```
===== TEST 1: Priority ordering =====
[low-A] pid=5 start pr=10
[high-C] pid=7 start pr=40
[high-C] pid=7 pass=5 uptime=1091 pr=40
[high-C] pid=7 pass=10 uptime=1099 pr=40
[high-C] pid=7 pass=15 uptime=1107 pr=40
[high-C] pid=7 pass=20 uptime=1115 pr=40
[high-C] pid=7 exit
[mid-B] pid=6 start pr=25
[mid-B] pid=6 pass=5 uptime=1125 pr=25
[mid-B] pid=6 pass=10 uptime=1133 pr=25
[mid-B] pid=6 pass=15 uptime=1142 pr=25
[mid-B] pid=6 pass=20 uptime=1150 pr=25
[mid-B] pid=6 exit
[low-A] pid=5 pass=5 uptime=1158 pr=10
Process Table:
Name: init
PID: 1
State: 2
Priority: 32
---------------------
Name: sh
PID: 2
State: 2
Priority: 32
---------------------
Name: test_sched
PID: 4
State: 4
Priority: 32
---------------------
Name: test_sched
PID: 5
State: 3
Priority: 10
---------------------
Name: test_sched
PID: 6
State: 5
Priority: 25
---------------------
Name: test_sched
PID: 7
```

State: 5
Priority: 40

[low-A] pid=5 pass=10 uptime=1168 pr=10
[low-A] pid=5 pass=15 uptime=1175 pr=10
[low-A] pid=5 pass=20 uptime=1183 pr=10
[low-A] pid=5 exit

===== TEST 2: setpriority() preemption =====
[child-low] pass=0 pr=10
[child-low] pass=1 pr=10
[child-low] pass=2 pr=10
[child-loParent raising child to pr=90
w] pass=3 pr=10
[child-low] pass=4 pr=90
[child-low] pass=5 pr=90
[child-low] pass=6 pr=90
[child-low] pass=7 pr=90
Process Table:
Name: init
PID: 1
State: 2
Priority: 32

Name: sh
PID: 2
State: 2
Priority: 32

Name: test_sched
PID: 4
State: 4
Priority: 32

Name: test_sched
PID: 8
State: 5
Priority: 90

===== TEST 3: Same-priority fairness =====
[same1] pid=9 start pr=20
[same2] pid=10 start pr=20
[same3] pid=11 start pr=20

[same1] pid=9 pass=5 uptime=1260 pr=20
[same1] pid=9 pass=10 uptime=1268 pr=20
[same1] pid=9 pass=15 uptime=1276 pr=20
[same1] pid=9 exit
[same2] pid=10 pass=5 uptime=1284 pr=20
[same2] pid=10 pass=10 uptime=1292 pr=20
[same2] pid=10 pass=15 uptime=1300 pr=20
[same2] pid=10 exit
[same3] pid=11 pass=5 uptime=1309 pr=20
[same3] pid=11 pass=10 uptime=1318 pr=20
[same3] pid=11 pass=15 uptime=1326 pr=20
[same3] pid=11 exit
Process Table:
Name: init
PID: 1
State: 2
Priority: 32

Name: sh
PID: 2
State: 2
Priority: 32

Name: test_sched
PID: 4
State: 4
Priority: 32

Name: test_sched
PID: 9
State: 5
Priority: 20

Name: test_sched
PID: 10
State: 5
Priority: 20

Name: test_sched
PID: 11
State: 5
Priority: 20

```
===== TEST 4: Starvation Check =====
[low] running 0
[low] running 1
[low] running 2
[low] running 3
[low] running 4
[low] running 5
[low] running 6
[low] running 7
[low] running 8
[low] running 9
[low] running 10
[low] running 11
Process Table:
Name: init
PID: 1
State: 2
Priority: 32
---------------------
Name: sh
PID: 2
State: 2
Priority: 32
---------------------
Name: test_sched
PID: 4
State: 4
Priority: 32
---------------------
Name: test_sched
PID: 12
State: 5
Priority: 80
---------------------
Name: test_sched
PID: 13
State: 5
Priority: 5
---------------------

===== TEST 5: Stress test (30 procs) =====
[stress] pid=14 start pr=0
[stress] pid=15 start pr=7
[stress] pid=16 start pr=14
```

[stress] pid=17 start pr=21
[stress] pid=18 start pr=28
[stress] pid=19 start pr=35
[stress] pid=19 pass=5 uptime=1479 pr=35
[stress] pid=19 pass=10 uptime=1489 pr=35
[stress] pid=19 exit
[stress] pid=20 start pr=42
[stress] pid=20 pass=5 uptime=1501 pr=42
[stress] pid=20 pass=10 uptime=1510 pr=42
[stress] pid=20 exit
[stress] pid=21 start pr=49
[stress] pid=21 pass=5 uptime=1521 pr=49
[stress] pid=21 pass=10 uptime=1529 pr=49
[stress] pid=21 exit
[stress] pid=22 start pr=6[stress] pid=23 start pr=13
[stress] pid=24 start pr=20
[stress] pid=25 start pr=27
[stress] pid=26 start pr=34
[stress] pid=26 pass=5 uptime=1544 pr=34
[stress] pid=26 pass=10 uptime=1553 pr=34
[stress] pid=26 exit
[stress] pid=27 start pr=41
[stress] pid=27 pass=5 uptime=1564 pr=41
[stress] pid=27 pass=10 uptime=1573 pr=41
[stress] pid=27 exit
[stress] pid=28 start pr=48
[stress] pid=28 pass=5 uptime=1584 pr=48
[stress] pid=28 pass=10 uptime=1594 pr=48
[stress] pid=28 exit
[stress] Process Table:
Name: init
PID: 1
State: 2
Priority: 32

Name: sh
PID: 2
State: 2
Priority: 32

Name: test_sched
PID: 4
State: 4
Priority: 32

Name: test_sched
PID: 14
State: 3
Priority: 0

Name: test_sched
PID: 15
State: 3
Priority: 7

Name: test_sched
PID: 16
State: 3
Priority: 14

Name: test_sched
PID: 17
State: 2
Priority: 21

Name: test_sched
PID: 18
State: 2
Priority: 28

Name: test_sched
PID: 19
State: 5
Priority: 35

Name: test_sched
PID: 20
State: 5
Priority: 42

Name: test_sched
PID: 21
State: 5
Priority: 49

Name: test_sched
PID: 22
State: 3

Priority: 6

Name: test_sched
PID: 23
State: 3
Priority: 13

Name: test_sched
PID: 24
State: 3
Priority: 20

Name: test_sched
PID: 25
State: 2
Priority: 27

Name: test_sched
PID: 26
State: 5
Priority: 34

Name: test_sched
PID: 27
State: 5
Priority: 41

Name: test_sched
PID: 28
State: 5
Priority: 48

Name: test_sched
PID: 29
State: 3
Priority: 5

Name: test_sched
PID: 30
State: 2
Priority: 12

Name: test_sched
PID: 31

State: 2
Priority: 19

Name: test_sched
PID: 32
State: 2
Priority: 26

Name: test_sched
PID: 33
State: 2
Priority: 33

Name: test_sched
PID: 34
State: 2
Priority: 40

Name: test_sched
PID: 35
State: 2
Priority: 47

Name: test_sched
PID: 36
State: 2
Priority: 4

Name: test_sched
PID: 37
State: 2
Priority: 11

Name: test_sched
PID: 38
State: 2
Priority: 18

Name: test_sched
PID: 39
State: 2
Priority: 25

Name: test_sched

PID: 40
State: 2
Priority: 32

Name: test_sched
PID: 41
State: 2
Priority: 39

Name: test_sched
PID: 42
State: 2
Priority: 46

Name: test_sched
PID: 43
State: 2
Priority: 3
---
pid=29 start [stress] pid=35 start pr=47
[stress] pid=35 pass=5 uptime=1651 pr=47
[stress] pid=35 pass=10 uptime=1659 pr=47
[stress] pid=35 exit
[stress] pid=42 start pr=46
[stress] pid=42 pass=5 uptime=1670 pr=46
[stress] pid=42 pass=10 uptime=1679 pr=46
[stress] pid=42 exit
[stress] pid=34 start pr=40
[stress] pid=34 pass=5 uptime=1689 pr=40
[stress] pid=34 pass=10 uptime=1697 pr=40
[stress] pid=34 exit
[stress] pid=41 start pr=39
[stress] pid=41 pass=5 uptime=1707 pr=39
[stress] pid=41 pass=10 uptime=1716 pr=39
[stress] pid=41 exit
[stress] pid=33 start pr=33
[stress] pid=33 pass=5 uptime=1727 pr=33
[stress] pid=33 pass=10 uptime=1736 pr=33
[stress] pid=33 exit
[stress] pid=40 start pr=32
[stress] pid=40 pass=5 uptime=1748 pr=32
[stress] pid=40 pass=10 uptime=1758 pr=32
[stress] pid=40 exit
[stress] pid=18 pass=5 uptime=1605 pr=28

```
[stress] pid=18 pass=10 uptime=1768 pr=28
[stress] pid=18 exit
[stress] pid=25 pass=5 uptime=1613 pr=27
[stress] pid=25 pass=10 uptime=1779 pr=27
[stress] pid=25 exit
[stress] pid=32 start pr=26
[stress] pid=32 pass=5 uptime=1789 pr=26
[stress] pid=32 pass=10 uptime=1798 pr=26
[stress] pid=32 exit
[stress] pid=39 start pr=25
[stress] pid=39 pass=5 uptime=1809 pr=25
[stress] pid=39 pass=10 uptime=1818 pr=25
[stress] pid=39 exit
[stress] pid=17 pass=5 uptime=1827 pr=21
[stress] pid=17 pass=10 uptime=1836 pr=21
[stress] pid=17 exit
[stress] pid=24 pass=5 uptime=1622 pr=20
[stress] pid=24 pass=10 uptime=1848 pr=20
[stress] pid=24 exit
[stress] pid=31 start pr=19
[stress] pid=31 pass=5 uptime=1859 pr=19
[stress] pid=31 pass=10 uptime=1869 pr=19
[stress] pid=31 exit
[stress] pid=38 start pr=18
[stress] pid=38 pass=5 uptime=1879 pr=18
[stress] pid=38 pass=10 uptime=1888 pr=18
[stress] pid=38 exit
[stress] pid=16 pass=5 uptime=1629 pr=14
[stress] pid=16 pass=10 uptime=1898 pr=14
[stress] pid=16 exit
[stress] pid=23 pass=5 uptime=1636 pr=13
[stress] pid=23 pass=10 uptime=1910 pr=13
[stress] pid=23 exit
[stress] pid=30 start pr=12
[stress] pid=30 pass=5 uptime=1921 pr=12
[stress] pid=30 pass=10 uptime=1930 pr=12
[stress] pid=30 exit
[stress] pid=37 start pr=11
[stress] pid=37 pass=5 uptime=1941 pr=11
[stress] pid=37 pass=10 uptime=1951 pr=11
[stress] pid=37 exit
[stress] pid=15 pass=5 uptime=1642 pr=7
[stress] pid=15 pass=10 uptime=1962 pr=7
[stress] pid=15 exit
```

[stress] pid=22 pass=5 uptime=1972 pr=6
[stress] pid=22 pass=10 uptime=1980 pr=6
[stress] pid=22 exit
pr=5
[stress] pid=29 pass=5 uptime=1991 pr=5
[stress] pid=29 pass=10 uptime=2000 pr=5
[stress] pid=29 exit
[stress] pid=36 start pr=4
[stress] pid=36 pass=5 uptime=2011 pr=4
[stress] pid=36 pass=10 uptime=2021 pr=4
[stress] pid=36 exit
[stress] pid=43 start pr=3
[stress] pid=43 pass=5 uptime=2032 pr=3
[stress] pid=43 pass=10 uptime=2041 pr=3
[stress] pid=43 exit
[stress] pid=14 pass=5 uptime=2052 pr=0
[stress] pid=14 pass=10 uptime=2061 pr=0
[stress] pid=14 exit

===== TEST 6: exit/wait correctness =====
Parent waited for = 44

===== TEST 7: Single RUNNABLE process =====
[single] pid=45 start pr=60
[single] pid=45 pass=5 uptime=2081 pr=60
[single] pid=45 pass=10 uptime=2090 pr=60
[single] pid=45 exit
Process Table:
Name: init
PID: 1
State: 2
Priority: 32

Name: sh
PID: 2
State: 2
Priority: 32

Name: test_sched
PID: 4
State: 4
Priority: 32

Name: test_sched
PID: 45
State: 5
Priority: 60

===== ALL TESTS PASSED =====

$ decaytest

===== TEST 1: Basic decay ordering =====
[high] start[mid] start pid=6 pr=20
[mid] pid=6 pass=1 pr=20 uptime=684
[mid] pid=6 pass=2 pr=22 uptime=686
[mid] pid=6 pass=3 pr=23 uptime=687
[mid] pid=6 pass=4 pr=24 uptime=688
[mid] pid=6 pass=5 pr=25 uptime=689
[mid] pid=6 exit
[low] start pid=7 pr=5
[low] pid=7 pass=1 pr=6 uptime=692
[low] pid=7 pass=2 pr=7 uptime=693
[low] pid=7 pass=3 pr=8 uptime=694
[low] pid=7 pass=4 pr=9 uptime=695
[low] pid=7 pass=5 pr=10 uptime=696
[low] pid=7 exit
 pid=5 pr=80
[high] pid=5 pass=1 pr=80 uptime=699
[high] pid=5 pass=2 pr=80 uptime=700
[high] pid=5 pass=3 pr=80 uptime=701
[high] pid=5 pass=4 pr=80 uptime=703
[high] pid=5 pass=5 pr=80 uptime=704
[high] pid=5 exit

===== TEST 2: Priority aging causes lower processes to catch up =====
[aging-low] start pid=8 pr=10
[aging-low] pass=0 pr=11
[aging-low] pass=1 pr=12
[aging-low] pass=2 pr=13
[aging-low] pass=3 pr=14
[aging-low] pass=4 pr=16
[aging-low] pass=5 pr=17
[aging-low] pass=6 pr=19

```
[aging-low] pass=7 pr=20
[aging-low] pass=8 pr=22
[aging-low] pass=9 pr=24
[aging-low] exit

===== TEST 3: setpriority() preemption + decay interaction =====
[child-before] i=0 pr=6
[child-before] i=1 pr=7
[child-before] i=2 pr=8
[child-before] i=3 pr=9
[child-before] i=4 pr=10
[child-before] i=5 pr=11
[child-before] i=6 pr=12
[child-before] i=7 pr=13
[child-before] done
Parent raising child priority to 90

===== TEST 4: Fairness among equal-priority + decay =====
[same1] start pid=10 pr=30
[same1] pid=10 pass=1 pr=31 uptime=783
[same1] pid=10 pass=2 pr=32 uptime=784
[same1] pid=10 pass=3 pr=33 uptime=785
[same1] pid=10 pass=4 pr=34 uptime=786
[same1] pid=10 pass=5 pr=36 uptime=788
[same1] pid=10 exit
[same2] start pid=11 pr=30
[same2] pid=11 pass=1 pr=31 uptime=790
[same2] pid=11 pass=2 pr=32 uptime=791
[same2] pid=11 pass=3 pr=33 uptime=793
[same2] pid=11 pass=4 pr=35 uptime=794
[same2] pid=11 pass=5 pr=36 uptime=795
[same2] pid=11 exit
[same3] start pid=12 pr=30
[same3] pid=12 pass=1 pr=31 uptime=798
[same3] pid=12 pass=2 pr=33 uptime=800
[same3] pid=12 pass=3 pr=34 uptime=801
[same3] pid=12 pass=4 pr=35 uptime=802
[same3] pid=12 pass=5 pr=36 uptime=803
[same3] pid=12 exit

===== TEST 5: Starvation Prevention Check =====
[STR-high] start pid=13 pr=80
[STR-low] run 0 pr=0
[STR-low] run 1 pr=1
```

[STR-low] run 2 pr=2
[STR-low] run 3 pr=3
[STR-low] run 4 pr=4
[STR-low] run 5 pr=5
[STR-low] run 6 pr=5
[STR-low] run 7 pr=6
[STR-low] run 8 pr=7
[STR-low] run 9 pr=8
[STR-low] run 10 pr=9
[STR-low] run 11 pr=10
[STR-high] pid=13 pass=1 pr=80 uptime=819
[STR-high] pid=13 pass=2 pr=80 uptime=821
[STR-high] pid=13 pass=3 pr=80 uptime=822
[STR-high] pid=13 pass=4 pr=80 uptime=823
[STR-high] pid=13 pass=5 pr=80 uptime=824
[STR-high] pid=13 exit

===== TEST 6: Stress Test (20 processes) =====
[str0] start pid=15 pr=0
[str0] pid=15 pass=1 pr=1 uptime=831
[str0] pid=15 pass=2 pr=2 uptime=832
[str0] pid=15 pass=3 pr=4 uptime=834
[str0] pid=15 exit
[str1] start pid=16 pr=3
[str1] pid=16 pass=1 pr=4 uptime=837
[str1] pid=16 pass=2 pr=5 uptime=838
[str1] pid=16 pass=3 pr=6 uptime=839
[str1] pid=16 exit
[str2] start pid=17 pr=6
[str2] pid=17 pass=1 pr=6 uptime=841
[str2] pid=17 pass=2 pr=8 uptime=843
[str2] pid=17 pass=3 pr=9 uptime=844
[str2] pid=17 exit
[str3] start pid=18 pr=9
[str3] pid=18 pass=1 pr=10 uptime=848
[str3] pid=18 pass=2 pr=11 uptime=849
[str3] pid=18 pass=3 pr=13 uptime=851
[str3] pid=18 exit
[str4] start pid=19 pr=12
[str4] pid=19 pass=1 pr=13 uptime=853
[str4] pid=19 pass=2 pr=15 uptime=855
[str4] pid=19 pass=3 pr=16 uptime=856
[str4] pid=19 exit
[str5] start pid=20 pr=15

```
[str5] pid=20 pass=1 pr=16 uptime=859
[str5] pid=20 pass=2 pr=17 uptime=860
[str5] pid=20 pass=3 pr=18 uptime=861
[str5] pid=20 exit
[str6] start pid=21 pr=18
[str6] pid=21 pass=1 pr=19 uptime=864
[str6] pid=21 pass=2 pr=20 uptime=865
[str6] pid=21 pass=3 pr=22 uptime=867
[str6] pid=21 exit
[str7] start pid=22 pr=21
[str7] pid=22 pass=1 pr=22 uptime=870
[str7] pid=22 pass=2 pr=23 uptime=871
[str7] pid=22 pass=3 pr=24 uptime=872
[str7] pid=22 exit
[str8] start pid=23 pr=24
[str8] pid=23 pass=1 pr=25 uptime=876
[str8] pid=23 pass=2 pr=26 uptime=877
[str8] pid=23 pass=3 pr=27 uptime=878
[str8] pid=23 exit
[str9] start pid=24 pr=27
[str9] pid=24 pass=1 pr=28 uptime=881
[str9] pid=24 pass=2 pr=29 uptime=882
[str9] pid=24 pass=3 pr=30 uptime=883
[str9] pid=24 exit
[str0] start pid=25 pr=30
[str0] pid=25 pass=1 pr=32 uptime=886
[str0] pid=25 pass=2 pr=33 uptime=887
[str0] pid=25 pass=3 pr=34 uptime=888
[str0] pid=25 exit
[str1] start pid=26 pr=33
[str1] pid=26 pass=1 pr=35 uptime=891
[str1] pid=26 pass=2 pr=36 uptime=892
[str1] pid=26 pass=3 pr=37 uptime=893
[str1] pid=26 exit
[str2] start pid=27 pr=36
[str2] pid=27 pass=1 pr=38 uptime=896
[str2] pid=27 pass=2 pr=39 uptime=897
[str2] pid=27 pass=3 pr=40 uptime=898
[str2] pid=27 exit
[str3] start pid=28 pr=39
[str3] pid=28 pass=1 pr=40 uptime=905
[str3] pid=28 pass=2 pr=41 uptime=906
[str3] pid=28 pass=3 pr=42 uptime=907
[str3] pid=28 exit
```

```
[str4] start pid=29 pr=42
[str4] pid=29 pass=1 pr=43 uptime=910
[str4] pid=29 pass=2 pr=44 uptime=911
[str4] pid=29 pass=3 pr=46 uptime=913
[str4] pid=29 exit
[str5] start pid=30 pr=45
[str5] pid=30 pass=1 pr=46 uptime=915
[str5] pid=30 pass=2 pr=47 uptime=916
[str5] pid=30 pass=3 pr=49 uptime=918
[str5] pid=30 exit
[str6] start pid=31 pr=48
[str6] pid=31 pass=1 pr=49 uptime=920
[str6] pid=31 pass=2 pr=50 uptime=921
[str6] pid=31 pass=3 pr=52 uptime=923
[str6] pid=31 exit
[str7] start pid=32 pr=51
[str7] pid=32 pass=1 pr=52 uptime=925
[str7] pid=32 pass=2 pr=53 uptime=926
[str7] pid=32 pass=3 pr=55 uptime=928
[str7] pid=32 exit
[str8] start pid=33 pr=54
[str8] pid=33 pass=1 pr=55 uptime=930
[str8] pid=33 pass=2 pr=56 uptime=931
[str8] pid=33 pass=3 pr=58 uptime=933
[str8] pid=33 exit
[str9] start pid=34 pr=57
[str9] pid=34 pass=1 pr=58 uptime=935
[str9] pid=34 pass=2 pr=59 uptime=936
[str9] pid=34 pass=3 pr=61 uptime=938
[str9] pid=34 exit

===== TEST 7: exit/wait correctness =====
[exit-test] done
Parent waited for pid=35

===== ALL TESTS FINISHED =====
$
```