

8051 Programming:

1. IO Interfacing:
 - a. Program the robot to blow the buzzer for 1 sec.
 - b. Program the robot to blink LED with delay of 1 second.
 - c. Program the robot to blow buzzer when switch is pressed. When switch is released it should turn off.
2. LCD Interfacing:
 - a. Program the robot to display your name
 - b. Program the robot to display e-Yantra on first line and Fire Bird V on second line.
 - c. Program the robot to display special characters.
3. Position Encoder:
 - a. Program the robot to move 50cm forward.
 - b. Program the robot to take 90 degrees turn
 - c. Program the robot to trace square of side 50cm
4. USB to serial communication:
 - a. Loading Program:
 - i. Small demo activity on how to load program in robot using USB to serial communication.
 - b. USB to serial communication:
 - i. Program the robot to connect with PC, type a character on keyboard and it should display on LCD.
5. Interrupts:
 - a. Write a program to buzz the buzzer after every two seconds using timer overflow interrupt. (Do NOT use the delay function)
 - b. Timer interrupt, serial interrupt and external interrupt
6. PWM:
 - a. Program the robot to control the speed of the motor.
7. Interfacing ADC:
 - a. White line sensors
 - i. Line following robot
 - ii. Multi surface line follower
 - b. Sharp sensor:
 - i. Obstacle detector robot
 - ii. Obstacle avoider robot
 - c. IR proximity sensor:
 - i. Wall follower robot
 - d. Battery voltage sensing:
 - i. Monitor the power consumption of the robot during various activities such as locomotion, sensing, buzzer and LCD operation.
 - e. Wireless communication using zigbee
8. Interfacing Motors:
 - a. Types of motors
 - b. Program the robot to move 50cm forward and then buzz buzzer for 1 second.
 - c. Program the robot to for different types of turns.