NAME: OMKAR RAMACHANDRA HEGDE

USN: 2GI17EC064

DIV: B

ASSIGNMENT: Learning to Write ISR's

Interrupt Service Routine:

Interrupt Service Routine or an Interrupt handler is an event that has small set of instructions in it. When an external interrupt occurs, the processor first executes these code that is present in ISR and returns back to state where it left the normal execution.

Example: Consider a moving car. If the car suddenly gets hit by an obstacle, the first thing that happens is the accelerometer sensor present in the car senses sudden change(deceleration) which triggers an interrupt. This will deploy the airbags immediately. An interrupt signal is of highest priority.

Arduino code for above example:

```
void setup() {
pinMode(12,OUTPUT);                    //Airbags connected to output
pinMode(2,INPUT);                      //Accelerometer sensor connected to input
attachInterrupt(0,openAirBag,RISING);  //Interrupt at pin 2 at rising edge
}
void loop() {
}
void openAirBag() {                    //Interrupt function call
digitalWrite(12,HIGH);                 //deploying the airbags
}
```

Demonstration:

When a car suddenly gets hit by an obstacle the accelerometer sensor which is connected to the pin 2 of arduino here triggers an interrupt and the output becomes high. The output at pin 12 is connected to airbags, hence the airbags deploy immediately.

Type of ISR used:

Hardware Interrupt: It happens when an external event is occurred like an external interrupt pin changes its state from low to high or high to low. (Here High to Low)