Project

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I couldn’t quite figure out the project so it does not work properly, but my code and progress is shown below. The screenshots will be incorrect though as I could not figure out the project

Start of code

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Freescale HC12-Assembler

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Abs. Rel. Loc Obj. code Source line

---- ---- ------ --------- -----------

1 1 ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

2 2 ;\* This stationery serves as the framework for a \*

3 3 ;\* user application (single file, absolute assembly application) \*

4 4 ;\* For a more comprehensive program that \*

5 5 ;\* demonstrates the more advanced functionality of this \*

6 6 ;\* processor, please see the demonstration applications \*

7 7 ;\* located in the examples subdirectory of the \*

8 8 ;\* Freescale CodeWarrior for the HC12 Program directory \*

9 9 ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

10 10

11 11 ; export symbols

12 12 XDEF Entry, \_Startup ; export 'Entry' symbol

13 13 ABSENTRY Entry ; for absolute assembly: mark this as application entry point

14 14

15 15

16 16

17 17 ; Include derivative-specific definitions

18 18

19 19 0000 0800 RAMStart EQU $0800

20 20 0000 4000 ROMStart EQU $4000 ; absolute address to place my code/constant data

21 21 0000 2000 Stack EQU $2000

22 22 0000 001E INTCR EQU $001E

23 23 0000 0040 IRQEN EQU $40

24 24 0000 0000 PORTA EQU $0000

25 25 0000 0002 DDRA EQU $0002

26 26 0000 0001 PORTB EQU $0001

27 27 0000 0003 DDRB EQU $0003

28 28 0000 0008 PORTE EQU $0008

29 29 0000 0009 DDRE EQU $0009

30 30 0000 0004 Num\_col EQU 4

31 31 0000 0005 Num\_row EQU 5

32 32 0000 0046 TSCR1 EQU $0046

33 33 0000 004F TFLAG2 EQU $004F

34 34 0000 0080 MSB EQU %10000000

35 35

36 36

37 37 ; variable/data section

38 38

39 39 ORG RAMStart

40 40

41 41 a000800 08 TABLE DC.B 8

42 42 a000801 01 DIRECTION DC.B 1

43 43 a000802 0100 BOUNCE DC.B 1,0

44 44 a000804 Keys DS.B 20

45 45 a000818 Key\_value DS.B 1

46 46 a000819 FEFD FBF7 MaskP DC.B $FE, $FD, $FB, $F7, $EF

00081D EF

47 47 a00081E Pressed DS.B 1

48 48 a00081F delayFlag DS.B 1

49 49 a000820 newSpeed DS.W 1

50 50 a000822 Speed DS.B 1

51 51 a000823 NTOFS DS.B 1

52 52

53 53

54 54 ORG ROMStart

55 55

56 56 Entry:

57 57 \_Startup:

58 58

59 59 a004000 CF20 00 lds #Stack ;set up stack

60 60 a004003 180B 4000 movb #IRQEN, INTCR ;interrupt for IRQ

004007 1E

61 61 a004008 180B FF00 movb #$FF, DDRA

00400C 02

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---- ---- ------ --------- -----------

62 62 a00400D 180B 0000 movb #0, PORTA

004011 00

63 63 a004012 180B FF00 movb #$FF, DDRE

004016 09

64 64

65 65 a004017 7908 1E clr Pressed

66 66

67 67 a00401A CD08 04 ldy #Keys

68 68 a00401D 10EF cli ;enables all maskable interrupts

69 69

70 70

71 71 startLoop:

72 72 a00401F 3E wai

73 73 a004020 B608 18 ldaa Key\_value

74 74 a004023 274D beq start\_led

75 75 a004025 2000 bra split

76 76

77 77 split:

78 78 a004027 1640 E0 jsr one\_sec\_delay

79 79 a00402A 2000 bra update\_table

80 80

81 81 update\_table:

82 82 a00402C 070B bsr interactions

83 83 a00402E 180C 0800 movb TABLE, PORTE

004032 0008

84 84 a004034 1640 E0 jsr one\_sec\_delay

85 85 a004037 20F3 bra update\_table

86 86

87 87 interactions:

88 88 a004039 3E wai

89 89 a00403A F608 18 ldab Key\_value

90 90 a00403D 810C cmpa #$C

91 91 a00403F 2740 beq reset

92 92 a004041 810B cmpa #$B

93 93 a004043 2715 beq resume\_led

94 94 a004045 810A cmpa #$A

95 95 a004047 271B beq stop\_led

96 96 a004049 8100 cmpa #0

97 97 a00404B 182E C7D1 lbgt newSpeed

98 98

99 99 default\_Position:

100 100 a00404F 7900 08 clr PORTE

101 101 a004052 7900 09 clr DDRE

102 102 a004055 180B 0108 movb #1, TABLE

004059 00

103 103

104 104 resume\_led

105 105 a00405A 180B 1000 movb #$10, PORTE

00405E 08

106 106 a00405F 180B 1000 movb #$10, DDRE

004063 09

107 107

108 108 stop\_led

109 109 a004064 3E wai

110 110 a004065 F608 18 ldab Key\_value

111 111 a004068 C10C cmpb #$C

112 112 a00406A 2715 beq reset

113 113 a00406C C10B cmpb #$B

114 114 a00406E 27EA beq resume\_led

115 115 a004070 20F2 bra stop\_led

116 116

117 117 start\_led:

118 118 a004072 180B 0100 movb #$01, PORTE

004076 08

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119 119 a004077 180B 0100 movb #$01, DDRE

00407B 09

120 120 a00407C 20BB bra interactions

121 121

122 122 speed:

123 123 a00407E F608 18 ldab Key\_value

124 124

125 125 reset:

126 126 a004081 7908 00 clr TABLE

127 127 a004084 7908 01 clr DIRECTION

128 128 a004087 7900 08 clr PORTE

129 129 a00408A 7900 09 clr DDRE

130 130 a00408D 1640 1F jsr startLoop

131 131

132 132 key\_isr

133 133 a004090 C7 clrb

134 134 a004091 CE08 19 ldx #MaskP

135 135

136 136 isr\_loop

137 137 a004094 180D 3000 movb 1, x+, PORTA

004098 00

138 138 a004099 9601 ldaa PORTB

139 139 a00409B 81FF cmpa #$FF

140 140 a00409D 2607 bne is\_pressed

141 141 a00409F 52 incb

142 142 a0040A0 C104 cmpb #4

143 143 a0040A2 26F0 bne isr\_loop

144 144 a0040A4 201C bra stop2

145 145

146 146 is\_pressed:

147 147 a0040A6 CE08 19 ldx #MaskP

148 148 a0040A9 CD00 05 ldy #5

149 149

150 150 isr\_loop2:

151 151 a0040AC A130 cmpa 1, x+

152 152 a0040AE 2707 beq stop1

153 153 a0040B0 CB04 addb #4

154 154 a0040B2 0436 F7 dbne y, isr\_loop2

155 155 a0040B5 200B bra stop2

156 156

157 157 stop1:

158 158 a0040B7 7B08 18 stab Key\_value

159 159 a0040BA 180B 0108 movb #1, Pressed

0040BE 1E

160 160 a0040BF 1640 1F jsr startLoop

161 161

162 162 stop2:

163 163 a0040C2 180B 0000 movb #$0, PORTA

0040C6 00

164 164 a0040C7 0B rti

165 165

166 166 setDelay:

167 167 a0040C8 FE08 20 ldx newSpeed

168 168

169 169 delay:

170 170 a0040CB 1640 E0 jsr one\_sec\_delay

171 171 a0040CE 3D rts

172 172

173 173 speedNew:

174 174 a0040CF F608 18 ldab Key\_value

175 175 a0040D2 B795 exg b, x

176 176 a0040D4 FC08 22 ldd Speed

177 177 a0040D7 1815 idivs

178 178 a0040D9 7E08 20 stx newSpeed

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---- ---- ------ --------- -----------

179 179 a0040DC F608 23 ldab NTOFS

180 180 a0040DF 3D rts

181 181

182 182 one\_sec\_delay:

183 183 a0040E0 180B 8000 movb #MSB, TSCR1

0040E4 46

184 184 a0040E5 180B 8000 movb #MSB, TFLAG2

0040E9 4F

185 185 a0040EA B608 23 ldaa NTOFS

186 186

187 187 spin:

188 188 a0040ED D64F ldab TFLAG2

189 189 a0040EF C580 bitb #MSB

190 190 a0040F1 27FA beq spin

191 191 a0040F3 180B 8000 movb #MSB, TFLAG2

0040F7 4F

192 192 a0040F8 43 deca

193 193 a0040F9 26F2 bne spin

194 194 a0040FB 3D rts

195 195

196 196 bouncer:

197 197 a0040FC B608 02 ldaa BOUNCE

198 198 a0040FF F708 02 tst BOUNCE

199 199 a004102 2600 bne noBouncer

200 200

201 201 noBouncer:

202 202

203 203

204 204

205 205

206 206

207 207

208 208

209 209

210 210 ; result in D

211 211

212 212 ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

213 213 ;\* Interrupt Vectors \*

214 214 ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

215 215 ORG $FFF2

216 216 a00FFF2 4090 dc.w key\_isr

217 217

218 218 ORG $FFFE

219 219 a00FFFE 4000 DC.W Entry ; Reset Vector

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*End of Code