



The tortoise and the hare

2016-1 프로젝트

주요 변수 및 함수

```
int RACE_END = 100; // 100m 까지 먼저 도착하면 경기 끝  
int timer = 0;      // 경기시간(초 단위)
```

```
//거북이 움직이고 현재 위치 반환
```

```
void moveTortoise( int * );
```

```
//토끼 움직이고 현재 위치 변환
```

```
void moveHare( int * );
```

```
//토끼와 거북이의 현재 위치를 받아서 표시
```

```
void printCurrentPositions( int *, int * );
```

```
int main(){
```

```
...
```

```
}
```

주요 알고리즘

1. 토끼와 거북이의 위치는 1에서 시작한다.
위치의 범위는 1~RACE_END
1. 둘 중 한 명의 위치가 RACE_END 위치가 될 때까지 토끼와 거북이는 경주한다.
2. 우리는 그들의 움직임을 '초 단위'로 볼 수 있다. 즉, timer가 하나(초)씩 증가할 때마다 둘의 위치가 바뀐다.
 - void moveTortoise(int *);
 - void moveHare(int *);
4. 초 단위로 둘의 달라진 위치를 모니터에 프린트 한다.
 - void printCurrentPositions(int *, int *);
5. 경기 종료 후
거북이가 이기거나 경기가 비기면
`cout << "₩nTORTOISE WINS!!! YAY!!!₩n";`
토끼가 이기면
`cout << "Hare wins. Yuch.₩n";`

주요 알고리즘

```
void moveTortoise( int * ){
```

1~10 사이의 random number를 생성

x=

1	2	3	4	5	6	7	8	9	10
빠른 기기 : 3만큼 위치 증가					넘어짐 :6만큼 감소		느리게 기기 :1만큼 위치 증가		

```
}
```

```
void moveHare( int * ){
```

1~10 사이의 random number를 생성

y=

1	2	3	4	5	6	7	8	9	10
		빠른 강총 :9만큼 증가		크게 넘어짐 :12감 소	보통 강총 :1만큼 증가			작게 넘어짐 :2 감소	

```
}
```

ON YOUR MARK, GET SET
BANG !!!!
AND THEY'RE OFF !!!!

경기시작!

timer값

1:
2:
3:
4:
5:
6:
7:
8:
9:
10:
11:
12:
13:
14:
15:
16:
17:
18:
19:
20:
21:
22:
23:
24:
25:
26:
27:
28:
29:
30:
31:
32:
33:

```
1: H T
2:   T H
3:     HT
4:       T H
5:         T   H H
6:           T   H H
7:             T   H H
8:               T   H
9:                 T   H
10:                  T   H
11:                    T   H H
12:                      T   H H
13:                        T   H H
14:                          T   H H
15:                            T   H H
16:                              T   H H
17:                                T   H
18:                                  T   H
19:                                    T   H H
20:                                      T   H H
21:                                        T   H H
22:                                          T   H H
23:                                            T   H H
24:                                              T   H H
25:                                                T   H H
26:                                                  T   H H
27:                                                    T   H H
28:                                                      T   H H
29:                                                        T   H H
30:                                                          T   H H
31:                                                            T   H H
32:                                                              T   H H
33:                                                                T   H H
```

void printCurrentPositions(int *, int *) 의 출력

- 토끼 위치 H, 거북이 위치 T로 표시
- 가로 1칸이 1m
- 매 초 토끼와 거북이의 위치를 로그로 남김
- 33초 일 때 토끼는 100m, 거북이는 34m 위치

Hare wins. Yuch.
TIME ELAPSED = 33 seconds

토끼가 100m 도착했으므로 경기 종료.
33초 카운트 되었음

`srand(time(NULL))`//시스템의 시간을 random seed 넣으면 실행시킬 때 마다 경기의 결과가 달라짐

```

1:  YOUR MARK, GET SET
2:  BANG      !!!!
3:  AND THEY'RE OFF  !!!!
4:  1:H   T
5:  2:OUCH!!!
6:  3:H   T
7:  4:H   T
8:  5:    OUCH!!!
9:  6:
10: 7:    T
11: 8:    T
12: 9:    T
13:10:
14:11:
15:12:
16:13:
17:14:
18:15:
19:16:
20:17:
21:18:
22:19:
23:20:
24:21:
25:22:
26:23:
27:24:
28:25:
29:26:
30:27:
31:28:
32:29:
33:30:
34:31:
35:32:
36:33:
37:34:
38:35:
39:36:
40:37:
41:38:
42:39:
43:40:
44:41:
45:42:
46:43:
47:44:
48:45:
49:46:
50:47:
51:48:
52:49:
53:50:
54:51:
55:52:
56:53:
57:54:
58:55:
59:60:
61:62:
62:63:
63:64:
64:65:
65:66:
66:67:
67:68:
68:69:
69:70:
70:71:
71:72:
72:73:
73:74:
74:75:
75:76:
76:77:
77:78:
78:79:
79:80:
80:81:
81:82:
82:83:
83:84:
84:85:
85:86:
86:87:
87:88:
88:89:
89:90:
90:91:
91:92:
92:93:
93:94:
94:95:
95:96:
96:97:
97:98:
98:99:
99:100:
100:101:
101:102:
102:103:
103:104:
104:105:
105:106:
106:107:
107:108:
108:109:
109:110:
110:111:
111:112:
112:113:
113:114:
114:115:
115:116:
116:117:
117:118:
118:119:
119:120:
120:121:
121:122:
122:123:
123:124:
124:125:
125:126:
126:127:
127:128:
128:129:
129:130:
130:131:
131:132:
132:133:
133:134:
134:135:
135:136:
136:137:
137:138:
138:139:
139:140:
140:141:
141:142:
142:143:
143:144:
144:145:
145:146:
146:147:
147:148:
148:149:
149:150:
150:151:
151:152:
152:153:
153:154:
154:155:
155:156:
156:157:
157:158:
158:159:
159:160:
160:161:
161:162:
162:163:
163:164:
164:165:
165:166:
166:167:
167:168:
168:169:
169:170:
170:171:
171:172:
172:173:
173:174:
174:175:
175:176:
176:177:
177:178:
178:179:
179:180:
180:181:
181:182:
182:183:
183:184:
184:185:
185:186:
186:187:
187:188:
188:189:
189:190:
190:191:
191:192:
192:193:
193:194:
194:195:
195:196:
196:197:
197:198:
198:199:
199:200:
200:201:
201:202:
202:203:
203:204:
204:205:
205:206:
206:207:
207:208:
208:209:
209:210:
210:211:
211:212:
212:213:
213:214:
214:215:
215:216:
216:217:
217:218:
218:219:
219:220:
220:221:
221:222:
222:223:
223:224:
224:225:
225:226:
226:227:
227:228:
228:229:
229:230:
230:231:
231:232:
232:233:
233:234:
234:235:
235:236:
236:237:
237:238:
238:239:
239:240:
240:241:
241:242:
242:243:
243:244:
244:245:
245:246:
246:247:
247:248:
248:249:
249:250:
250:251:
251:252:
252:253:
253:254:
254:255:
255:256:
256:257:
257:258:
258:259:
259:260:
260:261:
261:262:
262:263:
263:264:
264:265:
265:266:
266:267:
267:268:
268:269:
269:270:
270:271:
271:272:
272:273:
273:274:
274:275:
275:276:
276:277:
277:278:
278:279:
279:280:
280:281:
281:282:
282:283:
283:284:
284:285:
285:286:
286:287:
287:288:
288:289:
289:290:
290:291:
291:292:
292:293:
293:294:
294:295:
295:296:
296:297:
297:298:
298:299:
299:300:
300:301:
301:302:
302:303:
303:304:
304:305:
305:306:
306:307:
307:308:
308:309:
309:310:
310:311:
311:312:
312:313:
313:314:
314:315:
315:316:
316:317:
317:318:
318:319:
319:320:
320:321:
321:322:
322:323:
323:324:
324:325:
325:326:
326:327:
327:328:
328:329:
329:330:
330:331:
331:332:
332:333:
333:334:
334:335:
335:336:
336:337:
337:338:
338:339:
339:340:
340:341:
341:342:
342:343:
343:344:
344:345:
345:346:
346:347:
347:348:
348:349:
349:350:
350:351:
351:352:
352:353:
353:354:
354:355:
355:356:
356:357:
357:358:
358:359:
359:360:
360:361:
361:362:
362:363:
363:364:
364:365:
365:366:
366:367:
367:368:
368:369:
369:370:
370:371:
371:372:
372:373:
373:374:
374:375:
375:376:
376:377:
377:378:
378:379:
379:380:
380:381:
381:382:
382:383:
383:384:
384:385:
385:386:
386:387:
387:388:
388:389:
389:390:
390:391:
391:392:
392:393:
393:394:
394:395:
395:396:
396:397:
397:398:
398:399:
399:400:
400:401:
401:402:
402:403:
403:404:
404:405:
405:406:
406:407:
407:408:
408:409:
409:410:
410:411:
411:412:
412:413:
413:414:
414:415:
415:416:
416:417:
417:418:
418:419:
419:420:
420:421:
421:422:
422:423:
423:424:
424:425:
425:426:
426:427:
427:428:
428:429:
429:430:
430:431:
431:432:
432:433:
433:434:
434:435:
435:436:
436:437:
437:438:
438:439:
439:440:
440:441:
441:442:
442:443:
443:444:
444:445:
445:446:
446:447:
447:448:
448:449:
449:450:
450:451:
451:452:
452:453:
453:454:
454:455:
455:456:
456:457:
457:458:
458:459:
459:460:
460:461:
461:462:
462:463:
463:464:
464:465:
465:466:
466:467:
467:468:
468:469:
469:470:
470:471:
471:472:
472:473:
473:474:
474:475:
475:476
```

둘의 위치가 같을경우 OUCH!!!출력

24:	H	T	
25:			T U

```
74:
75:
TORTOISE WINS!!! YAY!!!
TIME ELAPSED = 75 seconds
```

과제 내용

1. 알고리즘을 구현하여 주어지는 srand(2016)로 실행시켰을 때의 결과와 동일한지 확인
3가지 함수 반드시 포함. 선언되는 형식 바꾸지 말 것

```
void moveTortoise( int * );
```

```
void moveHare( int * );
```

```
void printCurrentPositions( int *, int * );
```

cmd 창에서 첫번째와 같이 실행시키면 결과를 창에서 확인할 수 있고 두번째와 같이 실행시키면 화면을 텍스트파일에 저장할 수 있음

```
C:\Users\final_project\Debug\final_project.exe
```

```
C:\Users\final_project\Debug\final_project.exe > log.txt
```

2. srand(time(NULL)) 을 사용하여 매번 경주 결과가 달라짐을 보이기

과제 제출

3. 제출 파일 :

- 1) 컴파일 가능한 코드 파일
- 2) 코드 설명과 1 과 2를 실행시킨 결과를 포함하는 보고서

4. 제출 기한 6/15 수요일 자정

- 하루 늦을 때 마다 10% 감점
- 17일 금요일 이후에는 0점
- **copy 발견되면 베낀 사람 보여준 사람 모두 0점**