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Shell.java Report

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The implementation of this shell.java starts by separating the input string by the delimiter ';', since that is what tells the program to execute sequentially. After this, it further separates the line by the delimiter '&', and then executes every string in between the '&' concurrently. As it is doing this, it puts the children's id's into an array, and then passes this array into the helper function findChild, which takes an int array as its argument and returns nothing. findChild takes the id returned by SysLib.join and checks to see if that id is present into the passed array of ids. If so, it passes that particular id into another array called checkIds, and will continue to loop until the checkIds and ids are equal (which means that all the child processes were joined). Once done, it exits. Shell then resets the id array for the next line of execution.

Ways to test this program include passing in the PingPong.java as the argument and making sure it executes either concurrently or sequentially depending on the input (& for concurrently, ; for sequential).

```
[renglish@sig1 prog2]$ javac Shell.java
[renglish@sig1 prog2]$ java Boot
threadOS ver 1.0:
Type ? for help
threadOS: a new thread (thread=Thread[Thread-3,2,main] tid=0 pid=-1)
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l Shell
threadOS: a new thread (thread=Thread[Thread-5,2,main] tid=1 pid=0)
shell[1]%PingPong abc 100 ; PingPong xyz 50 ; PingPong 123 100
threadOS: a new thread (thread=Thread[Thread-7,2,main] tid=2 pid=1)
abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc abc ab
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threadOS: a new thread (thread=Thread[Thread-9,2,main] tid=3 pid=1)
xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xy
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threadOS: a new thread (thread=Thread[Thread-11,2,main] tid=4 pid=1)
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shell[2]%PingPong abc 50 ; PingPong xyz 100 & PingPong 123 100
threadOS: a new thread (thread=Thread[Thread-13,2,main] tid=5 pid=1)
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threadOS: a new thread (thread=Thread[Thread-15,2,main] tid=6 pid=1)
threadOS: a new thread (thread=Thread[Thread-17,2,main] tid=7 pid=1)
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shell[3]%PingPong abc 100 & PingPong xyz 100 ; PingPong 123 50
threadOS: a new thread (thread=Thread[Thread-19,2,main] tid=8 pid=1)
threadOS: a new thread (thread=Thread[Thread-21,2,main] tid=9 pid=1)
abc abc abc abc abc abc abc abc abc abc xyz abc xyz abc xyz abc xyz abc xyz abc xyz abc xyz abc xyz abc xyz abc xyz abc xyz abc xyz abc xyz abc xyz abc xy
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threadOS: a new thread (thread=Thread[Thread-23,2,main] tid=10 pid=1)
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3 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123
123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123 123
shell[4]%PingPong abc 50 & PingPong xyz 50 & PingPong 123 100
threadOS: a new thread (thread=Thread[Thread-25,2,main] tid=11 pid=1)
threadOS: a new thread (thread=Thread[Thread-27,2,main] tid=12 pid=1)
threadOS: a new thread (thread=Thread[Thread-29,2,main] tid=13 pid=1)
abc abc abc abc abc abc abc abc abc abc xyz abc xyz abc xyz abc xyz abc xyz abc xyz abc xyz abc xyz abc xyz abc xyz abc xy
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shell[5]%exit
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