

LAMPIRAN A
PROGRAM PADA KONTROLER CM-510

```
1: START PROGRAM
2: {
3:   Motion Page = 1
4:   WAIT WHILE ( Motion Status == TRUE )
5:   Timer = 1.920sec
6:   WAIT WHILE ( Timer > 0.000sec )
7:
8:   CALL PemilihanMode
9:
10:  IF ( UseGyro == FALSE && UseAccelero == FALSE )
11:  {
12:    CALL Mode_GyroTidakAktif_AcceleroTidakAktif
13:  }
14:
15:  IF ( UseGyro == TRUE && UseAccelero == FALSE )
16:  {
17:    CALL Mode_GyroAktif_AcceleroTidakAktif
18:  }
19:
20:  IF ( UseGyro == FALSE && UseAccelero == TRUE )
21:  {
22:    CALL Mode_GyroTidakAktif_AcceleroAktif
23:  }
24:
25:  IF ( UseGyro == TRUE && UseAccelero == TRUE )
26:  {
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27:     CALL Mode_GyroAKtif_AcceleroAktif
28: }
29: }
30:
31: FUNCTION PemilihanMode
32: {
33:     LOOP WHILE ( Mulai == FALSE )
34:     {
35:         IF ( 🖱️ Button == 🖱️ U )
36:         {
37:             UseGyro = FALSE
38:             UseAccelero = FALSE
39:             Mulai = TRUE
40:             🎵 Buzzer index = Melody2
41:         }
42:
43:         ELSE IF ( 🖱️ Button == 🖱️ R )
44:         {
45:             UseGyro = TRUE
46:             UseAccelero = FALSE
47:             Mulai = TRUE
48:             🎵 Buzzer index = Melody2
49:         }
50:
51:         ELSE IF ( 🖱️ Button == 🖱️ L )
52:         {
53:             UseGyro = FALSE





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54:         UseAccelerometer = TRUE
55:         Mulai = TRUE
56:         🎵 Buzzer index = Melody2
57:     }
58:
59:     ELSE IF ( 🖱️ Button == 🖱️ D )
60:     {
61:         UseGyro = TRUE
62:         UseAccelerometer = TRUE
63:         Mulai = TRUE
64:         🎵 Buzzer index = Melody2
65:     }
66: }
67: }
68:
69: FUNCTION Mode_GyroTidakAktif_AccelerometerTidakAktif
70: {
71:     Step = 20
72:     ENDLESS LOOP
73:     {
74:         🎮 Motion Page = Step
75:         WAIT WHILE ( 🎮 Motion Status == TRUE )
76:         IF ( Step == 26 )
77:         {
78:             Step = 20
79:         }
80:         Step = Step + 1










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81:     }
82: }
83:
84: FUNCTION Mode_GyroAktif_AcceleroTidakAktif
85: {
86:     CALL InisialisasiSensorGyro
87:     Step = 20
88:     ENDLESS LOOP
89:     {
90:          Motion Page = Step
91:         WAIT WHILE (  Motion Status == TRUE )
92:         IF ( Step == 26 )
93:         {
94:             Step = 20
95:         }
96:         Step = Step + 1
97:     }
98: }
99:
100: FUNCTION Mode_GyroTidakAktif_AcceleroAktif
101: {
102:     Step = 20
103:      Motion Page = Step
104:     WAIT WHILE (  Motion Status == TRUE )
105:     ENDLESS LOOP
106:     {
107:         IF ( FB_Delta15 > 6 || FB_Delta15 < -6 )

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108:      {
109:          IF (  Motion Page == 21 ||  Motion Page == 2
110:              4 )
111:          {
112:              Miring = TRUE
113:              Step = 40
114:               Motion Page = Step
115:              WAIT WHILE (  Motion Status == TRUE )
116:          }
117:      }
118:      IF ( FB_Delta15 > -6 && FB_Delta15 < 6 )
119:      {
120:          IF (  Motion Page == 41 ||  Motion Page == 4
121:              5 )
122:          {
123:              Miring = FALSE
124:              Step = 20
125:               Motion Page = Step
126:              WAIT WHILE (  Motion Status == TRUE )
127:          }
128:      }
129:      IF ( Miring == FALSE )
130:      {
131:          FBAccelero =  PORT[1]
132:          CALL InisialisasiSensorAccelero

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133:          FBAccelero_Error = FBAccelero - FBAccelero_Cer
            iter
134:
135:          LOOP WHILE ( FBAccelero_Error > 6 )
136:          {
137:              FB_Delta15 = FB_Delta15 - 2
138:              FB_Delta16 = 0 - FB_Delta15
139:              ID[15]:Joint offset = FB_Delta15 + 0
140:              ID[16]:Joint offset = FB_Delta16 - 0
141:              Motion Page = Step + 10
142:              WAIT WHILE ( Motion Status == TRUE )
143:              FBAccelero = PORT[1]
144:              FBAccelero_Error = FBAccelero - FBAccelero
            _Center
145:          }
146:
147:          LOOP WHILE ( FBAccelero_Error < -6 )
148:          {
149:              FB_Delta15 = FB_Delta15 + 2
150:              FB_Delta16 = 0 - FB_Delta15
151:              ID[15]:Joint offset = FB_Delta15 + 0
152:              ID[16]:Joint offset = FB_Delta16 - 0
153:              Motion Page = Step + 10
154:              WAIT WHILE ( Motion Status == TRUE )
155:              FBAccelero = PORT[1]
156:              FBAccelero_Error = FBAccelero - FBAccelero
            _Center

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157:         }
158:     IF ( Step == 26 )
159:     {
160:         Step = 20
161:     }
162:     Step = Step + 1
163:     Motion Page = Step
164:     WAIT WHILE ( Motion Status == TRUE )
165: }
166:
167: ELSE IF ( Miring == TRUE )
168: {
169:     FBAccelero = PORT[1]
170:     CALL InisialisasiSensorAccelero
171:     FBAccelero_Error = FBAccelero - FBAccelero_Cer

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iter

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172:
173:     LOOP WHILE ( FBAccelero_Error > 6 )
174:     {
175:         FB_Delta15 = FB_Delta15 - 2
176:         FB_Delta16 = 0 - FB_Delta15
177:         ID[15]:Joint offset = FB_Delta15 + 0
178:         ID[16]:Joint offset = FB_Delta16 - 0
179:         Motion Page = Step + 10
180:         WAIT WHILE ( Motion Status == TRUE )
181:         FBAccelero = PORT[1]
182:         FBAccelero_Error = FBAccelero - FBAccelero

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_Center


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183:     }
184:
185:     LOOP WHILE ( FBAccelero_Error < -6 )
186:     {
187:         FB_Delta15 = FB_Delta15 + 2
188:         FB_Delta16 = 0 - FB_Delta15
189:         ID[15]:Joint offset = FB_Delta15 + 0
190:         ID[16]:Joint offset = FB_Delta16 - 0
191:         Motion Page = Step + 10
192:         WAIT WHILE ( Motion Status == TRUE )
193:         FBAccelero = PORT[1]
194:         FBAccelero_Error = FBAccelero - FBAccelero

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Center

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195:     }
196:     IF ( Step == 48 )
197:     {
198:         Step = 40
199:     }
200:     Step = Step + 1
201:     Motion Page = Step
202:     WAIT WHILE ( Motion Status == TRUE )
203: }
204: }
205: }
206:
207: FUNCTION Mode_GyroAktif_AcceleroAktif
208: {







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209: CALL InisialisasiSensorGyro
210: Step = 20
211: Motion Page = Step
212: WAIT WHILE ( Motion Status == TRUE )
213: ENDLESS LOOP
214: {
215:     IF ( FB_Delta15 > 6 || FB_Delta15 < -6 )
216:     {
217:         IF ( Motion Page == 21 || Motion Page == 2
218:             14 )
219:         {
220:             Miring = TRUE
221:             Step = 40
222:             Motion Page = Step
223:             WAIT WHILE ( Motion Status == TRUE )
224:         }
225:     }
226:     IF ( FB_Delta15 > -6 && FB_Delta15 < 6 )
227:     {
228:         IF ( Motion Page == 41 || Motion Page == 4
229:             15 )
230:         {
231:             Miring = FALSE
232:             Step = 20
233:             Motion Page = Step
234:             WAIT WHILE ( Motion Status == TRUE )









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234:         }
235:     }
236:
237:     IF ( Miring == FALSE )
238:     {
239:         FBAccelero =  PORT[1]
240:         CALL InisialisasiSensorAccelero
241:         FBAccelero_Error = FBAccelero - FBAccelero_Cer
            iter
242:
243:         LOOP WHILE ( FBAccelero_Error > 6 )
244:         {
245:             FB_Delta15 = FB_Delta15 - 2
246:             FB_Delta16 = 0 - FB_Delta15
247:              ID[15]:Joint offset = FB_Delta15 + FBGyro_
            Error
248:              ID[16]:Joint offset = FB_Delta16 - FBGyro_E
            Error
249:              Motion Page = Step + 10
250:             WAIT WHILE (  Motion Status == TRUE )
251:             FBAccelero =  PORT[1]
252:             FBAccelero_Error = FBAccelero - FBAccelero_
            _Center
253:         }
254:
255:         LOOP WHILE ( FBAccelero_Error < -6 )
256:         {

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257:          FB_Delta15 = FB_Delta15 + 2
258:          FB_Delta16 = 0 - FB_Delta15
259:           ID[15]:Joint offset = FB_Delta15 + FBGyro_
      Error
260:           ID[16]:Joint offset = FB_Delta16 - FBGyro_E
      Error
261:           Motion Page = Step + 10
262:          WAIT WHILE (  Motion Status == TRUE )
263:          FBAccelero =  PORT[1]
264:          FBAccelero_Error = FBAccelero - FBAccelero_
      _Center
265:      }
266:      IF ( Step == 26 )
267:      {
268:          Step = 20
269:      }
270:      Step = Step + 1
271:       Motion Page = Step
272:      WAIT WHILE (  Motion Status == TRUE )
273:  }
274:
275:  ELSE IF ( Miring == TRUE )
276:  {
277:      FBAccelero =  PORT[1]
278:      CALL InisialisasiSensorAccelero
279:      FBAccelero_Error = FBAccelero - FBAccelero_Cer
      iter

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280:
281:     LOOP WHILE ( FBAccelero_Error > 6 )
282:     {
283:         FB_Delta15 = FB_Delta15 - 2
284:         FB_Delta16 = 0 - FB_Delta15
285:         ID[15]:Joint offset = FB_Delta15 + FBGyro_
Error
286:         ID[16]:Joint offset = FB_Delta16 - FBGyro_E
Error
287:         Motion Page = Step + 10
288:         WAIT WHILE ( Motion Status == TRUE )
289:         FBAccelero = PORT[1]
290:         FBAccelero_Error = FBAccelero - FBAccelero
_Center
291:     }
292:
293:     LOOP WHILE ( FBAccelero_Error < -6 )
294:     {
295:         FB_Delta15 = FB_Delta15 + 2
296:         FB_Delta16 = 0 - FB_Delta15
297:         ID[15]:Joint offset = FB_Delta15 + FBGyro_
Error
298:         ID[16]:Joint offset = FB_Delta16 - FBGyro_E
Error
299:         Motion Page = Step + 10
300:         WAIT WHILE ( Motion Status == TRUE )
301:         FBAccelero = PORT[1]







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302:          FBAccelero_Error = FBAccelero - FBAccelero
          _Center
303:      }
304:      IF ( Step == 48 )
305:      {
306:          Step = 40
307:      }
308:      Step = Step + 1
309:      Motion Page = Step
310:      WAIT WHILE ( Motion Status == TRUE )
311:  }
312: }
313: }
314:
315: FUNCTION InisialisasiSensorGyro
316: {
317:     LOOP FOR ( i = 1 ~ 10 )
318:     {
319:         FBGyro = PORT[3]
320:         RLGyro = PORT[4]
321:         FBGyro_Center = FBGyro_Center + FBGyro
322:         RLGyro_Center = RLGyro_Center + RLGyro
323:         Timer = 0.128sec
324:         WAIT WHILE ( Timer > TRUE )
325:     }
326:     FBGyro_Center = FBGyro_Center / 10
327:     RLGyro_Center = RLGyro_Center / 10




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328:     GyroReady = TRUE
329: }
330:
331: FUNCTION InisialisasiSensorAccelero
332: {
333:     IF (  Motion Page == 20 )
334:     {
335:         FBAccelero_Center = 343
336:     }
337:     ELSE IF (  Motion Page == 21 )
338:     {
339:         FBAccelero_Center = 340
340:     }
341:     ELSE IF (  Motion Page == 22 )
342:     {
343:         FBAccelero_Center = 346
344:     }
345:     ELSE IF (  Motion Page == 23 )
346:     {
347:         FBAccelero_Center = 347
348:     }
349:     ELSE IF (  Motion Page == 24 )
350:     {
351:         FBAccelero_Center = 343
352:     }
353:     ELSE IF (  Motion Page == 25 )
354:     {
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```
355:         FBAccelerero_Center = 347
356:     }
357:     ELSE IF (  Motion Page == 26 )
358:     {
359:         FBAccelerero_Center = 348
360:     }
361:
362:     ELSE IF (  Motion Page == 40 )
363:     {
364:         FBAccelerero_Center = 343
365:     }
366:     ELSE IF (  Motion Page == 41 )
367:     {
368:         FBAccelerero_Center = 343
369:     }
370:     ELSE IF (  Motion Page == 42 )
371:     {
372:         FBAccelerero_Center = 346
373:     }
374:     ELSE IF (  Motion Page == 43 )
375:     {
376:         FBAccelerero_Center = 342
377:     }
378:     ELSE IF (  Motion Page == 44 )
379:     {
380:         FBAccelerero_Center = 338
381:     }
```




```
382:  ELSE IF ( Motion Page == 45 )
383:  {
384:      FBAccelerero_Center = 347
385:  }
386:  ELSE IF ( Motion Page == 46 )
387:  {
388:      FBAccelerero_Center = 350
389:  }
390:  ELSE IF ( Motion Page == 47 )
391:  {
392:      FBAccelerero_Center = 342
393:  }
394:  ELSE IF ( Motion Page == 48 )
395:  {
396:      FBAccelerero_Center = 341
397:  }
398: }
399:
400: CALLBACK
401: {
402:
403:     IF ( Mulai == TRUE )
404:     {
405:
406:         IF ( UseGyro == TRUE && GyroReady == TRUE )
407:         {
408:             FBGyro = PORT[3]
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409:     RLGyro =  PORT[4]
410:
411:     FBGyro_Error = FBGyro - FBGyro_Center
412:     RLGyro_Error = RLGyro - RLGyro_Center
413:
414:     IF ( FBGyro_Error > 25 || FBGyro_Error < -25 )
415:     {
416:         FBGyro_Error = FBGyro_Error / 3
417:     }
418:     ELSE
419:     {
420:         FBGyro_Error = 0 + 0
421:     }
422:
423:     IF ( RLGyro_Error > 25 || RLGyro_Error < -25 )
424:     {
425:         RLGyro_Error = RLGyro_Error / 4
426:     }
427:     ELSE
428:     {
429:         RLGyro_Error = 0 + 0
430:     }
431:
432:      ID[15]:Joint offset = FB_Delta15 + FBGyro_Error
433:
434:      ID[16]:Joint offset = FB_Delta16 - FBGyro_Error
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434:


435:

 ID[9]:Joint offset = 0 - RLGyro_Error


436:

 ID[10]:Joint offset = 0 - RLGyro_Error

437:

 ID[17]:Joint offset = 0 - RLGyro_Error

438:

 ID[18]:Joint offset = 0 - RLGyro_Error

439:

}

440:

}

441:

}