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CS333 Project 3

Test name: with CS333 PROJECT set to 0 in the MakeFile

Test Description: Correctly compiles and boots, usertests runs to completion with all tests passed

Expected results: Expected results is for this to pass.

Test Output / Actual Results:

Correctly compiles and boots

```
cervan4@babbage:~/CS333/xv6-pdx$ grep "CS333_PROJECT ?=" Makefile
CS333_PROJECT ?= 0
cervan4@babbage:~/CS333/xv6-pdx$ !m
make clean run
rm -f *.o *.d *.asm *.sym vectors.S bootblock entryother \
initcode initcode.out kernel xv6.img fs.img kernelmemfs \
xv6memfs.img mkfs .gdbinit \
_cat _echo _forktest _grep _init _kill _ln _ls _mkdir _rm _sh _stressfs _usertests _wc _zombie  _halt _uptime
rm -rf dist dist-test
make -s clean
make -s qemu-nox
nmeta 59 (boot, super, log blocks 30 inode blocks 26, bitmap blocks 1) blocks 1941 total 2000
balloc: first 714 blocks have been allocated
balloc: write bitmap block at sector 58
boot block is 467 bytes (max 510)
10000+0 records in
10000+0 records out
5120000 bytes (5.1 MB, 4.9 MiB) copied, 0.113674 s, 45.0 MB/s
1+0 records in
1+0 records out
512 bytes copied, 0.00355303 s, 144 kB/s
377+1 records in
377+1 records out
193512 bytes (194 kB, 189 KiB) copied, 0.0102376 s, 18.9 MB/s
SeaBIOS (version 1.13.0-1ubuntu1)


iPXE (http://ipxe.org) 00:03.0 CA00 PCI2.10 PnP PMM+1FF8CA10+1FECCA10 CA00


Booting from Hard Disk..xv6...
cpu1: starting 1
cpu0: starting 0
sb: size 2000 nblocks 1941 ninodes 200 nlog 30 logstart 2 inodestart 32 bmap start 58
init: starting sh
$
```

Usertests runs to completion with all tests passed:

```
$ usertests
usertests starting
arg test passed
createdelete test
createdelete ok
linkunlink test
linkunlink ok
concreate test
concreate ok
fourfiles test
fourfiles ok
sharedfd test
sharedfd ok
bigarg test
bigarg test ok
bigwrite test
bigwrite ok
bigarg test
bigarg test ok
bss test
bss test ok
sbrk test
pid 97 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x80000000--kill proc
pid 98 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x8000c350--kill proc
pid 99 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x800186a0--kill proc
pid 100 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x800249f0--kill proc
pid 101 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x80030d40--kill proc
pid 102 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x8003d090--kill proc
pid 103 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x800493e0--kill proc
pid 104 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x80055730--kill proc
pid 105 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x80061a80--kill proc
pid 106 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x8006ddd0--kill proc
pid 107 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x8007a120--kill proc
pid 108 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x80086470--kill proc
pid 109 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x800927c0--kill proc
pid 110 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x8009eb10--kill proc
pid 111 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x800aae60--kill proc
pid 112 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x800b71b0--kill proc
pid 113 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x800c3500--kill proc
pid 114 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x800cf850--kill proc
pid 115 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x800dbba0--kill proc
pid 116 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x800e7ef0--kill proc
pid 117 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x800f4240--kill proc
pid 118 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x80100590--kill proc
pid 119 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x8010c8e0--kill proc
pid 120 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x80118c30--kill proc
pid 121 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x80124f80--kill proc
pid 122 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x801312d0--kill proc
pid 123 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x8013d620--kill proc
pid 124 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x80149970--kill proc
pid 125 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x80155cc0--kill proc
pid 126 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x80162010--kill proc
pid 127 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x8016e360--kill proc
pid 128 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x8017a6b0--kill proc
pid 129 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x80186a00--kill proc
pid 130 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x80192d50--kill proc
pid 131 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x8019f0a0--kill proc
pid 132 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x801ab3f0--kill proc
pid 133 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x801b7740--kill proc
pid 134 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x801c3a90--kill proc
pid 135 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x801cfde0--kill proc
```

```
pid 135 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x801cfde0--kill proc
pid 136 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x801dc130--kill proc
allocuvm out of memory
allocuvm out of memory
allocuvm out of memory
allocuvm out of memory
allocuvm out of memory
allocuvm out of memory
allocuvm out of memory
allocuvm out of memory
sbrk test OK
validate test
validate ok
open test
open test ok
small file test
creat small succeeded; ok
writes ok
open small succeeded ok
read succeeded ok
small file test ok
big files test
big files ok
many creates, followed by unlink test
many creates, followed by unlink; ok
openiput test
openiput test ok
exitiput test
exitiput test ok
iput test
iput test ok
mem test
allocuvm out of memory
mem ok
pipe1 ok
preempt: kill... wait... preempt ok
exitwait ok
rmdot test
rmdot ok
fourteen test
fourteen ok
bigfile test
bigfile test ok
subdir test
subdir ok
linktest
linktest ok
unlinkread test
unlinkread ok
dir vs file
dir vs file OK
empty file name
empty file name OK
fork test
fork test OK
bigdir test
bigdir ok
uio test
pid 591 usertests: trap 13 err 0 on cpu 1 eip 0x3448 addr 0x801dc130--kill proc
uio test done
exec test
ALL TESTS PASSED
```

Discussion:

The results were as expected everything compiled and worked properly.

Indication of Pass/Fail:

This test Passed

Test Name: CS333 PROJECT set to 3 in the Makefile

Test Description: Correctly compiles and boots, usertests runs to completion with all tests passed

Expected Results: Expected results for this test is for it to pass

Test Output / Actual Results:

```
cervan4@babbage:~/CS333/xv6-pdx$ grep "CS333_PROJECT ?=" Makefile
CS333_PROJECT ?= 3
cervan4@babbage:~/CS333/xv6-pdx$ !m
make clean run
rm -f *.o *.d *.asm *.sym vectors.S bootblock entryother \
initcode initcode.out kernel xv6.img fs.img kernelmemfs \
xv6memfs.img mkfs .gdbinit \
_cat _echo _forktest _grep _init _kill _ln _ls _mkdir _rm _sh _stressfs _usertests _wc _zombie  _halt _uptime _date _time _ps _testsetuid _testuidgid _p2-test _p3-test
rm -rf dist dist-test
make -s clean
make -s qemu-nox
nmeta 59 (boot, super, log blocks 30 inode blocks 26, bitmap blocks 1) blocks 1941 total 2000
balloc: first 978 blocks have been allocated
balloc: write bitmap block at sector 58
boot block is 467 bytes (max 510)
10000+0 records in
10000+0 records out
5120000 bytes (5.1 MB, 4.9 MiB) copied, 0.108342 s, 47.3 MB/s
1+0 records in
1+0 records out
512 bytes copied, 0.00341866 s, 150 kB/s
402+1 records in
402+1 records out
205852 bytes (206 kB, 201 KiB) copied, 0.00872922 s, 23.6 MB/s
SeaBIOS (version 1.13.0-1ubuntu1)


iPXE (http://ipxe.org) 00:03.0 CA00 PCI2.10 PnP PMM+1FF8CA10+1FECCA10 CA00



Booting from Hard Disk..xv6...
cpu1: starting 1
cpu0: starting 0
sb: size 2000 nblocks 1941 ninodes 200 nlog 30 logstart 2 inodestart 32 bmap start 58
init: starting sh
$
```

Usertests runs to completion with all tests passed

```
$ usertests
usertests starting
arg test passed
createdelete test
createdelete ok
linkunlink test
linkunlink ok
concreate test
concreate ok
fourfiles test
fourfiles ok
sharedfd test
sharedfd ok
bigarg test
bigarg test ok
bigwrite test
bigwrite ok
bigarg test
bigarg test ok
bss test
bss test ok
sbrk test
pid 97 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x80000000--kill proc
pid 98 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x8000c350--kill proc
pid 99 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x800186a0--kill proc
pid 100 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x800249f0--kill proc
pid 101 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x80030d40--kill proc
pid 102 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x8003d090--kill proc
pid 103 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x800493e0--kill proc
pid 104 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x80055730--kill proc
pid 105 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x80061a80--kill proc
pid 106 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x8006ddd0--kill proc
pid 107 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x8007a120--kill proc
pid 108 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x80086470--kill proc
pid 109 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x800927c0--kill proc
pid 110 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x8009eb10--kill proc
pid 111 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x800aae60--kill proc
pid 112 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x800b71b0--kill proc
pid 113 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x800c3500--kill proc
pid 114 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x800cf850--kill proc
pid 115 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x800dbba0--kill proc
pid 116 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x800e7ef0--kill proc
pid 117 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x800f4240--kill proc
pid 118 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x80100590--kill proc
pid 119 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x8010c8e0--kill proc
pid 120 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x80118c30--kill proc
pid 121 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x80124f80--kill proc
pid 122 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x801312d0--kill proc
pid 123 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x8013d620--kill proc
pid 124 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x80149970--kill proc
pid 125 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x80155cc0--kill proc
pid 126 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x80162010--kill proc
pid 127 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x8016e360--kill proc
pid 128 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x8017a6b0--kill proc
pid 129 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x80186a00--kill proc
pid 130 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x80192d50--kill proc
pid 131 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x8019f0a0--kill proc
pid 132 usertests: trap 14 err 5 on cpu 0 eip 0x2e91 addr 0x801ab3f0--kill proc
pid 133 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x801b7740--kill proc
pid 134 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x801c3a90--kill proc
pid 135 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x801cfde0--kill proc
pid 136 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x801dc130--kill proc
```

```
allocuvm out of memory
allocuvm out of memory
allocuvm out of memory
allocuvm out of memory
allocuvm out of memory
allocuvm out of memory
allocuvm out of memory
allocuvm out of memory
sbrk test OK
validate test
validate ok
open test
open test ok
small file test
creat small succeeded; ok
writes ok
open small succeeded ok
read succeeded ok
small file test ok
big files test
big files ok
many creates, followed by unlink test
many creates, followed by unlink; ok
openiput test
openiput test ok
exitiput test
exitiput test ok
iput test
iput test ok
mem test
allocuvm out of memory
mem ok
pipe1 ok
preempt: kill... wait... preempt ok
exitwait ok
rmdot test
rmdot ok
fourteen test
fourteen ok
bigfile test
bigfile test ok
subdir test
subdir ok
linktest
linktest ok
unlinkread test
unlinkread ok
dir vs file
dir vs file OK
empty file name
empty file name OK
fork test
fork test OK
bigdir test
bigdir ok
uio test
pid 591 usertests: trap 13 err 0 on cpu 0 eip 0x3448 addr 0x801ab3f0--kill proc
uio test done
exec test
ALL TESTS PASSED
$
```

Discussion: The results were as expected everything compiled and worked properly.

Indication of PASS/FAIL: This test Passed

Test Name: All subsequent tests should be done with the CS333 P3 macro turned on, when CS333 PROJECT is set to 3 in the Makefile.

Test Description:

- Show the UNUSED list is correctly initialized after xv6 is fully booted,
- Show the UNUSED list is correctly updated when a process is allocated and deallocated.
- Demonstrate that round-robin scheduling is maintained.
- Show the SLEEPING list is correctly updated when a process sleeps and is woken up.
- Process Death
    - Show the kill() system call correctly causes a process to move to the ZOMBIE list. The kill user program can be used for this purpose as it invokes the kill() system call.
    - Show the exit() system call correctly causes a process to move to the ZOMBIE list.
    - Show the wait() system call correctly causes a process to move to the UNUSED list.
- Show the console command control -r, control -s, control -f, control -z are correct match to the format in the project description.

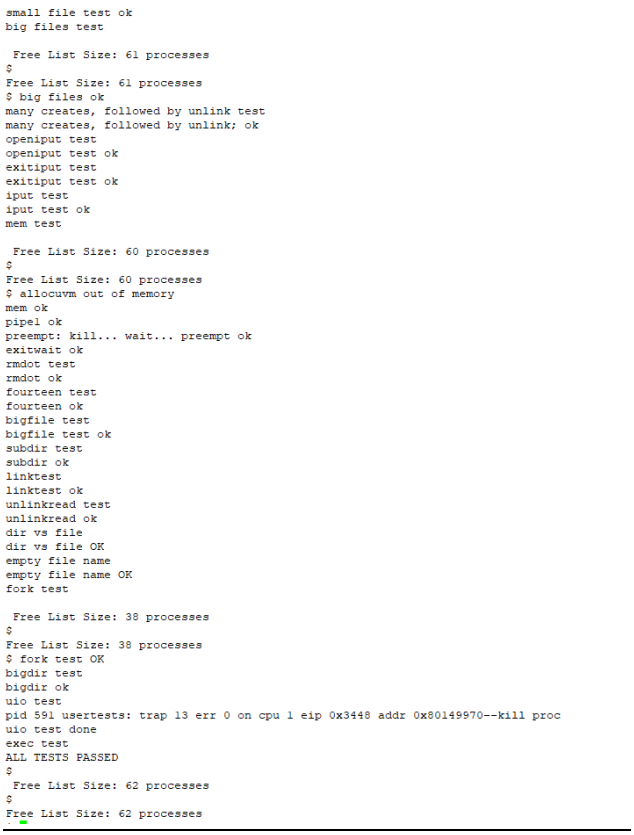
Expected Results: Expected results for this test is for it to pass all of the tests and get all of the values back correctly.

Test Output / Actual Results:

- Show the UNUSED list is correctly initialized after xv6 is fully booted,

```
init: starting sh
$
unused list has 62 processes
embryo list has  0 processes
sleep  list has  2 processes
runble list has  0 processes
run    list has  0 processes
zombie list has  0 processes
Total on lists is: 64. NPROC = 64. Congratulations!
$
```

- Show the UNUSED list is correctly updated when a process is allocated and deallocated.



```
small file test ok
big files test

 Free List Size: 61 processes
$
Free List Size: 61 processes
$ big files ok
many creates, followed by unlink test
many creates, followed by unlink; ok
openiput test
openiput test ok
exitiput test
exitiput test ok
iput test
iput test ok
mem test

 Free List Size: 60 processes
$
Free List Size: 60 processes
$ allocuvm out of memory
mem ok
pipe1 ok
preempt: kill... wait... preempt ok
exitwait ok
rmdot test
rmdot ok
fourteen test
fourteen ok
bigfile test
bigfile test ok
subdir test
subdir ok
linktest
linktest ok
unlinkread test
unlinkread ok
dir vs file
dir vs file OK
empty file name
empty file name OK
fork test

 Free List Size: 38 processes
$
Free List Size: 38 processes
$ fork test OK
bigdir test
bigdir ok
uio test
pid 591 usertests: trap 13 err 0 on cpu 1 eip 0x3448 addr 0x80149970--kill proc
uio test done
exec test
ALL TESTS PASSED
$
 Free List Size: 62 processes
$
Free List Size: 62 processes
```

- Show the SLEEPING list is correctly updated when a process sleeps and is woken up.

```
pid 136 usertests: trap 14 err 5 on cpu 1 eip 0x2e91 addr 0x801dc130--kill proc
allocuvm out of memory
1 -> 2 -> 3 -> 137 -> 138 -> 139

Sleep List Processes:
1 -> 2 -> 3 -> 137 -> 138 -> 139
$ allocuvm out of memory
allocuvm out of memory
allocuvm out of memory
allocuvm out of memory
allocuvm out of memory
allocuvm out of memory
allocuvm out of memory
sbrk test OK
validate test
1 -> 2 -> 3

Sleep List Processes:
1 -> 2 -> 3
$ validate ok
open test
```

- Show the console command control -r, control -s, control -f, control -z are correct match to the format in the project description.

```
ALL TESTS PASSED
$
Runnable List Processes:
$ 1 -> 2

Sleep List Processes:
1 -> 2
$
 Free List Size: 62 processes
$
Free List Size: 62 processes
$

Zombie List Processes:
$
```

Discussion: The results were as expected everything compiled and worked properly. All of data was correct and all of the tasks were done and everything passed

Indication of PASS/FAIL: This test Passed