211 — Operating Systems – Tutorial
Introduction

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1. The issue of *resource allocation* shows up in different forms in different types of operating systems. List the most important resources that must be managed by an operating system in the following settings:
   (a) Supercomputer
   (b) Workstations connected to servers via a network
   (c) Smartphone
2. What is the *kernel* of an operating system?
3. Why is the separation into a user mode and a kernel mode considered good operating system design?

   Give an example in which the execution of a user processes switches from user mode to kernel mode, and then back to user mode again.
4. Which of the following instructions should only be allowed in kernel mode, and why?
   (a) Disable all interrupts
   (b) Read the time of day clock
   (c) Change the memory map
   (d) Set the time of day
5. A *portable* operating system is one that can be ported from one system architecture to another with little modification. Explain why it is infeasible to build an operating system that is portable without any modification.

   Describe two general parts that you can find in an operating system that has been designed to be highly portable.