“BÁO CÁO THỰC TẬP”

1. Giới thiệu đồ án
2. Loadcell
   1. Cấu trúc
   2. Tại sao xài 6 dây, ko phải 4 dây
3. HX712
   1. ADC là gì, có bao nhiêu loại ADC
4. Lập trình MSP0
5. Lập trình STM32
6. Bootloader
   1. Memory map
   2. Các đọc file hex
   3. Truyền dữ liệu UART từ PC sang Arduino thông qua Python
   4. Truyền dữ liệu I2C giữa Arduino và STM32
7. Flash-ROM của STM32
8. Cách boot up của ARM chip
9. Vấn đề an ninh/quyền sở hữu trí tuệ

Phụ lục

0 || b'\x00' || b'80'

1 || b'\x01' || b'1'

2 || b'\x02' || b'2'

3 || b'\x03' || b'3'

4 || b'\x04' || b'4'

5 || b'\x05' || b'5'

6 || b'\x06' || b'86'

7 || b'\x07' || b'7'

8 || b'\x08' || b'8'

9 || b'\t' || b'89'

10 || b'\n' || b'A'

11 || b'\x0b' || b'B'

12 || b'\x0c' || b'C'

13 || b'\r' || b'8D'

14 || b'\x0e' || b'E'

15 || b'\x0f' || b'F'

16 || b'\x10' || b'10'

17 || b'\x11' || b'11'

18 || b'\x12' || b'12'

19 || b'\x13' || b'13'

20 || b'\x14' || b'14'

21 || b'\x15' || b'15'

22 || b'\x16' || b'16'

23 || b'\x17' || b'17'

24 || b'\x18' || b'18'

25 || b'\x19' || b'19'

26 || b'\x1a' || b'1A'

27 || b'\x1b' || b'1B'

28 || b'\x1c' || b'1C'

29 || b'\x1d' || b'1D'

30 || b'\x1e' || b'1E'

31 || b'\x1f' || b'1F'

32 || b' ' || b'20'

33 || b'!' || b'21'

34 || b'"' || b'22'

35 || b'#' || b'23'

36 || b'$' || b'24'

37 || b'%' || b'25'

38 || b'&' || b'26'

39 || b"'" || b'27'

40 || b'(' || b'28'

41 || b')' || b'29'

42 || b'\*' || b'2A'

43 || b'+' || b'2B'

44 || b',' || b'AC'

45 || b'-' || b'AD'

46 || b'.' || b'2E'

47 || b'/' || b'2F'

48 || b'0' || b'30'

49 || b'1' || b'B1'

50 || b'2' || b'B2'

51 || b'3' || b'33'

52 || b'4' || b'34'

53 || b'5' || b'35'

54 || b'6' || b'36'

55 || b'7' || b'37'

56 || b'8' || b'38'

57 || b'9' || b'B9'

58 || b':' || b'3A'

59 || b';' || b'3B'

60 || b'<' || b'3C'

61 || b'=' || b'BD'

62 || b'>' || b'3E'

63 || b'?' || b'3F'

64 || b'@' || b'C0'

65 || b'A' || b'41'

66 || b'B' || b'42'

67 || b'C' || b'43'

68 || b'D' || b'44'

69 || b'E' || b'45'

70 || b'F' || b'46'

71 || b'G' || b'47'

72 || b'H' || b'48'

73 || b'I' || b'49'

74 || b'J' || b'4A'

75 || b'K' || b'4B'

76 || b'L' || b'CC'

77 || b'M' || b'4D'

78 || b'N' || b'4E'

79 || b'O' || b'4F'

80 || b'P' || b'50'

81 || b'Q' || b'51'

82 || b'R' || b'52'

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85 || b'U' || b'55'

86 || b'V' || b'56'

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88 || b'X' || b'58'

89 || b'Y' || b'59'

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91 || b'[' || b'5B'

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94 || b'^' || b'5E'

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111 || b'o' || b'6F'

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115 || b's' || b'73'

116 || b't' || b'F4'

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118 || b'v' || b'76'

119 || b'w' || b'77'

120 || b'x' || b'F8'

121 || b'y' || b'79'

122 || b'z' || b'7A'

123 || b'{' || b'7B'

124 || b'|' || b'7C'

125 || b'}' || b'7D'

126 || b'~' || b'7E'

127 || b'\x7f' || b'7F'

128 || b'\x80' || b'80'

129 || b'\x81' || b'81'

130 || b'\x82' || b'82'

131 || b'\x83' || b'83'

132 || b'\x84' || b'84'

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134 || b'\x86' || b'86'

135 || b'\x87' || b'87'

136 || b'\x88' || b'88'

137 || b'\x89' || b'89'

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139 || b'\x8b' || b'8B'

140 || b'\x8c' || b'8C'

141 || b'\x8d' || b'8D'

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146 || b'\x92' || b'92'

147 || b'\x93' || b'93'

148 || b'\x94' || b'94'

149 || b'\x95' || b'95'

150 || b'\x96' || b'96'

151 || b'\x97' || b'97'

152 || b'\x98' || b'98'

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157 || b'\x9d' || b'9D'

158 || b'\x9e' || b'9E'

159 || b'\x9f' || b'9F'

160 || b'\xa0' || b'A0'

161 || b'\xa1' || b'A1'

162 || b'\xa2' || b'A2'

163 || b'\xa3' || b'A3'

164 || b'\xa4' || b'A4'

165 || b'\xa5' || b'A5'

166 || b'\xa6' || b'A6'

167 || b'\xa7' || b'A7'

168 || b'\xa8' || b'A8'

169 || b'\xa9' || b'A9'

170 || b'\xaa' || b'AA'

171 || b'\xab' || b'AB'

172 || b'\xac' || b'AC'

173 || b'\xad' || b'AD'

174 || b'\xae' || b'AE'

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187 || b'\xbb' || b'BB'

188 || b'\xbc' || b'BC'

189 || b'\xbd' || b'BD'

190 || b'\xbe' || b'BE'

191 || b'\xbf' || b'BF'

192 || b'\xc0' || b'C0'

193 || b'\xc1' || b'C1'

194 || b'\xc2' || b'C2'

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196 || b'\xc4' || b'C4'

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207 || b'\xcf' || b'CF'

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222 || b'\xde' || b'DE'

223 || b'\xdf' || b'DF'

224 || b'\xe0' || b'E0'

225 || b'\xe1' || b'E1'

226 || b'\xe2' || b'E2'

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234 || b'\xea' || b'EA'

235 || b'\xeb' || b'EB'

236 || b'\xec' || b'EC'

237 || b'\xed' || b'ED'

238 || b'\xee' || b'EE'

239 || b'\xef' || b'EF'

240 || b'\xf0' || b'F0'

241 || b'\xf1' || b'F1'

242 || b'\xf2' || b'F2'

243 || b'\xf3' || b'F3'

244 || b'\xf4' || b'F4'

245 || b'\xf5' || b'F5'

246 || b'\xf6' || b'F6'

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248 || b'\xf8' || b'F8'

249 || b'\xf9' || b'F9'

250 || b'\xfa' || b'FA'

251 || b'\xfb' || b'FB'

252 || b'\xfc' || b'FC'

253 || b'\xfd' || b'FD'

254 || b'\xfe' || b'FE'

255 || b'\xff' || b'FF'

INPUT(ON/OFF): done

finished program

PS C:\Users\binhc\OneDrive\Desktop\VSC workplace> & C:/Users/binhc/AppData/Local/Programs/Python/Python310/python.exe "c:/Users/binhc/OneDrive/Desktop/VSC workplace/Python\_with\_Arduino/main.py"

INPUT(ON/OFF): 3

3

0 || b'\x00' || b'0'

1 || b'\x01' || b'1'

2 || b'\x02' || b'2'

3 || b'\x03' || b'3'

4 || b'\x04' || b'4'

5 || b'\x05' || b'5'

6 || b'\x06' || b'6'

7 || b'\x07' || b'7'

8 || b'\x08' || b'8'

9 || b'\t' || b'9'

10 || b'\n' || b'A'

11 || b'\x0b' || b'B'

12 || b'\x0c' || b'C'

13 || b'\r' || b'D'

14 || b'\x0e' || b'E'

15 || b'\x0f' || b'F'

16 || b'\x10' || b'10'

17 || b'\x11' || b'11'

18 || b'\x12' || b'12'

19 || b'\x13' || b'13'

20 || b'\x14' || b'14'

21 || b'\x15' || b'15'

22 || b'\x16' || b'16'

23 || b'\x17' || b'17'

24 || b'\x18' || b'18'

25 || b'\x19' || b'19'

26 || b'\x1a' || b'1A'

27 || b'\x1b' || b'1B'

28 || b'\x1c' || b'1C'

29 || b'\x1d' || b'1D'

30 || b'\x1e' || b'1E'

31 || b'\x1f' || b'1F'

32 || b' ' || b'20'

33 || b'!' || b'21'

34 || b'"' || b'22'

35 || b'#' || b'23'

36 || b'$' || b'24'

37 || b'%' || b'25'

38 || b'&' || b'26'

39 || b"'" || b'27'

40 || b'(' || b'28'

41 || b')' || b'29'

42 || b'\*' || b'2A'

43 || b'+' || b'2B'

44 || b',' || b'2C'

45 || b'-' || b'2D'

46 || b'.' || b'2E'

47 || b'/' || b'2F'

48 || b'0' || b'30'

49 || b'1' || b'31'

50 || b'2' || b'32'

51 || b'3' || b'33'

52 || b'4' || b'34'

53 || b'5' || b'35'

54 || b'6' || b'36'

55 || b'7' || b'37'

56 || b'8' || b'38'

57 || b'9' || b'39'

58 || b':' || b'3A'

59 || b';' || b'3B'

60 || b'<' || b'3C'

61 || b'=' || b'3D'

62 || b'>' || b'3E'

63 || b'?' || b'3F'

64 || b'@' || b'40'

65 || b'A' || b'41'

66 || b'B' || b'42'

67 || b'C' || b'43'

68 || b'D' || b'44'

69 || b'E' || b'45'

70 || b'F' || b'46'

71 || b'G' || b'47'

72 || b'H' || b'48'

73 || b'I' || b'49'

74 || b'J' || b'4A'

75 || b'K' || b'4B'

76 || b'L' || b'4C'

77 || b'M' || b'4D'

78 || b'N' || b'4E'

79 || b'O' || b'4F'

80 || b'P' || b'50'

81 || b'Q' || b'51'

82 || b'R' || b'52'

83 || b'S' || b'53'

84 || b'T' || b'54'

85 || b'U' || b'55'

86 || b'V' || b'56'

87 || b'W' || b'57'

88 || b'X' || b'58'

89 || b'Y' || b'59'

90 || b'Z' || b'5A'

91 || b'[' || b'5B'

92 || b'\\' || b'5C'

93 || b']' || b'5D'

94 || b'^' || b'5E'

95 || b'\_' || b'5F'

96 || b'`' || b'60'

97 || b'a' || b'61'

98 || b'b' || b'62'

99 || b'c' || b'63'

100 || b'd' || b'64'

101 || b'e' || b'65'

102 || b'f' || b'66'

103 || b'g' || b'67'

104 || b'h' || b'68'

105 || b'i' || b'69'

106 || b'j' || b'6A'

107 || b'k' || b'6B'

108 || b'l' || b'6C'

109 || b'm' || b'6D'

110 || b'n' || b'6E'

111 || b'o' || b'6F'

112 || b'p' || b'70'

113 || b'q' || b'71'

114 || b'r' || b'72'

115 || b's' || b'73'

116 || b't' || b'74'

117 || b'u' || b'75'

118 || b'v' || b'76'

119 || b'w' || b'77'

120 || b'x' || b'78'

121 || b'y' || b'79'

122 || b'z' || b'7A'

123 || b'{' || b'7B'

124 || b'|' || b'7C'

125 || b'}' || b'7D'

126 || b'~' || b'7E'

127 || b'\x7f' || b'7F'

128 || b'\x80' || b'80'

129 || b'\x81' || b'81'

130 || b'\x82' || b'82'

131 || b'\x83' || b'83'

132 || b'\x84' || b'84'

133 || b'\x85' || b'85'

134 || b'\x86' || b'86'

135 || b'\x87' || b'87'

136 || b'\x88' || b'88'

137 || b'\x89' || b'89'

138 || b'\x8a' || b'8A'

139 || b'\x8b' || b'8B'

140 || b'\x8c' || b'8C'

141 || b'\x8d' || b'8D'

142 || b'\x8e' || b'8E'

143 || b'\x8f' || b'8F'

144 || b'\x90' || b'90'

145 || b'\x91' || b'91'

146 || b'\x92' || b'92'

147 || b'\x93' || b'93'

148 || b'\x94' || b'94'

149 || b'\x95' || b'95'

150 || b'\x96' || b'96'

151 || b'\x97' || b'97'

152 || b'\x98' || b'98'

153 || b'\x99' || b'99'

154 || b'\x9a' || b'9A'

155 || b'\x9b' || b'9B'

156 || b'\x9c' || b'9C'

157 || b'\x9d' || b'9D'

158 || b'\x9e' || b'9E'

159 || b'\x9f' || b'9F'

160 || b'\xa0' || b'A0'

161 || b'\xa1' || b'A1'

162 || b'\xa2' || b'A2'

163 || b'\xa3' || b'A3'

164 || b'\xa4' || b'A4'

165 || b'\xa5' || b'A5'

166 || b'\xa6' || b'A6'

167 || b'\xa7' || b'A7'

168 || b'\xa8' || b'A8'

169 || b'\xa9' || b'A9'

170 || b'\xaa' || b'AA'

171 || b'\xab' || b'AB'

172 || b'\xac' || b'AC'

173 || b'\xad' || b'AD'

174 || b'\xae' || b'AE'

175 || b'\xaf' || b'AF'

176 || b'\xb0' || b'B0'

177 || b'\xb1' || b'B1'

178 || b'\xb2' || b'B2'

179 || b'\xb3' || b'B3'

180 || b'\xb4' || b'B4'

181 || b'\xb5' || b'B5'

182 || b'\xb6' || b'B6'

183 || b'\xb7' || b'B7'

184 || b'\xb8' || b'B8'

185 || b'\xb9' || b'B9'

186 || b'\xba' || b'BA'

187 || b'\xbb' || b'BB'

188 || b'\xbc' || b'BC'

189 || b'\xbd' || b'BD'

190 || b'\xbe' || b'BE'

191 || b'\xbf' || b'BF'

192 || b'\xc0' || b'C0'

193 || b'\xc1' || b'C1'

194 || b'\xc2' || b'C2'

195 || b'\xc3' || b'C3'

196 || b'\xc4' || b'C4'

197 || b'\xc5' || b'C5'

198 || b'\xc6' || b'C6'

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202 || b'\xca' || b'CA'

203 || b'\xcb' || b'CB'

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205 || b'\xcd' || b'CD'

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221 || b'\xdd' || b'DD'

222 || b'\xde' || b'DE'

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225 || b'\xe1' || b'E1'

226 || b'\xe2' || b'E2'

227 || b'\xe3' || b'E3'

228 || b'\xe4' || b'E4'

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246 || b'\xf6' || b'F6'

247 || b'\xf7' || b'F7'

248 || b'\xf8' || b'F8'

249 || b'\xf9' || b'F9'

250 || b'\xfa' || b'FA'

251 || b'\xfb' || b'FB'

252 || b'\xfc' || b'FC'

253 || b'\xfd' || b'FD'

254 || b'\xfe' || b'FE'

255 || b'\xff' || b'FF'

INPUT(ON/OFF):