

test_output

```
1** The following tests were done by Francis Okoyo franciso 213811336 **
2Test1 :
3
4alarm> Diagram
5
6FBad command
7ialarm> galarm> ure 1: Overall system design.
8Bad command
9alarm> 3 MessageType(2, 1) Wie geht es dir?
10Type A Alarm Request With Message Number <1> Received at time <1522429831>: <Type A>
11alarm> 4 MessageType(2, 5) Es geht mir gut!
12Type A Alarm Request With Message Number <5> Received at time <1522429836>: <Type A>
13alarm> 2 MessageType(3, 22) Bruh!
14Type A Alarm Request With Message Number <22> Received at time <1522429840>: <Type A>
15alarm> Create_Thread: MessageType(3)
16Type B Create Thread Alarm Request With Message Type (3) Inserted Into Alarm List at <1522429846>!
17alarm> Type B Alarm Request Processed at <1522429846>: New Periodic Display Thread With Message Type (3) Created.
18Alarm With Message Type (3) and Message Number (22) Displayed at <1522429848>: <Type A> : "Bruh!"
19Alarm With Message Type (3) and Message Number (22) Displayed at <1522429850>: <Type A> : "Bruh!"
20Create_Thread: MessageType(1)
21Type B Alarm Request Error: No Alarm Request With Message Type(1)!
22alarm> Alarm With Message Type (3) and Message Number (22) Displayed at <1522429852>: <Type A> : "Bruh!"
23Alarm With Message Type (3) and Message Number (22) Displayed at <1522429854>: <Type A> : "Bruh!"
24Alarm With Message Type (3) and Message Number (22) Displayed at <1522429856>: <Type A> : "Bruh!"
25Create_Thread: MessageType(2)
26Alarm With Message Type (3) and Message Number (22) Displayed at <1522429858>: <Type A> : "Bruh!"
27Type B Create Thread Alarm Request With Message Type (2) Inserted Into Alarm List at <1522429858>!
28alarm> Type B Alarm Request Processed at <1522429858>: New Periodic Display Thread With Message Type (2) Created.
29Alarm With Message Type (3) and Message Number (22) Displayed at <1522429860>: <Type A> : "Bruh!"
30Alarm With Message Type (2) and Message Number (1) Displayed at <1522429861>: <Type A> : "Wie geht es dir?"
31Alarm With Message Type (3) and Message Number (22) Displayed at <1522429862>: <Type A> : "Bruh!"
32Alarm With Message Type (3) and Message Number (22) Displayed at <1522429864>: <Type A> : "Bruh!"
33Alarm With Message Type (2) and Message Number (5) Displayed at <1522429865>: <Type A> : "Es geht mir gut!"
34Alarm With Message Type (3) and Message Number (22) Displayed at <1522429866>: <Type A> : "Bruh!"
35Alarm With Message Type (2) and Message Number (1) Displayed at <1522429868>: <Type A> : "Wie geht es dir?"
36Alarm With Message Type (3) and Message Number (22) Displayed at <1522429868>: <Type A> : "Bruh!"
37Alarm With Message Type (3) and Message Number (22) Displayed at <1522429870>: <Type A> : "Bruh!"
38Alarm With Message Type (2) and Message Number (5) Displayed at <1522429872>: <Type A> : "Es geht mir gut!"
39Alarm With Message Type (3) and Message Number (22) Displayed at <1522429872>: <Type A> : "Bruh!"
40Alarm With Message Type (3) and Message Number (22) Displayed at <1522429874>: <Type A> : "Bruh!"
41Alarm With Message Type (2) and Message Number (1) Displayed at <1522429875>: <Type A> : "Wie geht es dir?"
42Cancel: Message(22)
```

test_output

```
43 Alarm With Message Type (3) and Message Number (22) Displayed at <1522429876>: <Type A> : "Bruh!"
44 Alarm With Message Type (2) and Message Number (5) Displayed at <1522429879>: <Type A> : "Es geht mir gut!"
45 Type C Cancel Alarm Request With Message Number (22) Inserted Into Alarm List at <1522429879>: <Type C>
46 alarm> Type C Alarm Request Processed at <1522429879>: Alarm Request With Message Number (22) Removed
47 No More Alarm Requests With Message Type (3): Periodic Display Thread For Message Type (3) Terminated.
48 Alarm With Message Type (2) and Message Number (1) Displayed at <1522429882>: <Type A> : "Wie geht es dir?"
49 Alarm With Message Type (2) and Message Number (5) Displayed at <1522429886>: <Type A> : "Es geht mir gut!"
50 Alarm With Message Type (2) and Message Number (1) Displayed at <1522429889>: <Type A> : "Wie geht es dir?"
51 Cancel: Message(1)
52 Alarm With Message Type (2) and Message Number (5) Displayed at <1522429893>: <Type A> : "Es geht mir gut!"
53 Type C Cancel Alarm Request With Message Number (1) Inserted Into Alarm List at <1522429893>: <Type C>
54 alarm> Alarm With Message Type (2) and Message Number (1) Displayed at <1522429896>: <Type A> : "Wie geht es dir?"
55 Type C Alarm Request Processed at <1522429896>: Alarm Request With Message Number (1) Removed
56 Alarm With Message Type (2) and Message Number (5) Displayed at <1522429900>: <Type A> : "Es geht mir gut!"
57 Alarm With Message Type (2) and Message Number (5) Displayed at <1522429904>: <Type A> : "Es geht mir gut!"
58 Cancel: Message(5)
59 Alarm With Message Type (2) and Message Number (5) Displayed at <1522429908>: <Type A> : "Es geht mir gut!"
60 Type C Cancel Alarm Request With Message Number (5) Inserted Into Alarm List at <1522429908>: <Type C>
61 alarm> 1 Alarm With Message Type (2) and Message Number (5) Displayed at <1522429912>: <Type A> : "Es geht mir gut!"
62 Type C Alarm Request Processed at <1522429912>: Alarm Request With Message Number (5) Removed
63 No More Alarm Requests With Message Type (2): Periodic Display Thread For Message Type (2) Terminated.
64 51
65 Bad command
66 alarm> 15
67 **DEBUG MODE ENGAGED**
68 [Thread List: ]
69 [Alarm List: ]
70 Ready = 0 read_count = 0 writing = 0
71 **DEBUG MODE DISENGAGED**
72 alarm> franciso@WORK-STATION:/mnt/c/Users/francis/Desktop/EECS 3221/assign3/EECS3221Assignment3$
73
74
75 Test2 :
76
77 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop/EECS 3221/assign3/EECS3221Assignment3$ ./a.out
78 alarm> 3 MessageType(2, 1) Wie geht es dir?
79 Type A Alarm Request With Message Number <1> Received at time <1522430168>: <Type A>
80 alarm> 15
81 **DEBUG MODE ENGAGED**
82 [Thread List: ]
83 [Alarm List: {Request Type = 1 Alarm # = 1 message type = 2} ]
84 Ready = 0 read_count = 0 writing = 0
```

test_output

```
85 **DEBUG MODE DISENGAGED**
86 alarm> 4 MessageType(2, 5) Es geht mir gut!
87 Type A Alarm Request With Message Number <5> Received at time <1522430177>: <Type A>
88 alarm> 15
89 **DEBUG MODE ENGAGED**
90 [Thread List: ]
91 [Alarm List: {Request Type = 1 Alarm # = 1 message type = 2} {Request Type = 1 Alarm # = 5 message type = 2} ]
92 Ready = 0 read_count = 0 writing = 0
93 **DEBUG MODE DISENGAGED**
94 alarm> Create_Thread: MessageType(2)
95 Type B Create Thread Alarm Request With Message Type (2) Inserted Into Alarm List at <1522430188>!
96 alarm> Type B Alarm Request Processed at <1522430188>: New Periodic Display Thread With Message Type (2) Created.
97 15
98 **DEBUG MODE ENGAGED**
99 [Thread List: {message type = 2 thread_id = <140240494724864>} ]
100 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 2} {Request Type = 1 Alarm # = 1 message type = 2} {Request Type = 1 Alarm # = 5 message type = 2} ]
101 Ready = 0 read_count = 1 writing = 0
102 **DEBUG MODE DISENGAGED**
103 alarm> Alarm With Message Type (2) and Message Number (1) Displayed at <1522430191>: <Type A> : "Wie geht es dir?"
104 Alarm With Message Type (2) and Message Number (5) Displayed at <1522430195>: <Type A> : "Es geht mir gut!"
105 Alarm With Message Type (2) and Message Number (1) Displayed at <1522430198>: <Type A> : "Wie geht es dir?"
106 Cancel: Message(1)
107 Alarm With Message Type (2) and Message Number (5) Displayed at <1522430202>: <Type A> : "Es geht mir gut!"
108 Type C Cancel Alarm Request With Message Number (1) Inserted Into Alarm List at <1522430202>: <Type C>
109 alarm> Alarm With Message Type (2) and Message Number (1) Displayed at <1522430205>: <Type A> : "Wie geht es dir?"
110 Type C Alarm Request Processed at <1522430205>: Alarm Request With Message Number (1) Removed
111 15
112 **DEBUG MODE ENGAGED**
113 [Thread List: {message type = 2 thread_id = <140240494724864>} ]
114 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 2} {Request Type = 1 Alarm # = 5 message type = 2} ]
115 Ready = 0 read_count = 1 writing = 0
116 **DEBUG MODE DISENGAGED**
117 alarm> Alarm With Message Type (2) and Message Number (5) Displayed at <1522430209>: <Type A> : "Es geht mir gut!"
118 Alarm With Message Type (2) and Message Number (5) Displayed at <1522430213>: <Type A> : "Es geht mir gut!"
119 Cancel: Message(5)
120 Alarm With Message Type (2) and Message Number (5) Displayed at <1522430217>: <Type A> : "Es geht mir gut!"
121 Type C Cancel Alarm Request With Message Number (5) Inserted Into Alarm List at <1522430217>: <Type C>
122 alarm> Type C Alarm Request Processed at <1522430217>: Alarm Request With Message Number (5) Removed
123 No More Alarm Requests With Message Type (2): Periodic Display Thread For Message Type (2) Terminated.
124 15
125 **DEBUG MODE ENGAGED**
```

test_output

```
126 [Thread List: ]
127 [Alarm List: ]
128 Ready = 0 read_count = 0 writing = 0
129 **DEBUG MODE DISENGAGED**
130 **////////////////////////////////////////////////////////////////////////**
131
132
133 /* testing for a fault (this series of inputs previously caused a segmentation fault) */
134 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop/EECS 3221/assign3/EECS3221Assignment3/A3_francis_tyler_adham_lindan$ ./a.out
135 alarm>
136 alarm>
137 alarm>
138 alarm>
139 alarm>
140 alarm>
141 alarm>
142 alarm>
143 alarm>
144 alarm>
145 alarm>
146 alarm> 14 Message(3,1) test 1 fault
147 Type A Alarm Request With Message Number <1> Received at time <1522568891>: <Type A>
148 alarm> 16 Message(2,2) test 2 fault
149 Type A Alarm Request With Message Number <2> Received at time <1522568895>: <Type A>
150 alarm> Create_Thread: MessageType(3)
151 Type B Create Thread Alarm Request With Message Type (3) Inserted Into Alarm List at <1522568898>!
152 alarm> Type B Alarm Request Processed at <1522568898>: New Periodic Display Thread With Message Type (3) Created.
153 Create_Thread: MessageType(2)
154 Type B Create Thread Alarm Request With Message Type (2) Inserted Into Alarm List at <1522568902>!
155 alarm> Type B Alarm Request Processed at <1522568902>: New Periodic Display Thread With Message Type (2) Created.
156 16 Message(3,2) test 2 fault replace
157 Type A Replacement Alarm Request With Message Number (2) Received at <1522568907>: <A>
158 Type A Alarm Request With Message Number <2> Received at time <1522568907>: <Type A>
159 alarm> Alarm With Message Type (3) and Message Number (1) Displayed at <1522568912>: <Type A> : "test 1 fault"
160 Alarm With Message Type (2) and Message Number (2) Displayed at <1522568918>: <Type A> : "test 2 fault"
161 Alarm With Message Type (3) and Message Number (1) Displayed at <1522568926>: <Type A> : "test 1 fault"
162 15
163 **DEBUG MODE ENGAGED**
164 [Thread List: {message type = 3 thread_id = <139933322774272>} ]
165 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 3} {Request Type = 1 Alarm # = 1 message type = 3} {Request Type = 1 Alarm # = 2 message type = 3} ]
166 Ready = 0 read_count = 0 writing = 0
```

test_output

```
167 **DEBUG MODE DISENGAGED**
168 alarm> Alarm With Message Type (3) and Message Number (2) Displayed at <1522568942>: <Type A> : "test 2 fault replace"
169 Cancel: Message(2)
170 Type C Cancel Alarm Request With Message Number (2) Inserted Into Alarm List at <1522568952>: <Type C>
171 alarm> Type C Alarm Request Processed at <1522568952>: Alarm Request With Message Number (2) Removed
172 Alarm With Message Type (3) and Message Number (1) Displayed at <1522568956>: <Type A> : "test 1 fault"
173      Cancel: Message(1)
174 Bad command
175 alarm> sdcsd
176 Bad command
177 alarm> Cancel: Message(1)
178 Bad command
179 alarm> Alarm With Message Type (3) and Message Number (2) Displayed at <1522568972>: <Type A> : "test 2 fault replace"
180 Cancel: Message(1)
181 Type C Cancel Alarm Request With Message Number (1) Inserted Into Alarm List at <1522568982>: <Type C>
182 alarm> Type C Alarm Request Processed at <1522568982>: Alarm Request With Message Number (1) Removed
183 No More Alarm Requests With Message Type (3): Periodic Display Thread For Message Type (3) Terminated.
184 Cancel: Message(1)
185 Alarm With Message Type (3) and Message Number (1) Displayed at <1522568986>: <Type A> : "test 1 fault"
186 Error: No Alarm Request With Message Number (1) to Cancel!
187 alarm> 15
188 **DEBUG MODE ENGAGED**
189 [Thread List: ]
190 [Alarm List: ]
191 Ready = 0 read_count = 0 writing = 0
192 **DEBUG MODE DISENGAGED**
193 alarm> clear
194 Bad command
195
196
197 //////////////////////////////////////
198
199 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop$ clear
200 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop$ make
201 make: *** No targets specified and no makefile found. Stop.
202 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop$ cc New_Alarm_Cond.c -D_POSIX_PTHREAD_SEMANTICS -lpthread
203 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop$ ./a.out
204 alarm> 5 Message(4,4) test
205
206 10Type A Alarm Request With Message Number <4> Received at time <1522777234>: <Type A>
207 alarm> alarm> Message(4,5) test 2
208 Type A Alarm Request With Message Number <5> Received at time <1522777236>: <Type A>
```

test_output

```
209 alarm> debug
210 **DEBUG MODE ENGAGED**
211 alarm> Create_Thread: MessageType(4)
212 Type B Create Thread Alarm Request With Message Type (4) Inserted Into Alarm List at <1522777251>!
213 alarm> Type B Alarm Request Processed at <1522777251>: New Periodic Display Thread With Message Type (4) Created.
214
215 [Thread List: {message type = 4 thread_id = <139726761690880>} ]
216 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 4} {Request Type = 1 Alarm # = 4 message type = 4} {Request Type =
  1 Alarm # = 5 message type = 4} ]
217 Ready = 0 read_count = 1 writing = 0
218
219 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777256>: <Type A> : "test"
220 Alarm With Message Type (4) and Message Number (5) Displayed at <1522777261>: <Type A> : "test 2"
221 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777261>: <Type A> : "test"
222 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777266>: <Type A> : "test"
223 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777271>: <Type A> : "test"
224 Alarm With Message Type (4) and Message Number (5) Displayed at <1522777271>: <Type A> : "test 2"
225 Create_Thread: MessageType(3)
226 Type B Alarm Request Error: No Alarm Request With Message Type(3)!
227 alarm> Alarm With Message Type (4) and Message Number (4) Displayed at <1522777276>: <Type A> : "test"
228 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777281>: <Type A> : "test"
229 Alarm With Message Type (4) and Message Number (5) Displayed at <1522777281>: <Type A> : "test 2"
230 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777286>: <Type A> : "test"
231 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777291>: <Type A> : "test"
232 Alarm With Message Type (4) and Message Number (5) Displayed at <1522777291>: <Type A> : "test 2"
233 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777296>: <Type A> : "test"
234 10 Message(3,5) test 2
235 Type A Replacement Alarm Request With Message Number (5) Received at <1522777300>: <A>
236 Type A Alarm Request With Message Number <5> Received at time <1522777300>: <Type A>
237 alarm> Segmentation fault (core dumped)
238 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop$ clearm
239 No command 'clearm' found, did you mean:
240 Command 'clear' from package 'ncurses-bin' (main)
241 clearm: command not found
242 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop$ clear
243 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop$ cc New_Alarm_Cond.c -D_POSIX_PTHREAD_SEMANTICS -lpthread
244 ^[[Afranciso@WORK-STATION:/mnt/c/Users/francis/Deskt./a.out
245 alarm> 5 Message(4,4) test
246
247 10Type A Alarm Request With Message Number <4> Received at time <1522777400>: <Type A>
248 alarm> Malarm> essage(4,5) test 2
249 Type A Alarm Request With Message Number <5> Received at time <1522777400>: <Type A>
```

test_output

250

251 alarm> Calarm> reate_Thread: MessageType(4)

252 Type B Create Thread Alarm Request With Message Type (4) Inserted Into Alarm List at <1522777400>!

253 alarm> Type B Alarm Request Processed at <1522777400>: New Periodic Display Thread With Message Type (4) Created.

254 deAlarm With Message Type (4) and Message Number (4) Displayed at <1522777405>: <Type A> : "test"

255 bug

256 **DEBUG MODE ENGAGED**

257 alarm> Alarm With Message Type (4) and Message Number (4) Displayed at <1522777410>: <Type A> : "test"

258 Alarm With Message Type (4) and Message Number (5) Displayed at <1522777410>: <Type A> : "test 2"

259 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777415>: <Type A> : "test"

260 10 Message(3,5) test 2 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777420>: <Type A> : "test"

261 Alarm With Message Type (4) and Message Number (5) Displayed at <1522777420>: <Type A> : "test 2"

262

263 Type A Replacement Alarm Request With Message Number (5) Received at <1522777422>: <A>

264 Type A Alarm Request With Message Number <5> Received at time <1522777422>: <Type A>

265 alarm>

266 [Thread List: Alarm With Message Type (3) Replaced at <1522777422>: <Type A>

267 {message type = 4 thread_id = <140542016947968>}]

268 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 4} {Request Type = 1 Alarm # = 4 message type = 4} {Request Type = 1 Alarm # = 5 message type = 3}]

269 Ready = 0 read_count = 1 writing = 0

270

271 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777425>: <Type A> : "test"

272 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777430>: <Type A> : "test"

273 Create_Thread: MessageType(3)

274 Type B Create Thread Alarm Request With Message Type (3) Inserted Into Alarm List at <1522777432>!

275 alarm> Type B Alarm Request Processed at <1522777432>: New Periodic Display Thread With Message Type (3) Created.

276

277 [Thread List: {message type = 3 thread_id = <140541933061888>} {message type = 4 thread_id = <140542016947968>}]

278 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 4} {Request Type = 1 Alarm # = 4 message type = 4} {Request Type = 1 Alarm # = 5 message type = 3} {Request Type = 2 Alarm # = 5 message type = 3}]

279 Ready = 0 read_count = -9 writing = 0

280

281 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777435>: <Type A> : "test"

282 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777440>: <Type A> : "test"

283 Cancel: Message(4)

284 Type C Cancel Alarm Request With Message Number (4) Inserted Into Alarm List at <1522777441>: <Type C>

285 alarm> Type C Alarm Request Processed at <1522777441>: Alarm Request With Message Number (4) Removed

286 No More Alarm Requests With Message Type (4): Periodic Display Thread For Message Type (4) Terminated.

287

288 [Thread List: {message type = 3 thread_id = <140541933061888>}]

289 [Alarm List: {Request Type = 1 Alarm # = 5 message type = 3} {Request Type = 2 Alarm # = 5 message type = 3}]

test_output

```
290 Ready = 1 read_count = -1178383 writing = 1
291
292 Alarm With Message Type (3) and Message Number (5) Displayed at <1522777442>: <Type A> : "test 2"
293 Cancel: Message(5)
294 Type C Cancel Alarm Request With Message Number (5) Inserted Into Alarm List at <1522777445>: <Type C>
295 alarm> Type C Alarm Request Processed at <1522777445>: Alarm Request With Message Number (5) Removed
296 No More Alarm Requests With Message Type (3): Periodic Display Thread For Message Type (3) Terminated.
297
298 [Thread List: ]
299 [Alarm List: ]
300 Ready = 1 read_count = -1178383 writing = 1
301
302 ^C
303 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop$ clear
304 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop$ cc New_Alarm_Cond.c -D_POSIX_PTHREAD_SEMANTICS -lpthread
305 New_Alarm_Cond.c: In function 'periodic_display_thread':
306 New_Alarm_Cond.c:571:5: error: incompatible type for argument 1 of 'sem_wait'
307     sem_wait(sem_mutex);
308     ^
309 In file included from New_Alarm_Cond.c:19:0:
310 /usr/include/semaphore.h:54:12: note: expected 'union sem_t *' but argument is of type 'sem_t'
311 extern int sem_wait (sem_t *__sem);
312     ^
313 New_Alarm_Cond.c:573:5: error: incompatible type for argument 1 of 'sem_post'
314     sem_post(sem_mutex);
315     ^
316 In file included from New_Alarm_Cond.c:19:0:
317 /usr/include/semaphore.h:69:12: note: expected 'union sem_t *' but argument is of type 'sem_t'
318 extern int sem_post (sem_t *__sem) __THROWNL;
319     ^
320 New_Alarm_Cond.c:607:5: error: incompatible type for argument 1 of 'sem_wait'
321     sem_wait(sem_mutex);
322     ^
323 In file included from New_Alarm_Cond.c:19:0:
324 /usr/include/semaphore.h:54:12: note: expected 'union sem_t *' but argument is of type 'sem_t'
325 extern int sem_wait (sem_t *__sem);
326     ^
327 New_Alarm_Cond.c:609:5: error: incompatible type for argument 1 of 'sem_post'
328     sem_post(sem_mutex);
329     ^
330 In file included from New_Alarm_Cond.c:19:0:
331 /usr/include/semaphore.h:69:12: note: expected 'union sem_t *' but argument is of type 'sem_t'
```


test_output

```
332 extern int sem_post (sem_t *__sem) __THROWNL;
333      ^
334 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop$ cc New_Alarm_Cond.c -D_POSIX_PTHREAD_SEMANTICS -lpthread
335 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop$ clear
336 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop$ ./a.out
337 alarm> 5 Message(4,4) test
338 Type A Alarm Request With Message Number <4> Received at time <1522777923>: <Type A>
339 alarm> 10 Message(4,5) test 2
340 Type A Alarm Request With Message Number <5> Received at time <1522777926>: <Type A>
341 alarm> Create_Thread: MessageType(4)
342 Type B Create Thread Alarm Request With Message Type (4) Inserted Into Alarm List at <1522777927>!
343 alarm> Type B Alarm Request Processed at <1522777927>: New Periodic Display Thread With Message Type (4) Created.
344 debug
345 **DEBUG MODE ENGAGED**
346 alarm> Alarm With Message Type (4) and Message Number (4) Displayed at <1522777932>: <Type A> : "test"
347 Alarm With Message Type (4) and Message Number (5) Displayed at <1522777937>: <Type A> : "test 2"
348 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777937>: <Type A> : "test"
349 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777942>: <Type A> : "test"
350 10 Message(3,5) test 2
351 Type A Replacement Alarm Request With Message Number (5) Received at <1522777943>: <A>
352 Type A Alarm Request With Message Number <5> Received at time <1522777943>: <Type A>
353 alarm>
354 [Thread List: Alarm With Message Type (3) Replaced at <1522777943>: <Type A>
355 {message type = 4 thread_id = <139767765206784>} ]
356 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 4} {Request Type = 1 Alarm # = 4 message type = 4} {Request Type =
  1 Alarm # = 5 message type = 3} ]
357 Ready = 0 read_count = 1 writing = 0
358
359 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777947>: <Type A> : "test"
360 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777952>: <Type A> : "test"
361 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777957>: <Type A> : "test"
362 Create_Thread: MessageType(3)
363 Type B Create Thread Alarm Request With Message Type (3) Inserted Into Alarm List at <1522777958>!
364 alarm> Type B Alarm Request Processed at <1522777958>: New Periodic Display Thread With Message Type (3) Created.
365
366 [Thread List: {message type = 3 thread_id = <139767756752640>} {message type = 4 thread_id = <139767765206784>} ]
367 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 4} {Request Type = 1 Alarm # = 4 message type = 4} {Request Type =
  1 Alarm # = 5 message type = 3} {Request Type = 2 Alarm # = 5 message type = 3} ]
368 Ready = 0 read_count = 2 writing = 0
369
370 Alarm With Message Type (4) and Message Number (4) Displayed at <1522777962>: <Type A> : "test"
371 Cancel: Message(4)
```

test_output

```
372 Type C Cancel Alarm Request With Message Number (4) Inserted Into Alarm List at <1522777966>: <Type C>
373 alarm> Type C Alarm Request Processed at <1522777966>: Alarm Request With Message Number (4) Removed
374 No More Alarm Requests With Message Type (4): Periodic Display Thread For Message Type (4) Terminated.
375
376 [Thread List: {message type = 3 thread_id = <139767756752640>} ]
377 [Alarm List: {Request Type = 1 Alarm # = 5 message type = 3} {Request Type = 2 Alarm # = 5 message type = 3} ]
378 Ready = 1 read_count = 0 writing = 1
379
380 Alarm With Message Type (3) and Message Number (5) Displayed at <1522777968>: <Type A> : "test 2"
381 Alarm With Message Type (3) and Message Number (5) Displayed at <1522777978>: <Type A> : "test 2"
382 Cancel: Message(5)
383 Type C Cancel Alarm Request With Message Number (5) Inserted Into Alarm List at <1522777982>: <Type C>
384 alarm> Type C Alarm Request Processed at <1522777982>: Alarm Request With Message Number (5) Removed
385 No More Alarm Requests With Message Type (3): Periodic Display Thread For Message Type (3) Terminated.
386
387 [Thread List: ]
388 [Alarm List: ]
389 Ready = 1 read_count = 0 writing = 1
390
391 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop$ clear
392 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop$ cc New_Alarm_Cond.c -D_POSIX_PTHREAD_SEMANTICS -lpthread
393 New_Alarm_Cond.c: In function 'main':
394 New_Alarm_Cond.c:1009:5: error: 'else' without a previous 'if'
395     else{
396     ^
397 New_Alarm_Cond.c: At top level:
398 New_Alarm_Cond.c:1014:1: error: expected identifier or '(' before '}' token
399 }
400 ^
401 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop$ cc New_Alarm_Cond.c -D_POSIX_PTHREAD_SEMANTICS -lpthread
402 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop$ ./a.out
403 alarm> d
404 **DEBUG MODE ENGAGED**
405 Ready = 0 read_count = 0 writing = 0
406
407 **DEBUG MODE DISENGAGED**
408 alarm> franciso@WORK-STATION:/mnt/c/Users/francis/Desktop$ cc New_Alarm_Cond.c -D_POSIX_PTHREAD_SEMANTICS -lpthread
409 /tmp/cc1gzMKv.o: In function 'main':
410 New_Alarm_Cond.c:(.text+0x191b): undefined reference to `display'
411 collect2: error: ld returned 1 exit status
412 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop$ cc New_Alarm_Cond.c -D_POSIX_PTHREAD_SEMANTICS -lpthread
413 franciso@WORK-STATION:/mnt/c/Users/francis/Desktop$ ./a.out
```

test_output

```
414 alarm> d
415 **DEBUG MODE ENGAGED**
416
417 [Thread List: ]
418 [Alarm List: ]
419 Ready = 0 read_count = 0 writing = 0
420
421 **DEBUG MODE DISENGAGED**
422 alarm> 5 Message(4,4) test
423
424 Type A Alarm Request With Message Number <4> Received at time <1522778355>: <Type A>
425 1alarm> 0alarm> Message(4,5) test 2
426 Type A Alarm Request With Message Number <5> Received at time <1522778355>: <Type A>
427 alarm>
428 Cralarm> eate_Thread: MessageType(4)
429 Type B Create Thread Alarm Request With Message Type (4) Inserted Into Alarm List at <1522778355>!
430 alarm> Type B Alarm Request Processed at <1522778355>: New Periodic Display Thread With Message Type (4) Created.
431
432 alarm> dAlarm With Message Type (4) and Message Number (4) Displayed at <1522778360>: <Type A> : "test"
433 d
434 Bad command
435 alarm> d
436 **DEBUG MODE ENGAGED**
437
438 [Thread List: {message type = 4 thread_id = <139646732273408>} ]
439 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 4} {Request Type = 1 Alarm # = 4 message type = 4} {Request Type =
    1 Alarm # = 5 message type = 4} ]
440 Ready = 0 read_count = 1 writing = 0
441
442 **DEBUG MODE DISENGAGED**
443 alarm> Alarm With Message Type (4) and Message Number (4) Displayed at <1522778365>: <Type A> : "test"
444 Alarm With Message Type (4) and Message Number (5) Displayed at <1522778365>: <Type A> : "test 2"
445 Alarm With Message Type (4) and Message Number (4) Displayed at <1522778370>: <Type A> : "test"
446 debug
447 **DEBUG MODE ENGAGED**
448 alarm> Alarm With Message Type (4) and Message Number (5) Displayed at <1522778375>: <Type A> : "test 2"
449 Alarm With Message Type (4) and Message Number (4) Displayed at <1522778375>: <Type A> : "test"
450 Alarm With Message Type (4) and Message Number (4) Displayed at <1522778380>: <Type A> : "test"
451 10 Message(3,5) test 2
452 Type A Replacement Alarm Request With Message Number (5) Received at <1522778380>: <A>
453 Type A Alarm Request With Message Number <5> Received at time <1522778380>: <Type A>
454 alarm>
```

test_output

```
455 [Thread List: Alarm With Message Type (3) Replaced at <1522778380>: <Type A>
456 {message type = 4 thread_id = <139646732273408>} ]
457 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 4} {Request Type = 1 Alarm # = 4 message type = 4} {Request Type =
    1 Alarm # = 5 message type = 3} ]
458 Ready = 0 read_count = 1 writing = 0
459
460 Alarm With Message Type (4) and Message Number (4) Displayed at <1522778385>: <Type A> : "test"
461 Create_Thread: MessageType(3)
462 Type B Create Thread Alarm Request With Message Type (3) Inserted Into Alarm List at <1522778388>!
463 alarm> Type B Alarm Request Processed at <1522778388>: New Periodic Display Thread With Message Type (3) Created.
464
465 [Thread List: {message type = 3 thread_id = <139646723819264>} {message type = 4 thread_id = <139646732273408>} ]
466 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 4} {Request Type = 1 Alarm # = 4 message type = 4} {Request Type =
    1 Alarm # = 5 message type = 3} {Request Type = 2 Alarm # = 5 message type = 3} ]
467 Ready = 0 read_count = 1 writing = 0
468
469 Alarm With Message Type (4) and Message Number (4) Displayed at <1522778390>: <Type A> : "test"
470 Alarm With Message Type (4) and Message Number (4) Displayed at <1522778395>: <Type A> : "test"
471 Alarm With Message Type (3) and Message Number (5) Displayed at <1522778398>: <Type A> : "test 2"
472 Alarm With Message Type (4) and Message Number (4) Displayed at <1522778400>: <Type A> : "test"
473 d
474 **DEBUG MODE ENGAGED**
475
476 [Thread List: {message type = 3 thread_id = <139646723819264>} {message type = 4 thread_id = <139646732273408>} ]
477 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 4} {Request Type = 1 Alarm # = 4 message type = 4} {Request Type =
    1 Alarm # = 5 message type = 3} {Request Type = 2 Alarm # = 5 message type = 3} ]
478 Ready = 0 read_count = 0 writing = 0
479
480 **DEBUG MODE DISENGAGED**
481 alarm> d
482 **DEBUG MODE ENGAGED**
483
484 [Thread List: {message type = 3 thread_id = <139646723819264>} {message type = 4 thread_id = <139646732273408>} ]
485 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 4} {Request Type = 1 Alarm # = 4 message type = 4} {Request Type =
    1 Alarm # = 5 message type = 3} {Request Type = 2 Alarm # = 5 message type = 3} ]
486 Ready = 0 read_count = 1 writing = 0
487
488 **DEBUG MODE DISENGAGED**
489 alarm> d
490 **DEBUG MODE ENGAGED**
491
492 [Thread List: {message type = 3 thread_id = <139646723819264>} {message type = 4 thread_id = <139646732273408>} ]
```

test_output

```
493 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 4} {Request Type = 1 Alarm # = 4 message type = 4} {Request Type = 1 Alarm # = 5 message type = 3} {Request Type = 2 Alarm # = 5 message type = 3} ]
494 Ready = 0 read_count = 1 writing = 0
495
496 **DEBUG MODE DISENGAGED**
497 alarm> d
498 **DEBUG MODE ENGAGED**
499
500 [Thread List: {message type = 3 thread_id = <139646723819264>} {message type = 4 thread_id = <139646732273408>} ]
501 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 4} {Request Type = 1 Alarm # = 4 message type = 4} {Request Type = 1 Alarm # = 5 message type = 3} {Request Type = 2 Alarm # = 5 message type = 3} ]
502 Ready = 0 read_count = 1 writing = 0
503
504 **DEBUG MODE DISENGAGED**
505 alarm> d
506 **DEBUG MODE ENGAGED**
507
508 [Thread List: {message type = 3 thread_id = <139646723819264>} {message type = 4 thread_id = <139646732273408>} ]
509 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 4} {Request Type = 1 Alarm # = 4 message type = 4} {Request Type = 1 Alarm # = 5 message type = 3} {Request Type = 2 Alarm # = 5 message type = 3} ]
510 Ready = 0 read_count = 1 writing = 0
511
512 **DEBUG MODE DISENGAGED**
513 alarm> d
514 **DEBUG MODE ENGAGED**
515
516 [Thread List: {message type = 3 thread_id = <139646723819264>} {message type = 4 thread_id = <139646732273408>} ]
517 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 4} {Request Type = 1 Alarm # = 4 message type = 4} {Request Type = 1 Alarm # = 5 message type = 3} {Request Type = 2 Alarm # = 5 message type = 3} ]
518 Ready = 0 read_count = 0 writing = 0
519
520 **DEBUG MODE DISENGAGED**
521 alarm> Alarm With Message Type (4) and Message Number (4) Displayed at <1522778405>: <Type A> : "test"
522 d
523 **DEBUG MODE ENGAGED**
524
525 [Thread List: {message type = 3 thread_id = <139646723819264>} {message type = 4 thread_id = <139646732273408>} ]
526 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 4} {Request Type = 1 Alarm # = 4 message type = 4} {Request Type = 1 Alarm # = 5 message type = 3} {Request Type = 2 Alarm # = 5 message type = 3} ]
527 Ready = 0 read_count = 0 writing = 0
528
529 **DEBUG MODE DISENGAGED**
```

test_output

```
530 alarm> d
531 **DEBUG MODE ENGAGED**
532
533 [Thread List: {message type = 3 thread_id = <139646723819264>} {message type = 4 thread_id = <139646732273408>} ]
534 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 4} {Request Type = 1 Alarm # = 4 message type = 4} {Request Type =
    1 Alarm # = 5 message type = 3} {Request Type = 2 Alarm # = 5 message type = 3} ]
535 Ready = 0 read_count = 2 writing = 0
536
537 **DEBUG MODE DISENGAGED**
538 alarm> d
539 **DEBUG MODE ENGAGED**
540
541 [Thread List: {message type = 3 thread_id = <139646723819264>} {message type = 4 thread_id = <139646732273408>} ]
542 [Alarm List: {Request Type = 2 Alarm # = 0 message type = 4} {Request Type = 1 Alarm # = 4 message type = 4} {Request Type =
    1 Alarm # = 5 message type = 3} {Request Type = 2 Alarm # = 5 message type = 3} ]
543 Ready = 0 read_count = 1 writing = 0
544
545 **DEBUG MODE DISENGAGED**
546 alarm> Alarm With Message Type (3) and Message Number (5) Displayed at <1522778408>: <Type A> : "test 2"
547 Alarm With Message Type (4) and Message Number (4) Displayed at <1522778410>: <Type A> : "test"
548 Alarm With Message Type (4) and Message Number (4) Displayed at <1522778415>: <Type A> : "test"
549 Alarm With Message Type (3) and Message Number (5) Displayed at <1522778418>: <Type A> : "test 2"
550 Cancel: Message(4)
551 Type C Cancel Alarm Request With Message Number (4) Inserted Into Alarm List at <1522778419>: <Type C>
552 alarm> Type C Alarm Request Processed at <1522778419>: Alarm Request With Message Number (4) Removed
553 No More Alarm Requests With Message Type (4): Periodic Display Thread For Message Type (4) Terminated.
554
555 [Thread List: {message type = 3 thread_id = <139646723819264>} ]
556 [Alarm List: {Request Type = 1 Alarm # = 5 message type = 3} {Request Type = 2 Alarm # = 5 message type = 3} ]
557 Ready = 1 read_count = 0 writing = 1
558
559 Alarm With Message Type (3) and Message Number (5) Displayed at <1522778428>: <Type A> : "test 2"
560 Cancel: Message(5)
561 Type C Cancel Alarm Request With Message Number (5) Inserted Into Alarm List at <1522778429>: <Type C>
562 alarm> Type C Alarm Request Processed at <1522778429>: Alarm Request With Message Number (5) Removed
563 No More Alarm Requests With Message Type (3): Periodic Display Thread For Message Type (3) Terminated.
564
565 [Thread List: ]
566 [Alarm List: ]
567 Ready = 1 read_count = 0 writing = 1
568
569
```

test_output

```
570 alarm> d
571 **DEBUG MODE ENGAGED**
572
573 [Thread List: ]
574 [Alarm List: ]
575 Ready = 0 read_count = 0 writing = 0
576
577 **DEBUG MODE DISENGAGED**
578 alarm>
579
```