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1. Problem Set

1. 3.2: Describe the actions taken by a kernel to context-switch between processes.

The operating system save the state of current running process and load the state of the process scheduled to be run next.

2. 3.11.a: What are the benefits and the disadvantages of each of the following? Consider both the system level and the programmer level.
a. Synchronous and asynchronous communication

Synchronous communication allows a rendezvous between blocking sender and blocking receiver. However, this may not be required and thus the message will be delivered asynchronously.

2. Nachos Exercise

1. Explain why dereferencing the first parameter in ExceptionHandler() does not result in the string whose address is passed by the statement
Write("Hello world\n", 12, 1); in {test}/hw2.c:main() .

The value stored in register 4 is the index of main memory where the string is stored, thus we can't directly assign the value as address to pointer.

2. Explain the correct way for ExceptionHandler() to obtain the string, by giving both verbal description and the C code to do it.

The right way to get address of string is go to the coordinate index and use '&' operator to get the actual address.

C code: char *msg = &(kernel->machine->mainmemory[val]);