Input Devices

Activities
1.
Activity-1 Duration: 15 minutes
Design a burglar alarm system using the appropriate sensors, ADC, computer, siren and lights. Use the box below to complete a block diagram. What operations does this burglar alarm perform?
Motion sensor- Checks for motion of any objects or footsteps Sound sensor- Checks for the sound of footsteps or movement of any objects Pressure sensor- Checks for pressure on the door or floor (weight of a person) The analogue signals from the sensor are converted to digital signals by the ADC The computer processes these signals and switches ON the siren and lights when necessary
Activity-2 Duration: 20 minutes
Design a street light control application. The components for this systems are a microprocessor, ADC, lamps and sensors. The lamp is switched ON at night and heavy cloud cover automatically. The lamp is switched OFF automatically in the daytime. Explain the operation of this system in detail.
Light sensor checks for light intensity every …… minutes If light intensity < value stored in the microprocessor, The lamp is switched ON Or else The lamp is switched OFF
End of topic questions
2.
End of topic questions
How can a document (hard-copy) be converted to text file format? 2D scanners convert hard-copy to image. Computers with Optical Character Recognition (OCR) software allow the scanned document to be converted into a text file format. What are the advantages of QR codes over barcodes? QR codes can store up to 7000 digits whereas normal barcodes can only store 30 digits. With Internet access, QR codes can be scanned anywhere. Barcode can be read only by LED or laser. What operations are performed by a microprocessor in digital cameras? Automatically adjusts the shutter speed, focuses the image, operates the flash, adjusts the aperture size, adjusts the size of the image, removes ‘red eye’ when the flash has been used How does a keyboard work? A keyboard translates text information from the user into a computer-understandable format. Each character has a unique ASCII code. When a key is pressed, it is converted into a digital signal, which the computer interprets. How have the pointing devices evolved over the years? Traditional mouse with mechanical ball arrangement connected to computer via USB. Optical mouse that uses light to detect motion. Wireless mouse. What are voice recognition systems? It has software to compare the wave pattern of the sound from the user to the wave pattern stored in its memory. If the two wave patterns match, then the user is identified and given access to the system. It is used in security systems. These systems are also used to give commands in cars, such as ‘switch on GPS’, ‘open the window’, etc.
End of topic questions
What are the different ways of making a touchscreen? What is the principle of working behind each one of them? Capacitive – made of many layers of glass, due to changes in electric current when the glass layer is touched, the coordinates where it has been touched is sent to the microprocessor Infrared – made of glass, Heat-sensitive: Needs a warm object to give input, Optical: An array of sensors in the form of a grid determine the coordinates touched Resistive – made of An upper layer of polyester and a bottom layer of glass. When the polyester layer is touched, both layers connect and complete the circuit. The microprocessor interprets the signal and determines the coordinates. What are the applications of interactive whiteboards? For teaching, demonstrating software applications and presentations