Q1. Difference between kernel and OS

Operating System - OS is actually a whole stack of software which includes kernel also. Hence responsibilities of an OS include but not limited to manage the hardware of your machine, provide GUI for you to interact with the hardware, provide a framework which can be leveraged to write application softwares which can run over the OS.

1. Provides interface between user and hardware.
2. Protection and security.
3. It is the first program to load when computer boots up.

Examples of OS are:

Windows (XP, 7, 8, etc. other variants)

Ubuntu, Kubuntu

Mac OSX

Solaris, etc.

Kernel - This is the lowest level of software stack of OS (I repeat, kernel is a part of OS) which does all the dirty work of talking to the hardware of your machine. Kernel exposes the functionality of the hardware of the machine in the form of system calls. These system calls are further used by the software layers above to design API, etc. I will give example in existing kernel in reference to the examples I gave for OS. The kernel is the main part of the operating system and is responsible for translating the command into something that can be understood by the computer. The main functions of the kernel are:

1. memory management
2. network management
3. device driver
4. file management
5. process management

Examples -

Windows NT is the kernel used in Windows

Linux is the kernel used in Ubuntu and Kubuntu

XNU (a fork of Unix) is the kernel of Mac OSX

Solaris-kernel (again a fork of Unix) is the kernel of Solaris

Ques2 - Write one-liner on Type of OS with examples

- Batch OS

  Batch os rather than interacting directly with computer it uses an operator to sort job with similar needs.

  Eg. Payroll System , Bank Invoice System

- Distributed OS

  Multiple central processors are used by Distributed systems to serve multiple real-time applications and multiple users.

  Eg. AIX operating system for IBM RS/6000 computers.

- Multitasking OS

  Multitasking, in an operating system, is allowing a user to perform more than one computer task at a time.

  Eg. Microsoft Windows 2000, IBM's OS/390, and Linux

- Network OS

  Network Operating System is a computer operating system that facilitates to connect and communicate various autonomous computer over the network.

  Eg. Microsoft Windows Server 2003, Microsoft Windows Server 2008, UNIX, Linux.

- Real-OS

  Real-time os is an operating system intended to serve real time application that process data as it comes in without buffer delay.

Eg. PSOS, VRTX, RT Linux

- Mobile OS

  A mobile operating system (OS) is the software that allows mobile devices like phones, tablets and other smart devices like wearable technology to run applications and other programs.

  EX. Andorid, ios, Symbian