**MICROCONTROLLER**

**OPEN ENDED EXPERIMENT**

**TOPIC – AUTOMATIC RAILWAY GATE CONTROL**

**TEAM MEMBERS**

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**COMPONENTS USED : 8051 MICROCONTROLLER,IR SENSOR(1),STEPPER MOTOR , BREADBOARD , WIRES ,REGULATED DC POWER SUPPLY(5V).**

**THEORY:IN A COUNTRY HAVING THE LARGEST RAILWAY CONNECTIVITY , IT IS NOT FEASIBLE TO OPERATE THE GATES MANUALLY , THIS FACT ALONE MAKES THIS PROJECT MORE RELEVANT AND UPON ITS USE WE DON’T NEED TO WORRY ABOUT FREAK ACCIDENTS CAUSED DUE TO HUMAN ERROR/NEGLIGENCE.THE IR SENSOR IS INTEREFACED TO THE MICROCONTROLLER WHICH DETECTS THE ARRIVAL OR DEPARTURE OF THE TRAIN , WHICH INTURN CONTROLS THE ROTATION OF THE STEPPER MOTOR FOR OPENING AND CLOSING OF THE GATES.**

**WORKING:WHEN IR SENSOR DETECTS AN OBJECT ITS OUTPUT IS HIGH AT PIN D0 WHICH IS CONNECTED TO A PORT PIN , THE PORT PIN OUTPUT VALUE ACTS AS A CONDITION WHICH CONTROLS THE ROTATION OF THE STEPPER MOTOR .**

**CODE: EMBEDDED C**

#include<reg51.h>

sbit sensor=P3^2;

unsigned int i,k;

unsigned int j=100; // unsigned int can take upto 65,536

unsigned char status=0; //to check the status of the door being open

void delay(unsigned int x)

{

for(;x>0;x--)

for(;j>0;j--);

}

void deactivate\_motors()

{ unsigned char val;

unsigned int cnt=500;

/\*while(sensor==0) //or while(!sensor) ,schecking if the object is still in front of the sensor,if yes keep waiting

{

delay(100);

} \*/

for(k=0;k<50;k++)

{ val=0x01;

for(i=0;i<4;i++)

{

P0=val;

val=val<<1;

delay(cnt);

}

} status=0;

delay(10);

}

void activate\_motors()

{

unsigned char val;

unsigned int cnt=500;

for(k=0;k<50;k++)

{

val=0x08; //activating the motors

for (i=0;i<4;i++)

{

P0=val;

val=val>>1;

delay(cnt);

}

delay(10);

}status=1;

// deactivate\_motors();

}

void detect() //checking for the sensor values

{

while(1)

{

if(sensor==0)

{ activate\_motors();

while(sensor==0)

delay(100);

}

if(status==1 &&sensor==1)

deactivate\_motors();

}

}

int main()

{

detect();

}