received at hyperterminal.

3. ESD Lab Protection System 1.0

Write a code that gives access to ESD lab only if user enters correct passcode.
The user shall enter a passcode at Hyperterminal window, and if it matches to the saved passcode, Display "Welcome to ESD Lab!" at hyper terminal.
If the passcode does not match, display "Invalid Passcode." and request user to re-enter the passcode.
If user enters incorrect passcode for three times, display "System hang..!!!".