#define ON HIGH //defines "ON" as high, i.e. declaring "ON" as turning the LED on.

#define OFF LOW //defines "ON" as low, i.e. declaring "OFF" as turning the LED off.

//north south traffic lights.

#define REDLEDN 13 //defines REDLEDN to pin 13.

#define AMBERLEDN 12 //defines AMBERLEDN to pin 12.

#define GREENLEDN 11 //defines GREENLEDN to pin 11.

//west east traffic lights.

#define REDLEDW 10 //defines REDLEDW to pin 10.

#define AMBERLEDW 9 //defines AMBERLEDW to pin 9.

#define GREENLEDW 8 //defines GREENLEDW to pin 8.

//pedestrian traffict lights.

#define pedGREEN 7 //defines pedGREEN to pin 7.

#define pedRED 6 //defines pedRED to pin 6.

int incomingByte; //a variable to read incoming serial data into.

void setup() {

Serial.begin(9600); //initialize serial communication:

pinMode(13, OUTPUT); //initializes the north red LED pin as an output.

pinMode(12, OUTPUT); //initializes the north amber LED pin as an output.

pinMode(11, OUTPUT); //initializes the north green LED pin as an output.

pinMode(10, OUTPUT); //initializes the west red east pin as an output.

pinMode(9, OUTPUT); //initializes the west amber east pin as an output.

pinMode(8, OUTPUT); //initializes the west green east pin as an output.

pinMode(7, OUTPUT); //initializes the green pedestrian light as an output.

pinMode(6, OUTPUT); //initializes the red pedestrian light as an output.

}

void loop() {

//begins the traffic light system with all the red lights on.

digitalWrite(REDLEDN, ON); //turns the north red LED on.

digitalWrite(AMBERLEDN, OFF); //turns the north amber LED off.

digitalWrite(GREENLEDN, OFF); //turns the north green LED off.

digitalWrite(REDLEDW, ON); //turns the west red LED on.

digitalWrite(AMBERLEDW, OFF); //turns the west amber LED off.

digitalWrite(GREENLEDW, OFF); //turns the west green LED off.

digitalWrite(pedGREEN, OFF); //turns the pedestrian green LED off.

digitalWrite(pedRED, ON); //turns the pedestrian red LED on.

delay(3000);

if (Serial.available() > 0) { //if there is no input (serial is > 0) do:

incomingByte = Serial.read(); //checks for an input from the keyboard.

if (incomingByte == 'H') //if "H" is pressed do:

{

//turns the north/west & east/west traffic lights to orange to prepare them to stop.

digitalWrite(REDLEDN, OFF); //turns the right red LED off.

digitalWrite(AMBERLEDN, ON); //turns the right amber LED on.

digitalWrite(GREENLEDN, OFF); //turns the right green LED off.

digitalWrite(REDLEDW, OFF); //turns the left red LED on.

digitalWrite(AMBERLEDW, ON); //turns the left amber LED on.

digitalWrite(GREENLEDW, OFF); //turns the left green LED off.

digitalWrite(pedGREEN, OFF); //turns the pedestrian green LED off.

digitalWrite(pedRED, ON); //turns the pedestrian red LED on.

delay(3000); //3 second delay.

//turns the north/west & east/west traffic lights to red .

digitalWrite(REDLEDN, ON); //turns the north red LED on.

digitalWrite(AMBERLEDN, OFF); //turns the north amber LED off.

digitalWrite(GREENLEDN, OFF); //turns the north green LED off.

digitalWrite(REDLEDW, ON); //turns the west red LED on.

digitalWrite(AMBERLEDW, OFF); //turns the west amber LED off.

digitalWrite(GREENLEDW, OFF); //turns the west green LED off.

digitalWrite(pedGREEN, OFF); //turns the pedestrian green LED off.

digitalWrite(pedRED, ON); //turns the pedestrian red LED on.

delay(1500); //half a second delay.

//turns the north/west & east/west traffic lights to red and pedestrian light on for them to cross.

digitalWrite(REDLEDN, ON); //turns the north red LED on.

digitalWrite(AMBERLEDN, OFF); //turns the north amber LED off.

digitalWrite(GREENLEDN, OFF); //turns the north green LED off.

digitalWrite(REDLEDW, ON); //turns the west red LED on.

digitalWrite(AMBERLEDW, OFF); //turns the west amber LED off.

digitalWrite(GREENLEDW, OFF); //turns the west green LED off.

digitalWrite(pedGREEN, ON); //turns the pedestrian green LED on.

digitalWrite(pedRED, OFF); //turns the pedestrian red LED off.

delay(5000); //5 second delay.

//turns the pedestrian light to red and begins the traffict light system back to normal.

digitalWrite(REDLEDN, ON); //turns the north red LED on.

digitalWrite(AMBERLEDN, OFF); //turns the north amber LED off.

digitalWrite(GREENLEDN, OFF); //turns the north green LED off.

digitalWrite(REDLEDW, ON); //turns the west red LED on.

digitalWrite(AMBERLEDW, OFF); //turns the west amber LED off.

digitalWrite(GREENLEDW, OFF); //turns the west green LED off.

digitalWrite(pedGREEN, OFF); //turns the pedestrian green LED on.

digitalWrite(pedRED, ON); //turns the pedestrian red LED on.

delay(3000); //5 second delay.

//break;

}

else

{

//turns the north/south red & amber lights on.

digitalWrite(REDLEDN, ON); //turns the north red LED on.

digitalWrite(AMBERLEDN, ON); //turns the north amber LED on.

digitalWrite(GREENLEDN, OFF); //turns the north green LED off.

digitalWrite(REDLEDW, ON); //turns the west red LED on.

digitalWrite(AMBERLEDW, OFF); //turns the west amber LED off.

digitalWrite(GREENLEDW, OFF); //turns the west green LED off.

digitalWrite(pedGREEN, OFF); //turns the pedestrian green LED off.

digitalWrite(pedRED, ON); //turns the pedestrian red LED on.

delay(3000); //3 second delay.

//turns the north/south green lights on.

digitalWrite(REDLEDN, OFF); //turns the north red LED off.

digitalWrite(AMBERLEDN, OFF); //turns the north amber LED off.

digitalWrite(GREENLEDN, ON); //turns the north green LED on.

digitalWrite(REDLEDW, OFF); //turns the west red LED off.

digitalWrite(AMBERLEDW, OFF); //turns the west amber LED off.

digitalWrite(GREENLEDW, OFF); //turns the west green LED off.

digitalWrite(pedGREEN, OFF); //turns the pedestrian green LED 0ff.

digitalWrite(pedRED, ON); //turns the pedestrian red LED on.

delay(3000); //3 second delay.

//turns the north/south amber light on.

digitalWrite(REDLEDN, OFF); //turns the north red LED off.

digitalWrite(AMBERLEDN, ON); //turns the north amber LED on.

digitalWrite(GREENLEDN, OFF); //turns the north green LED off.

digitalWrite(REDLEDW, OFF); //turns the west red LED off.

digitalWrite(AMBERLEDW, OFF); //turns the west amber LED off.

digitalWrite(GREENLEDW, OFF); //turns the west green LED off.

digitalWrite(pedGREEN, OFF); //turns the pedestrian green LED off.

digitalWrite(pedRED, ON); //turns the pedestrian red LED on.

delay(3000); //3 second delay

//turns north/south & east/west red lights on.

digitalWrite(REDLEDN, ON); //turns the north red LED on.

digitalWrite(AMBERLEDN, OFF); //turns the north amber LED off.

digitalWrite(GREENLEDN, OFF); //turns the north green LED off.

digitalWrite(REDLEDW, ON); //turns the west red LED on.

digitalWrite(AMBERLEDW, OFF); //turns the west amber LED off.

digitalWrite(GREENLEDW, OFF); //turns the west green LED off.

digitalWrite(pedGREEN, OFF); //turns the pedestrian green LED off.

digitalWrite(pedRED, ON); //turns the pedestrian red LED on.

delay(3000); //3 second delay.

//turns east/west red & amber lights on.

digitalWrite(REDLEDN, ON); //turns the north red LED on.

digitalWrite(AMBERLEDN, ON); //turns the north amber LED on.

digitalWrite(GREENLEDN, OFF); //turns the north green LED off.

digitalWrite(REDLEDW, ON); //turns the west red LED on.

digitalWrite(AMBERLEDW, ON); //turns the west amber LED on.

digitalWrite(GREENLEDW, OFF); //turns the west green LED off.

digitalWrite(pedGREEN, OFF); //turns the pedestrian green LED off.

digitalWrite(pedRED, ON); //turns the pedestrian red LED on.

delay(3000); //3 second delay.

//turns east/west green light on.

digitalWrite(REDLEDN, OFF); //turns the north red LED off.

digitalWrite(AMBERLEDN, OFF); //turns the north amber LED off.

digitalWrite(GREENLEDN, OFF); //turns the north green LED off.

digitalWrite(REDLEDW, ON); //turns the west red LED on.

digitalWrite(AMBERLEDW, OFF); //turns the west amber LED off.

digitalWrite(GREENLEDW, OFF); //turns the west green LED off.

digitalWrite(pedGREEN, OFF); //turns the pedestrian green LED off.

digitalWrite(pedRED, ON); //turns the pedestrian red LED off.

delay(3000); //3 second delay.

//turns east/west amber light on.

digitalWrite(REDLEDN, OFF); //turns the north red LED off.

digitalWrite(AMBERLEDN, OFF); //turns the north amber LED off.

digitalWrite(GREENLEDN, OFF); //turns the north green LED off.

digitalWrite(REDLEDW, OFF); //turns the west red LED off.

digitalWrite(AMBERLEDW, ON); //turns the west amber LED on.

digitalWrite(GREENLEDW, OFF); //turns the west green LED off.

digitalWrite(pedGREEN, OFF); //turns the pedestrian green LED off.

digitalWrite(pedRED, ON); //turns the pedestrian red LED on.

delay(3000); //3 second delay.

}

}

}