

```
Total Elapsed Time = 13374663
```

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Anushrees-MacBook-Air:p4 anushreenaik$ make
kpl Kernel -unsafe
[asm Kernel.s
kpl Main -unsafe
asm Main.s
lddd Runtime.o Switch.o System.o List.o BitMap.o Kernel.o Main.o -o os
Anushrees-MacBook-Air:p4 anushreenaik$ Blitz -g os
Beginning execution...
[===== KPL PROGRAM STARTING =====
Initializing Thread Scheduler...
Initializing Frame Manager...

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**** PROCESS-MANAGER TEST ****

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123.4..1562738.9...104...111.13.1427153121651718.98.19.6...20...10..411..11314.3715.92...19...6.20.16105.4.1811.1781.....3.9.1913..620712.14.155.....18.171..
2.1041639..196.20...14...15818.11713.7.2.12..10....619..20514.11.34.16.1.7....212.9.15.8.18196..17.20.311..16...17.5..10.291415.8186.17.12....13..19..1671.54.
11103.8..17..12..2..9.1314.1516197.5.11.8....18.172121.4..69.10.15.5....11.13143..20171816.4.8.6....10.121..51911..713.215...144...9.320..121101816...7.13...
.2.51489.19116..17.12...3.20.7.13.15521...10.19...1417.4.83209.7..16.....15.181019.11141713..5.876...16...18.4.15..21210.115..831..2016.....18.9.4.171413112..
15.8...20.12.19..610189534.....15820..1712.14.7131910....15...8.1166.2017189.14..4.1115..12...5.8.13...71614..2411..12..17.3...5188.1316.7919...2..1220...17
136.1415.4...11..102..12.20.5.13817..144...111...3.102.9.6125.15.147.1911..1...18.8.10163..9.201514..4..12..518..13.2.17.9.20.16..4..712.1911.6....17...209..
1615137.106..19....183.20..16.10.11.19..6....13.16.18...19...1316.18....

```

```

**** PROCESS-MANAGER TEST COMPLETED SUCCESSFULLY ****

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===== KPL PROGRAM TERMINATION =====

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```

**** A 'debug' instruction was encountered ****
Done! The next instruction to execute will be:
001078: C0100000      sethi    0x0000,r1          ! 0x00001088 = 4232 (noGoMessage)

```

```

Entering machine-level debugger...

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=====                               =====
=====       The BLITZ Machine Emulator       =====
=====                               =====
===== Copyright 2001-2007, Harry H. Porter III =====
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Enter a command at the prompt. Type 'quit' to exit or 'help' for
info about commands.

```

```

> q
Number of Disk Reads   = 0
Number of Disk Writes  = 0
Instructions Executed   = 13284625
Time Spent Sleeping    = 0
    Total Elapsed Time = 13284625

```

Beginning execution...

===== KPL PROGRAM STARTING =====

Initializing Thread Scheduler...

Initializing Frame Manager...

***** FRAME-MANAGER TEST *****

12345678.9.10.....1.23.7.4685...910...2..13784..5.6....9102.31..74.86.
5....9.10.237.1..46..8.59.10.2.3.1.6..7.45.10.89..1.27.4.3..95..12..46
.
8.9.73..41.9.7.6..42..9106..4.1.5..7.32.5.8.9.3.1.8.3.10.2.8.510.7..16
..
4.32..43.5..107..1.69..16..43.5..4.7.82..78..610..35.4..91..29..82..10
8.5.10.7..106.9.2.4.8.5.1.7.10.3.6.9.2.4.8.5.1.7.10.3.6.9.2.4.8.5.1.7.
10.3.6.9.2.4..84..54..74..34..94.1.4..104.6.4.2..28..12...125...132...
4.312...3101...391...37.92..7.98.7..15...5110...5610..9..8..35.7..104
9..8.2.357..101..892...4.83..5.710.4.8.1.2.3.5.9.2.3.59..2..17.102..41
0..59.10...15.8.7.3.5.8..7310..87...1098.1.10.4.3..47.5..29.8.2.10.2.1
0.7.10.5.1..98.3.9.3.9.7.10.5.1..81.2.3.9.7.10.6..65..68..61..96..76.4
.
6.2.6..36.10.6.5.6.4.2.1.3.9.10.7.5.8.6.8.6.1.3.9.10.7.5.4.2..28..12..
1.3.12..3.7.1.2.6.3.12...351..93..63..72.10..2.10.4.110..4.93...945...
9.61.410.7..3.5.79....2531..82..79..48..10.5.34...15.2.7..91...5.10749
.
6.3.6.5..6.107..4.110..9.42..95..47.9.1.3.1.2.1.5.10...457.9.4.9.2..91
0.3.9.5..78...817..82...1089..4.108..74..75.9.7..107..310.4.6..65..69.
.
86...678...1068..5.68..46.7.6.10..63..16.8.9.8.7.8.10.3.1.6.4.9.2.7.5.
8.5.3.1.6.4.9..92.9..109..59..19..1.49..18.9..31..71..41..4.51..94..29
.
10.6.5.1..51..5.47.5...879...617.4...765.4..78.4..104.9..65.2.5.7..85.
.
104..810..110.3.7.5..9.75.4..75..410.7..109..810..310..3.610.2..29..25
.
9..37..63..103..4.210..52..17.2.3..1.23.10..23.10.2.4.1.5..15.7.1.3.10
.
2.4.2.4.2.5.7..37.8.8.6..86..4.86..53.7.3.2.3..210..86..108.6..78.6.3.
.
86..38..48.7.8.9.8.10.6.3.6.4.6.7.9.8.10.2.3.5.4.1.6.1.9.8.10.2.3.5.4.
4.7.4.7..1.47...4107...4510...1084..310.7..110..1.210.1..910..9.57.9..
5..879..51...106.95..37...143.7...1013...795..104.7..10.13.6.10..53.8.
.
49.1..21.10.7.5.3.7.5.3.9..63.10.6.4..57.2.1.9..38..36.4.3.7.3.1..910.
9.5.6.5.6.3..13.10.1.9.4.9.7.5.7.3.10.1.2.2.4.9.4..54.7.10.1.2.1.2..82
..
32..42..102.1.2.8.8.3.8..84..8..18.2.7.6.9.4.5.1.8...82..68..96.8..56.
.
8.26...862..6.9.6.5.6.8.2.8.2.5.6.5.6..96.8.6.8.6.9.2..5.3.8.6..2..3.8
.6.2..8.6.2..6..6.6.

Here is a histogram showing how many times each frame was used:



6:

7:

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```

***** FRAME-MANAGER TEST COMPLETED SUCCESSFULLY *****

```

===== KPL PROGRAM TERMINATION =====
Done! The next instruction to execute will be:
001078: C0100000      sethi    0x0000,r1  ! 0x00001088 = 4232
(noGoMessage)
=====
=====                                     =====
=====      The BLITZ Machine Emulator      =====
=====                                     =====
===== Copyright 2001-2007, Harry H. Porter III =====
=====                                     =====
=====

```

Enter a command at the prompt. Type 'quit' to exit or 'help' for info about commands.

>

```

Anushrees-MacBook-Air:p4 anushreenaik$ make
kpl Main -unsafe
asm Main.s
lddd Runtime.o Switch.o System.o List.o BitMap.o Kernel.o Main.o -o os
Anushrees-MacBook-Air:p4 anushreenaik$ blitz -g os
Beginning execution...
===== KPL PROGRAM STARTING =====
Initializing Thread Scheduler...
Initializing Frame Manager...

**** THREAD-MANAGER-HOARE TEST ****

123.4.56.78192.10....11..412.313651489.2115...16717...1810...41119.12.20..313586..142....16.9.71018...11.141512..20.3..138....69716.10.185.19..1417...2.20.313
.8..11.151.4....6101918..1417..129.27...85..11..151..16.4.2063..1418912.2..10.8...13.1715..11.1..716420.14182...5.10...8.3.6139.11.12191.7...14....510.416.20.
153817.11.127.....614.5910134.2..1...15..11.19.20.618148..317..7....511615.119.101912...6.....320.177185.1314.8.12....166..3.15.20..112147.13..817....9166.
.1810.3195.411.15.1...2012..1692.14..713..8..5..18.117.10.20.3191614..157....8.4.918.526..12.1331.15.....17.820.10..194914.121316..15....5..17.1127.81963..1
2....1815..417.5191114.13..2..12.18..15.20.7.1048..5.17...2.1912..11815169...735176.....2.1911.1210.14.1473.19.20.16.15..11.9.212..1419..2010..116.5.15.9.2
..143.13.20.10..15.2...19.9.156.13.20..17.1110..8.1..52.123..13..20171619...7..8.15....18133.920...7.812..4...11.181017.6...1413167...19..4.111820....61410...
19.4..1213119...186.14.17.19.16.4...18..13.17.16.19...6..18...17.16.....

**** THREAD-MANAGER-HOARE TEST COMPLETED SUCCESSFULLY ****

===== KPL PROGRAM TERMINATION =====

**** A 'debug' instruction was encountered ****
Done! The next instruction to execute will be:
001078: C0100000      sethi    0x0000,r1      ! 0x00001088 = 4232 (noGoMessage)

Entering machine-level debugger...
=====
=====
===== The BLITZ Machine Emulator =====
=====
===== Copyright 2001-2007, Harry H. Porter III =====
=====
=====

Enter a command at the prompt. Type 'quit' to exit or 'help' for
info about commands.
> █

```