INTRODUCTION:

Nowadays, the most pressing issue is unauthorized access to mobile phones in restricted areas such as confidential rooms, prisons, colleges, and schools. There is a significant need to restrict the use of cell phones at specific times and places. Thus, an intelligent mobile phone detector is essential.

Here, we attempt to prevent unauthorized access to mobile phones. We would like to develop a detector that can detect the presence of an activated mobile phone at a specific distance and notify it through an alarm.

The circuit can detect incoming and outgoing calls, including SMS, even if the mobile phone is in silent mode. The moment the mobile detector identifies a signal from an activated mobile phone, it begins alarming and the LED blinks, as well as indicating this through an LCD display. The alarm continues until the signal transmission stops. Using Zigbees, we transmit the message to the monitoring section.

OBJECTIVE:

The objective of the system is:

1. To develop an embedded system, which is used to detect the mobile in our surroundings using a microcontroller.
2. This handy cell phone detector, a pocket-sized mobile transmission detector or sniffer, can sense the presence of an activated mobile cell phone from a distance of one and a half meters. So, it can be used to prevent the use of mobile phones in examination halls, confidential rooms, etc.
3. It is useful where the use of mobile phones is prohibited like petrol pumps and gas stations, historical places, religious places, and courts of law.

METHODOLOGY:

1. An ordinary RF detector using a tuned LC circuit is not suitable for detecting signals in the GHz frequency band used in mobile phones. The transmission frequency of mobile phones ranges from 0.9 to 3 GHz with a wavelength of 3.3 to 10 cm. Therefore, a circuit detecting gigahertz signals is required for a mobile bug.
2. Here, the circuit uses a 0.22 uf disk capacitor (C3) to capture RF signals from the mobile phone. The lead length of the capacitor is fixed as 18 mm with a spacing of...
8mm between the leads to get the desired frequency. The disk capacitor along with the lead acts as a small giga hertz loop antenna to collect the RF signals from the mobile phone.

3. Op-amp IC CA8310 (IC1) is used in a circuit as a current-to-voltage converter with capacitor C3 connected between its inverting and non-inverting inputs. It is a CMOS version using gate-protected p-channel MOSFET transistor in the input to provide very high input impedance, very low input current and very high speed of performance. The output CMOS transistor is capable of swinging the output voltage to within 10mV of either supply voltage terminal.

4. Capacitor C3 in conjunction with the lead inductance acts as a transmission line that intercepts the signals from the mobile phone, this capacitor stores energy and transmits the stored energy in the form of minute current to the input of IC1. This will upset the balance input of IC1 and convert the current into the corresponding output voltage.

5. Capacitor C4 along with high-value resistor R1 keeps the non-inverting input stable for easy swing of the output to high state. Resistor R2 provides the discharge path for capacitor C4. Feed-back resistor R3 makes the inverting input high when the output becomes high. Capacitor C5 (47pF) is connected across ‘strobe’ (pin8) and ‘null’ inputs (pin1) of IC1 for phase compensation and gain control to optimize the frequency response.

6. When the mobile phone signal is detected by C3, the output of IC1 becomes high and low alternately according to the frequency of the signal as indicated by LED1. This triggers mono-stable timer IC2 through capacitor C7. Capacitor C6 maintains a base bias of transistor T1 for fast switching components R6 and C9 produce very short time delay to avoid audio nuisance.

7. Assemble the circuit on a general-purpose PCB as compact as possible and enclose in a small box like junk mobile case. As mentioned earlier, capacitor C3 should have a lead length of 18mm with lead spacing of 8mm. Carefully solder the capacitor in standing position with equal spacing of the leads. The response can be optimized by trimming the lead length of C3 for the desired frequency. You may use a short telescopic type antenna.

8. Use the miniature 12V battery of a remote control and a small buzzer to make the gadget pocket-size. The unit will give the warning indication if someone uses mobile phone within a radius of 1.5 meters.

**BLOCK DIAGRAM**
DESCRIPTION
This handy cell phone detector, pocket-size mobile transmission detector or sniffer can sense the presence of an activated mobile cell phone from a distance of one and-a-half meters. So it can be used to prevent use of mobile phones in confidential rooms, etc. This project is implemented using AT89S52 microcontroller interfaced with a signal comparator circuit, buzzer and led. The system uses a compact circuitry built around flash version of AT89S52 microcontroller with a non-volatile memory. Programs are developed in embedded c. 8051 Programmer is used to dump the code into the microcontroller.

RESULTS AND CONCLUSION:
This pocket-size mobile transmission detector or Sniffer can sense the presence of an activated mobile cell phone from a distance of one and-a-half meters. So it can be used to prevent use of mobile phones in private meetings, defence establishments, confidential rooms, Military camps and sends information to administration room.

SCOPE FOR FUTURE WORK:
Trying to increase the detecting range of mobile bug to few more meters for observing over a wide range of area.