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/*
  ETHERNET SWITCH
    BY ROGER REHR w3sz

  Ethernet shield connected to pins 10, 11, 12, 13
  This initially required a MEGA as it used 3196 bytes of Dynamic Memory
  Changes in the code reduced SRAM requirement to 1598 bytes, so it should also
      work with an UNO.
*/

#include <Ethernet.h>  //for ethernet port
#include <string.h> // for string handling

String commandInputString = "";
String serIn;
String serOut1a;
String serOut2a;
String serOut3a;
String serOut4a;
String serOut1b;
String serOut2b;
String serOut3b;
String serOut4b;
String serOut5a;
String serOut6a;
String serOut7a;
String serOut8a;
String serOut9a;
String serOut5b;
String serOut6b;
String serOut7b;
String serOut8b;
String serOut9b;
String serOut10a;
String serOut11a;
String serOut12a;
String serOut13a;
String serOut14a;
String serOut15a;
String serOut16a;
String serOut10b;
String serOut11b;
String serOut12b;
String serOut13b;
String serOut14b;
String serOut15b;
String serOut16b;

const int ON = 1;
const int OFF = 0;

// Enter MAC address and IP address for Arduino.
// The IP address is dependent on your local network:
byte mac[] = { 0x90, 0xAA, 0xBB, 0xCC, 0xDA, 0x02 };
IPAddress ip(192, 168, 10, 176); //<< ENTER YOUR IP ADDRESS HERE <<

// Initialize the Ethernet server library
// We'll use port 80 for HTTP):
EthernetServer server(80);
EthernetClient client;

const int PinR1 = 2; //number of Relay 1 pin
const int PinR2 = 3; //number of Relay 2 pin
const int PinR3 = 4; //number of Relay 3 pin
const int PinR4 = 5; //number of Relay 4 pin
const int PinR5 = 6; //number of Relay 5 pin
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 66: const int PinR6 = 8; //number of Relay 6 pin
 67: const int PinR7 = A5; //number of Relay 7 pin
 68: const int PinR8 = A4; //number of Relay 8 pin
 69: const int PinR9 = A3; //number of Relay 9 pin
 70: const int PinR10 = A2; //number of Relay 10 pin
 71: const int PinR11 = A1; //number of Relay 11 pin
 72: const int PinR12 = A0; //number of Relay 12 pin
 73: const int PinR13 = A8; //number of Relay 13 pin
 74: const int PinR14 = A9; //number of Relay 14 pin
 75: const int PinR15 = A10; //number of Relay 15 pin
 76: const int PinR16 = A11; //number of Relay 16 pin
 77:
 78: void setup()
 79: {
 80:   // initialize GPIO pins as output pins
 81:   pinMode(PinR1, OUTPUT);
 82:   pinMode(PinR2, OUTPUT);
 83:   pinMode(PinR3, OUTPUT);
 84:   pinMode(PinR4, OUTPUT);
 85:   pinMode(PinR5, OUTPUT);
 86:   pinMode(PinR6, OUTPUT);
 87:   pinMode(PinR7, OUTPUT);
 88:   pinMode(PinR8, OUTPUT);
 89:   pinMode(PinR9, OUTPUT);
 90:   pinMode(PinR10, OUTPUT);
 91:   pinMode(PinR11, OUTPUT);
 92:   pinMode(PinR12, OUTPUT);
 93:   pinMode(PinR13, OUTPUT);
 94:   pinMode(PinR14, OUTPUT);
 95:   pinMode(PinR15, OUTPUT);
 96:   pinMode(PinR16, OUTPUT);
 97:
 98:   //initialize all GPIO pin values to OFF
 99:   digitalWrite(PinR1, OFF);
100:   digitalWrite(PinR2, OFF);
101:   digitalWrite(PinR3, OFF);
102:   digitalWrite(PinR4, OFF);
103:   digitalWrite(PinR5, OFF);
104:   digitalWrite(PinR6, OFF);
105:   digitalWrite(PinR7, OFF);
106:   digitalWrite(PinR8, OFF);
107:   digitalWrite(PinR9, OFF);
108:   digitalWrite(PinR10, OFF);
109:   digitalWrite(PinR11, OFF);
110:   digitalWrite(PinR12, OFF);
111:   digitalWrite(PinR13, OFF);
112:   digitalWrite(PinR14, OFF);
113:   digitalWrite(PinR15, OFF);
114:   digitalWrite(PinR16, OFF);
115:
116:   // start the Ethernet connection and the server and the serial port:
117:   Ethernet.begin(mac, ip);
118:   server.begin();
119:   Serial.begin(9600);
120:   Serial.println("Arduino Ethernet Device Switch");
121:   Serial.println("by W3SZ");
122:   Serial.println("Starting Server");
123:   Serial.println (Ethernet.localIP());
124:
125:
126: }
127:
128: //this routine reads the output pin values and reports them both through the
         serial port and to the HTML client
129: //it also creates the HTML buttons on the web page and defines what is sent to
         the HTML server when each button is clicked
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130: void sendReply()
131:   {
132:
133:     //read all output pin values
134:              bool val = digitalRead(PinR1);
135:              Serial.println(val);
136:              if(val == ON)
137:              {
138:              serOut1a = F("<input  type=button value = 'WATTMETER' onmousedown=
                      location.href='/~1$' style = 'background-color:lime'>");
139:              serOut1b = F("<input  type=button value = 'SWR METER' onmousedown=
                      location.href='/~100$' style = 'background-color:silver'>");
140:              }
141:              else if (val == OFF)
142:              {
143:              serOut1a = F("<input  type=button value = 'WATTMETER' onmousedown=
                      location.href='/~1$' style = 'background-color:silver'>");
144:              serOut1b = F("<input  type=button value = 'SWR METER' onmousedown=
                      location.href='/~100$' style = 'background-color:lime'>");
145:              }
146:
147:              val = digitalRead(PinR2);
148:              Serial.println(val);
149:              if(val == ON)
150:              {
151:              serOut2a = F("<input  type=button value = 'SWR-CAM ON'  onmousedown=
                      location.href='/~2$' style = 'background-color:lime'>");
152:              serOut2b = F("<input  type=button value = 'SWR-CAM OFF' onmousedown=
                      location.href='/~200$' style = 'background-color:silver'>");
153:              }
154:              else if (val == OFF)
155:              {
156:              serOut2a = F("<input  type=button value = 'SWR-CAM ON' onmousedown=
                      location.href='/~2$' style = 'background-color:silver'>");
157:              serOut2b = F("<input  type=button value = 'SWR-CAM OFF' onmousedown=
                      location.href='/~200$' style = 'background-color:lime'>");
158:              }
159:
160:              val = digitalRead(PinR3);
161:              Serial.println(val);
162:              if(val == ON)
163:              {
164:              serOut3a = F("<input  type=button value = 'WATT-CAM ON' style = '
                      background-color:lime' onmousedown=location.href='/~3$'>");
165:              serOut3b = F("<input  type=button value = 'WATT-CAM OFF' style = '
                      background-color:silver' onmousedown=location.href='/~300$'>");
166:              }
167:              else if (val == OFF)
168:              {
169:              serOut3a = F("<input  type=button value = 'WATT-CAM ON' onmousedown=
                      location.href='/~3$' style = 'background-color:silver'>");
170:              serOut3b = F("<input  type=button value = 'WATT-CAM OFF' onmousedown=
                      location.href='/~300$' style = 'background-color:lime'>");
171:              }
172:
173:              val = digitalRead(PinR4);
174:              Serial.println(val);
175:              if(val == ON)
176:              {
177:              serOut4a = F("<input  type=button value = 'TX ANT ON' onmousedown=
                      location.href='/~4$' style = 'background-color:lime'>");
178:              serOut4b = F("<input  type=button value = 'TX ANT OFF' onmousedown=
                      location.href='/~400$' style = 'background-color:silver'>");
179:              }
180:              else if (val == OFF)
181:              {
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182:              serOut4a = F("<input  type=button value = 'TX ANT ON' onmousedown=
                      location.href='/~4$' style = 'background-color:silver'>");
183:              serOut4b = F("<input  type=button value = 'TX ANT OFF' onmousedown=
                      location.href='/~400$' style = 'background-color:lime'>");
184:              }
185:
186:              val = digitalRead(PinR5);
187:              Serial.println(val);
188:              if(val == ON)
189:              {
190:              serOut5a = F("<input  type=button value = 'VNA ON' onmousedown=
                      location.href='/~5$' style = 'background-color:lime'>");
191:              serOut5b = F("<input  type=button value = 'VNA OFF' onmousedown=
                      location.href='/~500$' style = 'background-color:silver'>");
192:              }
193:              else if (val == OFF)
194:              {
195:              serOut5a = F("<input  type=button value = 'VNA ON' onmousedown=
                      location.href='/~5$' style = 'background-color:silver'>");
196:              serOut5b = F("<input  type=button value = 'VNA OFF' onmousedown=
                      location.href='/~500$' style = 'background-color:lime'>");
197:              }
198:
199:              val = digitalRead(PinR6);
200:              Serial.println(val);
201:              if(val == ON)
202:              {
203:              serOut6a = F("<input  type=button value = 'Relay 6 ON' onmousedown=
                      location.href='/~6$' style = 'background-color:lime'>");
204:              serOut6b = F("<input  type=button value = 'Relay 6 OFF' onmousedown=
                      location.href='/~600$' style = 'background-color:silver'>");
205:              }
206:              else if (val == OFF)
207:              {
208:              serOut6a = F("<input  type=button value = 'Relay 6 ON' onmousedown=
                      location.href='/~6$' style = 'background-color:silver'>");
209:              serOut6b = F("<input  type=button value = 'Relay 6 OFF' onmousedown=
                      location.href='/~600$' style = 'background-color:lime'>");
210:              }
211:
212:              val = digitalRead(PinR7);
213:              Serial.println(val);
214:              if(val == ON)
215:              {
216:              serOut7a = F("<input  type=button value = 'Relay 7 ON' onmousedown=
                      location.href='/~7$' style = 'background-color:lime'>");
217:              serOut7b = F("<input  type=button value = 'Relay 7 OFF' onmousedown=
                      location.href='/~700$' style = 'background-color:silver'>");
218:              }
219:              else if (val == OFF)
220:              {
221:              serOut7a = F("<input  type=button value = 'Relay 7 ON' onmousedown=
                      location.href='/~7$' style = 'background-color:silver'>");
222:              serOut7b = F("<input  type=button value = 'Relay 7 OFF' onmousedown=
                      location.href='/~700$' style = 'background-color:lime'>");
223:              }
224:
225:              val = digitalRead(PinR8);
226:              Serial.println(val);
227:              if(val == ON)
228:              {
229:              serOut8a = F("<input  type=button value = 'Relay 8 ON' onmousedown=
                      location.href='/~8$' style = 'background-color:lime'>");
230:              serOut8b = F("<input  type=button value = 'Relay 8 OFF' onmousedown=
                      location.href='/~800$' style = 'background-color:silver'>");
231:              }
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232:              else if (val == OFF)
233:              {
234:              serOut8a = F("<input  type=button value = 'Relay 8 ON' onmousedown=
                      location.href='/~8$' style = 'background-color:silver'>");
235:              serOut8b = F("<input  type=button value = 'Relay 8 OFF' onmousedown=
                      location.href='/~800$' style = 'background-color:lime'>");
236:              }
237:
238:              val = digitalRead(PinR9);
239:              Serial.println(val);
240:              if(val == ON)
241:              {
242:              serOut9a = F("<input  type=button value = 'Relay 9 ON' onmousedown=
                      location.href='/~9$' style = 'background-color:lime'>");
243:              serOut9b = F("<input  type=button value = 'Relay 9 OFF' onmousedown=
                      location.href='/~900$' style = 'background-color:silver'>");
244:              }
245:              else if (val == OFF)
246:              {
247:              serOut9a = F("<input  type=button value = 'Relay 9 ON' onmousedown=
                      location.href='/~9$' style = 'background-color:silver'>");
248:              serOut9b = F("<input  type=button value = 'Relay 9 OFF' onmousedown=
                      location.href='/~900$' style = 'background-color:lime'>");
249:              }
250:
251:              val = digitalRead(PinR10);
252:              Serial.println(val);
253:              if(val == ON)
254:              {
255:              serOut10a = F("<input  type=button value = 'Relay 10 ON' onmousedown=
                      location.href='/~10$' style = 'background-color:lime'>");
256:              serOut10b = F("<input  type=button value = 'Relay 10 OFF' onmousedown
                      =location.href='/~1000$' style = 'background-color:silver'>");
257:              }
258:              else if (val == OFF)
259:              {
260:              serOut10a = F("<input  type=button value = 'Relay 10 ON' onmousedown=
                      location.href='/~10$' style = 'background-color:silver'>");
261:              serOut10b = F("<input  type=button value = 'Relay 10 OFF' onmousedown
                      =location.href='/~1000$' style = 'background-color:lime'>");
262:              }
263:
264:              val = digitalRead(PinR11);
265:              Serial.println(val);
266:              if(val == ON)
267:              {
268:              serOut11a = F("<input  type=button value = 'Relay 11 ON' onmousedown=
                      location.href='/~11$' style = 'background-color:lime'>");
269:              serOut11b = F("<input  type=button value = 'Relay 11 OFF' onmousedown
                      =location.href='/~1100$' style = 'background-color:silver'>");
270:              }
271:              else if (val == OFF)
272:              {
273:              serOut11a = F("<input  type=button value = 'Relay 11 ON' onmousedown=
                      location.href='/~11$' style = 'background-color:silver'>");
274:              serOut11b = F("<input  type=button value = 'Relay 11 OFF' onmousedown
                      =location.href='/~1100$' style = 'background-color:lime'>");
275:              }
276:
277:              val = digitalRead(PinR12);
278:              Serial.println(val);
279:              if(val == ON)
280:              {
281:              serOut12a = F("<input  type=button value = 'Relay 12 ON' onmousedown=
                      location.href='/~12$' style = 'background-color:lime'>");
282:              serOut12b = F("<input  type=button value = 'Relay 12 OFF' onmousedown
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                    =location.href='/~1200$' style = 'background-color:silver'>");
283:            }
284:            else if (val == OFF)
285:            {
286:            serOut12a = F("<input  type=button value = 'Relay 12 ON' onmousedown=
                    location.href='/~12$' style = 'background-color:silver'>");
287:            serOut12b = F("<input  type=button value = 'Relay 12 OFF' onmousedown
                    =location.href='/~1200$' style = 'background-color:lime'>");
288:            }
289:
290:            val = digitalRead(PinR13);
291:            Serial.println(val);
292:            if(val == ON)
293:            {
294:            serOut13a = F("<input  type=button value = 'Relay 13 ON' onmousedown=
                    location.href='/~13$' style = 'background-color:lime'>");
295:            serOut13b = F("<input  type=button value = 'Relay 13 OFF' onmousedown
                    =location.href='/~1300$' style = 'background-color:silver'>");
296:            }
297:            else if (val == OFF)
298:            {
299:            serOut13a = F("<input  type=button value = 'Relay 13 ON' onmousedown=
                    location.href='/~13$' style = 'background-color:silver'>");
300:            serOut13b = F("<input  type=button value = 'Relay 13 OFF' onmousedown
                    =location.href='/~1300$' style = 'background-color:lime'>");
301:            }
302:
303:            val = digitalRead(PinR14);
304:            Serial.println(val);
305:            if(val == ON)
306:            {
307:            serOut14a = F("<input  type=button value = 'Relay 14 ON' onmousedown=
                    location.href='/~14$' style = 'background-color:lime'>");
308:            serOut14b = F("<input  type=button value = 'Relay 14 OFF' onmousedown
                    =location.href='/~1400$' style = 'background-color:silver'>");
309:            }
310:            else if (val == OFF)
311:            {
312:            serOut14a = F("<input  type=button value = 'Relay 14 ON' onmousedown=
                    location.href='/~14$' style = 'background-color:silver'>");
313:            serOut14b = F("<input  type=button value = 'Relay 14 OFF' onmousedown
                    =location.href='/~1400$' style = 'background-color:lime'>");
314:            }
315:
316:            val = digitalRead(PinR15);
317:            Serial.println(val);
318:            if(val == ON)
319:            {
320:            serOut15a = F("<input  type=button value = 'Relay 15 ON' onmousedown=
                    location.href='/~15$' style = 'background-color:lime'>");
321:            serOut15b = F("<input  type=button value = 'Relay 15 OFF' onmousedown
                    =location.href='/~1500$' style = 'background-color:silver'>");
322:            }
323:            else if (val == OFF)
324:            {
325:            serOut15a = F("<input  type=button value = 'Relay 15 ON' onmousedown=
                    location.href='/~15$' style = 'background-color:silver'>");
326:            serOut15b = F("<input  type=button value = 'Relay 15 OFF' onmousedown
                    =location.href='/~1500$' style = 'background-color:lime'>");
327:            }
328:
329:            val = digitalRead(PinR16);
330:            Serial.println(val);
331:            if(val == ON)
332:            {
333:            serOut16a = F("<input  type=button value = 'Relay 16 ON' onmousedown=
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                    location.href='/~16$' style = 'background-color:lime'>");
334:              serOut16b = F("<input  type=button value = 'Relay 16 OFF' onmousedown
                    =location.href='/~1600$' style = 'background-color:silver'>");
335:              }
336:              else if (val == OFF)
337:              {
338:              serOut16a = F("<input  type=button value = 'Relay 16 ON' onmousedown=
                    location.href='/~16$' style = 'background-color:silver'>");
339:              serOut16b = F("<input  type=button value = 'Relay 16 OFF' onmousedown
                    =location.href='/~1600$' style = 'background-color:lime'>");
340:              }
341:
342:            client.println("HTTP/1.1 200 OK");
343:            client.println("Content-Type: text/html");
344:            client.println();
345:            client.println("<!DOCTYPE HTML>");
346:            client.println("<html>");
347:            client.println("<HEAD>");
348:            client.println("<TITLE>W3SZ Ethernet Relay Switch</TITLE>");
349:            client.println("</HEAD>");
350:            client.println("<body>");
351:            client.println("<br />");
352:            client.println("<H1>W3SZ Ethernet Relay Control</H1>");
353:            client.println("<H2>Click On Relay Buttons To Change State</H2>");
354:            client.println("<br />");
355:            client.println("<input  type=button value = 'GET STATUS' onmousedown=
                  location.href='/~STATUS$'>");
356:            client.println("<br />");
357:            client.println("<br />");
358:            client.println("<br />");
359:            client.println("<style>");
360:
361:            client.println("table, th, td {border-collapse: collapse;");
362:            client.println("}");
363:            client.println("th, td {");
364:            client.println("padding: 5px;");
365:            client.println("}");
366:
367:            client.println("table {");
368:            client.println("width: 100%;");
369:            client.println("}");
370:            client.println("</style>");
371:            client.println("<table>");
372:            client.println("<tr style='border-top:2px solid #f00; border-bottom:2px
                  solid #f00; border-left:2px solid #f00; border-right:2px solid #f00
                  ;'>");
373:            client.println("<td>");
374:            client.println(serOut1a);
375:            client.println(serOut1b);
376:            client.println("</td>");
377:            client.println("<td>");
378:            client.println(serOut2a);
379:            client.println(serOut2b);
380:            client.println("</td>");
381:            client.println("<td>");
382:            client.println(serOut3a);
383:            client.println(serOut3b);
384:            client.println("</td>");
385:            client.println("<td>");
386:            client.println(serOut4a);
387:            client.println(serOut4b);
388:            client.println("</td>");
389:            client.println("</tr>");
390:
391:            client.println("<tr style='border-bottom:2px solid #f00; border-left:2
                  px solid #f00; border-right:2px solid #f00;'>");
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392:            client.println("<td>");
393:            client.println(serOut5a);
394:            client.println(serOut5b);
395:            client.println("</td>");
396:            client.println("<td>");
397:            client.println(serOut6a);
398:            client.println(serOut6b);
399:            client.println("</td>");
400:            client.println("<td>");
401:            client.println(serOut7a);
402:            client.println(serOut7b);
403:            client.println("</td>");
404:            client.println("<td>");
405:            client.println(serOut8a);
406:            client.println(serOut8b);
407:            client.println("</td>");
408:            client.println("</tr>");
409:
410:
411:            client.println("<tr style='border-bottom:2px solid #f00; border-left:2
                    px solid #f00; border-right:2px solid #f00;'>");
412:            client.println("<td>");
413:            client.println(serOut9a);
414:            client.println(serOut9b);
415:            client.println("</td>");
416:            client.println("<td>");
417:            client.println(serOut10a);
418:            client.println(serOut10b);
419:            client.println("</td>");
420:            client.println("<td>");
421:            client.println(serOut11a);
422:            client.println(serOut11b);
423:            client.println("</td>");
424:            client.println("<td>");
425:            client.println(serOut12a);
426:            client.println(serOut12b);
427:            client.println("</td>");
428:            client.println("</tr>");
429:
430:
431:            client.println("<tr style='border-bottom:2px solid #f00; border-left:2
                    px solid #f00; border-right:2px solid #f00;'>");
432:            client.println("<td>");
433:            client.println(serOut13a);
434:            client.println(serOut13b);
435:            client.println("</td>");
436:            client.println("<td>");
437:            client.println(serOut14a);
438:            client.println(serOut14b);
439:            client.println("</td>");
440:            client.println("<td>");
441:            client.println(serOut15a);
442:            client.println(serOut15b);
443:            client.println("</td>");
444:            client.println("<td>");
445:            client.println(serOut16a);
446:            client.println(serOut16b);
447:            client.println("</td>");
448:            client.println("</tr>");
449:
450:            client.println("</table>");
451:
452:
453:            client.println("</body>");
454:            client.println("</html>");
455:        // pause to give the browser time to receive the data
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```
456:     delay(5);
457:     // close the connection:
458:     client.stop();
459:
460:
461:   }
462:
463: //this is the main program loop.
464: //it listens for an HTML client and when it gets input from the client it builds
         a string from the client's input
465: //it then parses the input and if it finds a valid command in the input, it uses
         that command to set the status of
466: //the digital output pin referenced by that command
467: //it reports the command received to the serial monitor and
468: //it calls the function sendReply which reads the output pin values and reports
         them both via serial port and HTML
469: //and creates the webpage with the buttons and the relay status displays
470: void loop()
471: {
472:   // listen for incoming client
473:   client = server.available();
474:   if (client) {
475:     while (client.connected()) {
476:         char c = client.read();
477:         commandInputString += c;  //append latest character received to string
478:       if (c == '\n')
479:       {
480:         //Checks for the URL string beginning with '~' and ending with '$'
481:           int stringStart = commandInputString.indexOf('~');
482:           int stringEnd = commandInputString.indexOf('$');
483:           String commandOut = commandInputString.substring(1 + stringStart,
                stringEnd);
484:           Serial.print("Command is: ");
485:           Serial.println(commandOut);
486:           Serial.println(" ");
487:
488:           if (commandOut  == "1") {
489:             digitalWrite(PinR1, ON);
490:             sendReply();
491:           }
492:           else if (commandOut  == "100") {
493:             digitalWrite(PinR1, OFF);
494:             sendReply();
495:           }
496:
497:           else if (commandOut  == "2") {
498:             digitalWrite(PinR2, ON);
499:             sendReply();
500:           }
501:           else if (commandOut  == "200") {
502:             digitalWrite(PinR2, OFF);
503:             sendReply();
504:           }
505:
506:           else if (commandOut  == "3") {
507:             digitalWrite(PinR3, ON);
508:             sendReply();
509:           }
510:           else if (commandOut  == "300") {
511:             digitalWrite(PinR3, OFF);
512:             sendReply();
513:           }
514:
515:           else if (commandOut  == "4") {
516:             digitalWrite(PinR4, ON);
517:             sendReply();
```

```
518:            }
519:            else if (commandOut  == "400") {
520:              digitalWrite(PinR4, OFF);
521:              sendReply();
522:            }
523:
524:            else if (commandOut  == "5") {
525:              digitalWrite(PinR5, ON);
526:              sendReply();
527:            }
528:            else if (commandOut  == "500") {
529:              digitalWrite(PinR5, OFF);
530:              sendReply();
531:            }
532:
533:            else if (commandOut  == "6") {
534:              digitalWrite(PinR6, ON);
535:              sendReply();
536:            }
537:            else if (commandOut  == "600") {
538:              digitalWrite(PinR6, OFF);
539:              sendReply();
540:            }
541:
542:            else if (commandOut  == "7") {
543:              digitalWrite(PinR7, ON);
544:              sendReply();
545:            }
546:            else if (commandOut  == "700") {
547:              digitalWrite(PinR7, OFF);
548:              sendReply();
549:            }
550:
551:            else if (commandOut  == "8") {
552:              digitalWrite(PinR8, ON);
553:              sendReply();
554:            }
555:            else if (commandOut  == "800") {
556:              digitalWrite(PinR8, OFF);
557:              sendReply();
558:            }
559:
560:            else if (commandOut  == "9") {
561:              digitalWrite(PinR9, ON);
562:              sendReply();
563:            }
564:            else if (commandOut  == "900") {
565:              digitalWrite(PinR9, OFF);
566:              sendReply();
567:            }
568:
569:            else if (commandOut  == "10") {
570:              digitalWrite(PinR10, ON);
571:              sendReply();
572:            }
573:            else if (commandOut  == "1000") {
574:              digitalWrite(PinR10, OFF);
575:              sendReply();
576:            }
577:
578:            else if (commandOut  == "11") {
579:              digitalWrite(PinR11, ON);
580:              sendReply();
581:            }
582:            else if (commandOut  == "1100") {
583:              digitalWrite(PinR11, OFF);
```

```
584:             sendReply();
585:           }
586:
587:           else if (commandOut  == "12") {
588:             digitalWrite(PinR12, ON);
589:             sendReply();
590:           }
591:           else if (commandOut  == "1200") {
592:             digitalWrite(PinR12, OFF);
593:             sendReply();
594:           }
595:
596:
597:           else if (commandOut  == "13") {
598:             digitalWrite(PinR13, ON);
599:             sendReply();
600:           }
601:           else if (commandOut  == "1300") {
602:             digitalWrite(PinR13, OFF);
603:             sendReply();
604:           }
605:
606:           else if (commandOut  == "14") {
607:             digitalWrite(PinR14, ON);
608:             sendReply();
609:           }
610:           else if (commandOut  == "1400") {
611:             digitalWrite(PinR14, OFF);
612:             sendReply();
613:           }
614:
615:           else if (commandOut  == "15") {
616:             digitalWrite(PinR15, ON);
617:             sendReply();
618:           }
619:           else if (commandOut  == "1500") {
620:             digitalWrite(PinR15, OFF);
621:             sendReply();
622:           }
623:
624:           else if (commandOut  == "16") {
625:             digitalWrite(PinR16, ON);
626:             sendReply();
627:           }
628:           else if (commandOut  == "1600") {
629:             digitalWrite(PinR16, OFF);
630:             sendReply();
631:           }
632:
633:           else if (commandOut  == "STATUS") {
634:             sendReply();
635:           }
636:           else
637:           {
638:             String HTMString = "Command Not Recognized:  ";
639:             Serial.println(commandOut);
640:             Serial.println(HTMString);
641:             sendReply();
642:           }
643:
644:           commandInputString = "";
645:           commandOut = "";
646:           c=' ';
647:
648:       }
649:     }
```

```
 650:   }
 651: }
 652:
```