**OS PROJECT PROPOSAL**

**Project Title: Lightweight Virtual Machine**

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Introduction

VIRTUALIZATION:-

In computing, virtualization is the act of creating a virtual version of something at the same abstraction level, including virtual computer hardware platforms, storage devices, and computer network resources.

Virtualization uses software to create an abstraction layer over computer hardware that allows the hardware elements of a single computer's resources to be divided into multiple virtual computers, known as virtual machines (VMs). Each virtual OS runs its own operating system (OS) and behaves like an independent OS; even though it is running on just a portion of the actual underlying computer hardware (performance is not same as it is not on the OS itself).

It follows that virtualization enables more efficient utilization of physical computer hardware (as divides same resources available to multiple vms loaded) and allows a greater return on a hardware.

## VIRTUAL MACHINE:-

## As the name suggests, a virtual machine (VM) is a virtual environment that [simulates a physical machine](https://www.redhat.com/en/topics/virtualization/what-is-a-virtual-machine). VMs have their own central processing unit (CPU), memory, network interface, and storage, but they are independent of physical hardware. Multiple VMs can coexist in a single physical machine without collision, as long as the hardware resources are efficiently distributed. VMs are implemented using [software emulation](https://en.wikipedia.org/wiki/Virtual_machine#Full_virtualization) and hardware virtualization.

LIGHTWEIGHT VIRTUAL MACHINE (VM):-

Unlike traditional virtual machines, a lightweight virtual machine emulates a part of a computer, such as privileged instructions (e.g., user mode to kernel mode) and serial ports, and while most of the instructions are executed by the real CPU (host) itself. The implementation of the lightweight virtual machine is simplified by cooperating with the host OS.

PURPOSE OF LIGHTWEIGHT VM:-

* We do not have port existing native OSes to host OSes. We can generate a user-level OS based on a native OS without detailed knowledge about user-level OS internals.
* As a full PC emulator, we get much better performance.
* A limitation of our method is that we need source code of the user-level OS.

BENEFITS OF USING A VIRTUAL MACHINE:-

* accessibility
* sharing
* backup
* recovery of data becomes easy

Hence, offering flexibility and mobility in business operations.