# Process States

1. Out of the following, select the potential process states.

* **Running**
* Child
* **Blocked**
* Parent
* **Ready**
* Yield
* Kernel

Answer: Running, blocked, ready

# CPU Utilization

1. Suppose you’re using your computer to take this quiz. While you are taking your quiz, there are 3 processes total which are active 70% of the time in the CPU and spend the rest of the time waiting for the I/O.

What is the overall CPU utilization?

* 99.936
* 99.759
* 99.657
* **99.973**

Answer: 1-0.33 = 99.973

## Process Anatomy

1. Which of the following are the responsibilities of the Process Control Block.

* **1) The process control block allows the kernel to monitor what processes are active**
* 2) The process control block can initiate an interrupt to allow a process to start running.
* **3) The process control block holds onto metadata needed to represent a process in the process table**
* 1) and 2) are correct
* **1) and 3) are correct**
* Only 1) is correct
* Only 2) is correct
* Only 3) is correct
* 1), 2), and 3) are correct

Answer: 1) and 3) are correct

## Xv6 Context Switching

1. Between what two systems does xv6 switch between during a context switch?

* Thread Space and CPU Space
* Trap Frame and Kernel Context
* **User Space and Kernel Space**
* Process Control Block and Scheduler

Answer: User Space and Kernel Stack

## **Scheduling**

1. **True** or False: xv6’s scheduler is fair because it gives every process an equal chance to run

Answer: True

## Thread Switching

1. When we perform a context switch in the kernel scheduler, we utilize the following code.

A)

swtch:

movl 4(%esp), %eax

movl 8(%esp), %edx

B)

pushl %ebp

pushl %ebx

pushl %esi

pushl %edi

C)

movl %esp, (%eax)

movl %edx, %esp

**D)**

popl %edi

popl %esi

popl %ebx

popl %ebp

ret

Which part of the code above allows us to restore our original program counter from the new context?

* A
* B
* C
* **D**

Answer: D, more specifically, the ret command restores our program counter.