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CptS 370
2/23/2022
Program 2 Report

1.
To Test my Shell.java first you need to compile it using the command: javac Shell.java

Then you need to run the Boot using the command: java Boot

Next you need to run the shell class using ThreadOS with the command: l Shell

Now you are using the shell class and can use commands like: PingPong abc 10; PingPong what 20 & PingPong CptS 30 to test the shell program.

2.
first keep track of the line number

Next, I made a while loop to keep listening to user input on each line and print out what line you are on using SysLib.cout

Next, I use a string builder and SysLib.cin to keep track of user input

I take the user input in a string then split the string by the ';' character to keep track of what commands should be run simultaneously.

Before running the commands, I also check if the user input was the 'exit' command and if so it should break out of the initial while loop.

Otherwise, I use a for loop to run through strings of commands that were connected with & to run them simultaneously with the runner2() method.

The runner2() method declares an int to hold a thread id as well as a list on integers to keep track of active threads.

The runner2() method takes in a string of arguments, then splits the string by the '&' character.

Then it uses the split string and assigns it to a string array which holds each command and its args.

Each string in the array is then split into another string array using SysLib.stringtoArgs()

If that arguments length is greater than zero I grab its thread id from the SysLib.exec() method and store it in the threadlist, this also executes the given command.

Once the for loop exits runner2 then waits for all threads to terminate using the join() method and removes each thread as it terminates.

When all threads are removed from the list you break out of the while loop and return to the for loop in the run() method.

3.

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[sskinner@sig2 prog2]$ java Boot
threadOS ver 1.0:
Type ? for help
threadOS: a new thread (thread=Thread[Thread-3,2,main] tid=0 pid=-1)
-->l Shell
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
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abc abc abc abc abc abc abc abc abc abc
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 xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz
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xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz
threadOS: a new thread (thread=Thread[Thread-11,2,main] tid=4 pid=1)
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
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Shell [2]
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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)
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
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abc abc abc abc abc abc abc abc abc abc
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)
xyz xyz xyz xyz xyz xyz xyz xyz xyz xyz 123 xyz 123 xyz 123 xyz 123 xyz 123 xyz 123 xyz 123 xyz 123 xyz 123 xyz 123 xyz
123 xyz 123 xyz 123 xyz 123 xyz 123 xyz 123 xyz 123 xyz 123 xyz 123 xyz 123 xyz 123 xyz 123 xyz 123 xyz 123 xyz 123 xyz
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123 123 123 123 123 123 123 123 123 123
Shell [3]
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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
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threadOS: a new thread (thread=Thread[Thread-23,2,main] tid=10 pid=1)
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Shell [4]
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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 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 xyz abc xyz abc xyz abc xyz abc xyz abc xyz abc
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Shell [5]
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