

CS-356 Operating System Project1

519021910366 Dou Yi-Ming

1. Description of files

1. For problem1, the implementation of the system call 356 is in /Project1/problem1/hello.c
2. For problem2, the code to test system call 356 is in /Project1/problem2/jni/syscall_prtee.c
3. For problem3, the code executing ptree which uses execl is in /Project1/problem3/jni/syscall_prtee.c
4. For problem4, there is only one file called BurgerBuddies.c.

2. Environment

1. VMware + Ubuntu18.04
2. Android SDK & Android NDK
3. goldfish kernel

3. Outputs

1. Problem1: There is no outputs, since only implementing the syscall is required.
2. Problem2:

```
1  swapper,0,0,0,0,0,0
2      init,1,1,0,1,1,0
3          ueventd,43,1,1,0,43,0
4          logd,61,1,1,0,61,1036
5          vold,62,1,1,0,62,0
6          healthd,69,1,1,0,69,0
7          lmkd,70,1,1,0,70,0
8          servicemanager,71,1,1,0,71,1000
9          surfaceflinger,72,1,1,0,72,1000
10         qemud,74,1,1,0,74,0
11         sh,77,1,1,0,77,2000
12         adbd,78,1,1,78,78,0
13             sh,1224,1,78,0,1224,0
14             sh,28166,1,78,0,28166,0
15             sh,9812,1,78,9812,9812,0
16                 helloARM,6131,0,9812,0,6131,0
17             sh,20741,1,78,0,20741,0
18         debuggerd,80,1,1,0,80,0
19         rild,81,1,1,0,81,1001
20         drmserver,82,1,1,0,82,1019
21         install,85,1,1,0,85,0
22         keystore,86,1,1,0,86,1017
23         gatekeeperd,88,1,1,0,88,1000
24         perfprofd,89,1,1,0,89,0
25         fingerprintd,90,1,1,0,90,1000
26         bootanimation,1277,1,1,0,1277,1003
27         netd,5846,1,1,0,5846,0
28         mediaserver,5847,1,1,0,5847,1013
29         main,5848,1,1,5848,5848,0
```

```

30         system_server,5944,64,5848,0,5944,1000
31     kthreadd,2,1,0,2,2,0
32         ksoftirqd/0,3,1,2,0,3,0
33         kworker/u:0,5,1,2,0,5,0
34         khelper,6,1,2,0,6,0
35         sync_supers,7,1,2,0,7,0
36         bdi-default,8,1,2,0,8,0
37         kblockd,9,1,2,0,9,0
38         rpciod,10,1,2,0,10,0
39         kswapd0,12,1,2,0,12,0
40         fsnotify_mark,13,1,2,0,13,0
41         crypto,14,1,2,0,14,0
42         kworker/u:1,25,1,2,0,25,0
43         mtblock0,30,1,2,0,30,0
44         mtblock1,35,1,2,0,35,0
45         mtblock2,40,1,2,0,40,0
46         binder,41,1,2,0,41,0
47         deferwq,42,1,2,0,42,0
48         jbd2/mtblock0-,45,1,2,0,45,0
49         ext4-dio-unwrit,46,1,2,0,46,0
50         jbd2/mtblock1-,52,1,2,0,52,0
51         ext4-dio-unwrit,53,1,2,0,53,0
52         jbd2/mtblock2-,59,1,2,0,59,0
53         ext4-dio-unwrit,60,1,2,0,60,0
54         kauditd,118,1,2,0,118,0
55         kworker/0:1,16932,1,2,0,16932,0
56         flush-31:1,30614,1,2,0,30614,0
57         kworker/0:2,9571,1,2,0,9571,0

```

3. Problem3:

```

1  This is parent process, pid = 6137
2  root@generic:/data/code/problem3 # This is child process, pid = 6138
3
4  syscall return 0
5  nr = 57
6  swapper,0,0,0,0,0,0
7      init,1,1,0,1,1,0
8          ueventd,43,1,1,0,43,0
9          logd,61,1,1,0,61,1036
10         vold,62,1,1,0,62,0
11         healthd,69,1,1,0,69,0
12         lmkd,70,1,1,0,70,0
13         servicemanager,71,1,1,0,71,1000
14         surfaceflinger,72,1,1,0,72,1000
15         qemud,74,1,1,0,74,0
16         sh,77,1,1,0,77,2000
17         adbd,78,1,1,78,78,0
18             sh,1224,1,78,0,1224,0
19             sh,28166,1,78,0,28166,0
20             sh,9812,1,78,0,9812,0
21             sh,20741,1,78,0,20741,0
22         debuggerd,80,1,1,0,80,0
23         rild,81,1,1,0,81,1001
24         drmserver,82,1,1,0,82,1019
25         installd,85,1,1,0,85,0
26         keystore,86,1,1,0,86,1017

```

```

27      gatekeeperd,88,1,1,0,88,1000
28      perfprofd,89,1,1,0,89,0
29      fingerprintd,90,1,1,0,90,1000
30      bootanimation,1277,1,1,0,1277,1003
31      netd,5846,1,1,0,5846,0
32      mediaserver,5847,1,1,0,5847,1013
33      main,5848,1,1,5848,5848,0
34      system_server,5944,64,5848,0,5944,1000
35      helloARM,6138,0,1,0,6138,0
36      kthreadd,2,1,0,2,2,0
37      ksoftirqd/0,3,1,2,0,3,0
38      kworker/u:0,5,1,2,0,5,0
39      khelper,6,1,2,0,6,0
40      sync_supers,7,1,2,0,7,0
41      bdi-default,8,1,2,0,8,0
42      kblockd,9,1,2,0,9,0
43      rpciod,10,1,2,0,10,0
44      kswapd0,12,1,2,0,12,0
45      fsnotify_mark,13,1,2,0,13,0
46      crypto,14,1,2,0,14,0
47      kworker/u:1,25,1,2,0,25,0
48      mtblock0,30,1,2,0,30,0
49      mtblock1,35,1,2,0,35,0
50      mtblock2,40,1,2,0,40,0
51      binder,41,1,2,0,41,0
52      deferwq,42,1,2,0,42,0
53      jbd2/mtblock0-,45,1,2,0,45,0
54      ext4-dio-unwrit,46,1,2,0,46,0
55      jbd2/mtblock1-,52,1,2,0,52,0
56      ext4-dio-unwrit,53,1,2,0,53,0
57      jbd2/mtblock2-,59,1,2,0,59,0
58      ext4-dio-unwrit,60,1,2,0,60,0
59      kauditd,118,1,2,0,118,0
60      kworker/0:1,16932,1,2,0,16932,0
61      flush-31:1,30614,1,2,0,30614,0
62      kworker/0:2,9571,1,2,0,9571,0

```

4. Problem4:

```

1  Cooks [2], Cashiers [4], Customers [41]
2  Begin run
3  Cook [2] make a burger.
4  Cook [2] make a burger.
5  Cook [2] make a burger.
6  Cook [2] make a burger.
7  Cook [2] make a burger.
8  Cook [2] make a burger.
9  Cook [2] make a burger.
10 Cook [2] make a burger.
11 Cook [2] make a burger.
12 Cook [2] make a burger.
13 Customer [1] come.
14 Customer [2] come.
15 Customer [3] come.
16 Customer [4] come.
17 Cashier [3] accepts an order.
18 Cashier [3] take a burger to customor.

```

19 Casher [3] accepts an order.
20 Casher [3] take a burger to customor.
21 Cook [2] make a burger.
22 Cook [2] make a burger.
23 Casher [2] accepts an order.
24 Casher [2] take a burger to customor.
25 Cook [2] make a burger.
26 Casher [1] accepts an order.
27 Casher [1] take a burger to customor.
28 Cook [2] make a burger.
29 Customer [6] come.
30 Customer [7] come.
31 Casher [3] accepts an order.
32 Casher [3] take a burger to customor.
33 Casher [3] accepts an order.
34 Casher [3] take a burger to customor.
35 Customer [8] come.
36 Cook [1] make a burger.
37 Cook [1] make a burger.
38 Casher [2] accepts an order.
39 Casher [2] take a burger to customor.
40 Cook [2] make a burger.
41 Customer [9] come.
42 Casher [4] accepts an order.
43 Casher [4] take a burger to customor.
44 Cook [2] make a burger.
45 Customer [5] come.
46 Customer [11] come.
47 Customer [12] come.
48 Customer [13] come.
49 Casher [1] accepts an order.
50 Customer [14] come.
51 Casher [1] take a burger to customor.
52 Casher [1] accepts an order.
53 Casher [1] take a burger to customor.
54 Casher [1] accepts an order.
55 Casher [1] take a burger to customor.
56 Casher [1] accepts an order.
57 Casher [1] take a burger to customor.
58 Cook [2] make a burger.
59 Cook [2] make a burger.
60 Cook [2] make a burger.
61 Cook [2] make a burger.
62 Casher [2] accepts an order.
63 Casher [2] take a burger to customor.
64 Cook [2] make a burger.
65 Customer [15] come.
66 Casher [1] accepts an order.
67 Casher [1] take a burger to customor.
68 Cook [2] make a burger.
69 Customer [22] come.
70 Casher [4] accepts an order.
71 Casher [4] take a burger to customor.
72 Customer [10] come.
73 Cook [1] make a burger.
74 Customer [23] come.
75 Customer [24] come.
76 Customer [16] come.

77 Customer [18] come.
78 Cashier [3] accepts an order.
79 Cashier [3] take a burger to customor.
80 Cashier [3] accepts an order.
81 Cashier [3] take a burger to customor.
82 Cashier [3] accepts an order.
83 Cashier [3] take a burger to customor.
84 Cashier [3] accepts an order.
85 Cashier [3] take a burger to customor.
86 Cashier [3] accepts an order.
87 Cashier [3] take a burger to customor.
88 Cook [2] make a burger.
89 Cook [2] make a burger.
90 Customer [19] come.
91 Cashier [3] accepts an order.
92 Cook [2] make a burger.
93 Cook [2] make a burger.
94 Cashier [3] take a burger to customor.
95 Cook [2] make a burger.
96 Customer [28] come.
97 Cashier [2] accepts an order.
98 Cashier [2] take a burger to customor.
99 Cook [2] make a burger.
100 Customer [29] come.
101 Cashier [1] accepts an order.
102 Cook [1] make a burger.
103 Cashier [1] take a burger to customor.
104 Cook [2] make a burger.
105 Customer [32] come.
106 Customer [27] come.
107 Customer [17] come.
108 Cashier [3] accepts an order.
109 Cashier [3] take a burger to customor.
110 Cashier [3] accepts an order.
111 Cashier [3] take a burger to customor.
112 Customer [20] come.
113 Cook [1] make a burger.
114 Cook [1] make a burger.
115 Customer [21] come.
116 Cashier [4] accepts an order.
117 Customer [25] come.
118 Cashier [3] accepts an order.
119 Cashier [1] accepts an order.
120 Customer [30] come.
121 Customer [31] come.
122 Customer [34] come.
123 Cashier [4] take a burger to customor.
124 Cashier [4] accepts an order.
125 Cashier [4] take a burger to customor.
126 Cashier [4] accepts an order.
127 Cashier [4] take a burger to customor.
128 Cashier [4] accepts an order.
129 Cashier [4] take a burger to customor.
130 Customer [33] come.
131 Cook [1] make a burger.
132 Cook [1] make a burger.
133 Cook [1] make a burger.
134 Cook [2] make a burger.

```
135 | Cashier [2] accepts an order.
136 | Cashier [2] take a burger to customor.
137 | Cashier [2] accepts an order.
138 | Cashier [2] take a burger to customor.
139 | Cashier [1] take a burger to customor.
140 | Cook [2] make a burger.
141 | Cook [2] make a burger.
142 | Cook [2] make a burger.
143 | Cashier [3] take a burger to customor.
144 | Cook [2] make a burger.
145 | Customer [36] come.
146 | Cashier [2] accepts an order.
147 | Cashier [2] take a burger to customor.
148 | Cook [2] make a burger.
149 | Customer [37] come.
150 | Cashier [1] accepts an order.
151 | Cashier [1] take a burger to customor.
152 | Cook [2] make a burger.
153 | Customer [38] come.
154 | Cashier [3] accepts an order.
155 | Cashier [3] take a burger to customor.
156 | Cook [2] make a burger.
157 | Customer [41] come.
158 | Cashier [4] accepts an order.
159 | Cashier [4] take a burger to customor.
160 | Cook [2] make a burger.
161 | Customer [26] come.
162 | Cashier [2] accepts an order.
163 | Cashier [2] take a burger to customor.
164 | Customer [39] come.
165 | Customer [40] come.
166 | Cashier [1] accepts an order.
167 | Cook [2] make a burger.
168 | Cashier [3] accepts an order.
169 | Cashier [3] take a burger to customor.
170 | Customer [35] come.
171 | Cashier [1] take a burger to customor.
172 | Cashier [1] accepts an order.
173 | Cashier [1] take a burger to customor.
174 | Cook [2] make a burger.
175 | Cook [2] make a burger.
176 | Cook [1] make a burger.
```

If there is any mistake or question, please do not hesitate to contact:

Author: Dou Yi-Ming

Tel: 18017112986

E-mail: douyiming@sjtu.edu.cn