

```
"C:\Program Files\Java\jdk-22\bin\java.exe" "-javaagent:C:\Users\
USER\AppData\Local\JetBrains\IntelliJ IDEA Community Edition 2024
.1.3\lib\idea_rt.jar=50562:C:\Users\USER\AppData\Local\JetBrains\
IntelliJ IDEA Community Edition 2024.1.3\bin" -Dfile.encoding=UTF
-8 -Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-8 -
classpath D:\M.Sc_2nd_Sem\AOS\Assignment4\out\production\
Assignment4 Main
```

### Print Stack Updates

```
New Node(leaf) pushed : name : P7 id: 1
child Popped: name : P7 id: 1 parentid: 2
New Node(internal) pushed : name : P6 id: 2
New Node(internal) pushed : name : P3 id: 3
child Popped: name : P3 id: 3 parentid: 4
child Popped: name : P6 id: 2 parentid: 4
New Node(internal) pushed : name : P2 id: 4
New Node(internal) pushed : name : P5 id: 5
child Popped: name : P5 id: 5 parentid: 6
New Node(internal) pushed : name : P4 id: 6
child Popped: name : P4 id: 6 parentid: 7
child Popped: name : P2 id: 4 parentid: 7
New Node(internal) pushed : name : P1 id: 7
root Popped: name :P1 id: 7 parent Id: 0
```

### System Log::

```
Information Message :: Node P1 with ID 7 have been set to PHOLD
Initially.
Request Message :: Node P7 [ REQUESTING ] with ID 1 is requesting
token from P6
Request Message :: Node P6 [ NONE ] with ID 2 is requesting token
from P2
Request Message :: Node P2 [ NONE ] with ID 4 is requesting token
from P1
Send Message :: Node P1 [ PHOLD ] with ID 7 is sending token to
P2
Information Message :: Node P2 with ID 4 is now parent of P1
Send Message :: Node P2 [ PHOLD ] with ID 4 is sending token to
P6
Information Message :: Node P6 with ID 2 is now parent of P2
Send Message :: Node P6 [ PHOLD ] with ID 2 is sending token to
```

P7

Information Message :: Node P7 with ID 1 is now parent of P6

Information Message :: Node P7 with ID 1 is in critical state

Request Message :: Node P6 [ REQUESTING ] with ID 2 is requesting token from P7

Request Message :: Node P4 [ REQUESTING ] with ID 6 is requesting token from P1

Request Message :: Node P1 [ NONE ] with ID 7 is requesting token from P2

Request Message :: Node P2 [ NONE ] with ID 4 is requesting token from P6

Send Message :: Node P7 [ PHOLD ] with ID 1 is sending token to P6

Information Message :: Node P6 with ID 2 is now parent of P7

Information Message :: Node P6 with ID 2 is in critical state

Send Message :: Node P6 [ PHOLD ] with ID 2 is sending token to P2

Information Message :: Node P2 with ID 4 is now parent of P6

Send Message :: Node P2 [ PHOLD ] with ID 4 is sending token to P1

Information Message :: Node P1 with ID 7 is now parent of P2

Send Message :: Node P1 [ PHOLD ] with ID 7 is sending token to P4

Information Message :: Node P4 with ID 6 is now parent of P1

Information Message :: Node P4 with ID 6 is in critical state

Request Message :: Node P1 [ REQUESTING ] with ID 7 is requesting token from P4

Request Message :: Node P6 [ REQUESTING ] with ID 2 is requesting token from P2

Request Message :: Node P2 [ NONE ] with ID 4 is requesting token from P1

Request Message :: Node P3 [ REQUESTING ] with ID 3 is requesting token from P2

Termination Message :: Node P5 with ID: 5 has been terminated due to an empty request queue.

Send Message :: Node P4 [ PHOLD ] with ID 6 is sending token to P1

Information Message :: Node P1 with ID 7 is now parent of P4

Information Message :: Node P1 with ID 7 is in critical state

Request Message :: Node P4 [ REQUESTING ] with ID 6 is requesting token from P1

Send Message :: Node P1 [ PHOLD ] with ID 7 is sending token to P2  
Information Message :: Node P2 with ID 4 is now parent of P1  
Request Message :: Node P1 [ REQUESTING ] with ID 7 is requesting token back from P2 to send P4  
Send Message :: Node P2 [ PHOLD ] with ID 4 is sending token to P6  
Information Message :: Node P6 with ID 2 is now parent of P2  
Request Message :: Node P2 [ REQUESTING ] with ID 4 is requesting token back from P6 to send P3  
Information Message :: Node P6 with ID 2 is in critical state  
Termination Message :: Node P7 with ID: 1 has been terminated due to an empty request queue.  
Send Message :: Node P6 [ PHOLD ] with ID 2 is sending token to P2  
Information Message :: Node P2 with ID 4 is now parent of P6  
Send Message :: Node P2 [ PHOLD ] with ID 4 is sending token to P3  
Information Message :: Node P3 with ID 3 is now parent of P2  
Request Message :: Node P2 [ REQUESTING ] with ID 4 is requesting token back from P3 to send P1  
Information Message :: Node P3 with ID 3 is in critical state  
Request Message :: Node P6 [ REQUESTING ] with ID 2 is requesting token from P2  
Send Message :: Node P3 [ PHOLD ] with ID 3 is sending token to P2  
Information Message :: Node P2 with ID 4 is now parent of P3  
Send Message :: Node P2 [ PHOLD ] with ID 4 is sending token to P1  
Information Message :: Node P1 with ID 7 is now parent of P2  
Request Message :: Node P2 [ REQUESTING ] with ID 4 is requesting token back from P1 to send P6  
Send Message :: Node P1 [ PHOLD ] with ID 7 is sending token to P4  
Information Message :: Node P4 with ID 6 is now parent of P1  
Request Message :: Node P1 [ REQUESTING ] with ID 7 is requesting token back from P4 to send P2  
Information Message :: Node P4 with ID 6 is in critical state  
Termination Message :: Node P3 with ID: 3 has been terminated due to an empty request queue.  
Send Message :: Node P4 [ PHOLD ] with ID 6 is sending token to

P1

Information Message :: Node P1 with ID 7 is now parent of P4

Send Message :: Node P1 [ PHOLD ] with ID 7 is sending token to P2

Information Message :: Node P2 with ID 4 is now parent of P1

Send Message :: Node P2 [ PHOLD ] with ID 4 is sending token to P6

Information Message :: Node P6 with ID 2 is now parent of P2

Information Message :: Node P6 with ID 2 is in critical state

Request Message :: Node P2 [ REQUESTING ] with ID 4 is requesting token from P6

Send Message :: Node P6 [ PHOLD ] with ID 2 is sending token to P2

Information Message :: Node P2 with ID 4 is now parent of P6

Information Message :: Node P2 with ID 4 is in critical state

Request Message :: Node P4 [ REQUESTING ] with ID 6 is requesting token from P1

Request Message :: Node P1 [ NONE ] with ID 7 is requesting token from P2

Send Message :: Node P2 [ PHOLD ] with ID 4 is sending token to P1

Information Message :: Node P1 with ID 7 is now parent of P2

Send Message :: Node P1 [ PHOLD ] with ID 7 is sending token to P4

Information Message :: Node P4 with ID 6 is now parent of P1

Information Message :: Node P4 with ID 6 is in critical state

Request Message :: Node P1 [ REQUESTING ] with ID 7 is requesting token from P4

Send Message :: Node P4 [ PHOLD ] with ID 6 is sending token to P1

Information Message :: Node P1 with ID 7 is now parent of P4

Information Message :: Node P1 with ID 7 is in critical state

Request Message :: Node P2 [ REQUESTING ] with ID 4 is requesting token from P1

Termination Message :: Node P4 with ID: 6 has been terminated due to an empty request queue.

Send Message :: Node P1 [ PHOLD ] with ID 7 is sending token to P2

Termination Message :: Node P6 with ID: 2 has been terminated due to an empty request queue.

Information Message :: Node P2 with ID 4 is now parent of P1

Information Message :: Node P2 with ID 4 is in critical state  
Request Message :: Node P1 [ REQUESTING ] with ID 7 is requesting token from P2  
Send Message :: Node P2 [ PHOLD ] with ID 4 is sending token to P1  
Information Message :: Node P1 with ID 7 is now parent of P2  
Information Message :: Node P1 with ID 7 is in critical state  
Request Message :: Node P2 [ REQUESTING ] with ID 4 is requesting token from P1  
Send Message :: Node P1 [ PHOLD ] with ID 7 is sending token to P2  
Information Message :: Node P2 with ID 4 is now parent of P1  
Information Message :: Node P2 with ID 4 is in critical state  
Termination Message :: Node P2 with ID: 4 has been terminated due to an empty request queue.  
Termination Message :: Node P1 with ID: 7 has been terminated due to an empty request queue.

All system processes have finished.

Final Inverted tree is :

```
P2
  P6
    P7
      P3
        P1
          P4
            P5
```

Process finished with exit code 0