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* **User Interface:** “Almost all operating systems have a user interface (UI).This interface can take several forms”[1]. An OS takes its commands from the user through command prompt or GUI. Usually, GUI also invokes some sort of command to run a program that makes it function. Likewise, a CEO in a tech company, let’s say Sundar Pichai the CEO of Google reacts under the decision of board members, demand in the market, new technology, competitors, budget, etc. Like every OS does its own specific task where user as an outside stimulus acts on OS. The CEO is also acted upon by Market, budget, demand and supply. The only difference between CEO and OS is: CEO is a future OS, it knows which command to activate when a certain situation comes up. But still, the CEO will react on the market as OS reacts on command.

* **Program Execution:** In our book, it is clearly stated that “The system must be able to load a program into memory and to run that program. The program must be able to end its execution, either normally or abnormally (indicating error).” [1]

The same goes for a CEO. A CEO in a company runs different projects which will be led by different directors. Those projects can be old projects which do maintenance or it can be totally new projects which are targeted for a different purpose than what the company has been doing so far. The projects are like just the programs in OS. OS loads the program in memory as the Company uses its budget to run its project. OS can load new as well as the new application as the projects by the company.

* **I/O Operations:** We know that our system takes different Input to make our program run. It takes all the data needed from memory which will be facilitated by OS. Same goes with the Company, A CEO decides how much to spend, how many new hires to make so the company can be expanded while making maximum profit possible. A company takes resources like employees and people’s talent to give finish products to its customers.
* **File-System Manipulation:** Our system needs to read and write to files to perform some operations. The system can create and delete files and directories according to the command given to them. We can also set permission and locks in different files for avoiding unauthorized access.A CEO of a company has access to all the data and information of the company. He can dissolve some department, or merge two or more department to make one. He can also design a totally different department with the new director. Like the lock system in our system. A CEO can set the privilege and limitation of directors in different departments. He can define how much information can department head can have. It is just like OS deciding limits of programs.
* **Communications:** In system communication is the process when one process needs to communicate with another process. The processes can be on the same computer or on a totally different computer but in the same network.  
  In this scenario if two departments let’s say Google’s chrome and Google Cellular, two departments, are running inside the same network then they can be seen like two processes in one computer. But let's say Google’s Chrome and SuperAI which are both acquired by Alphabet and runs in different locations but share some resources then they can be seen as processes in different devices sharing resources.
* **Error Detection:** Operating System detects error all the time. It checks if the CPU and memory are functioning as they should. It checks all the I/O devices attached to it. It checks all the networks associated with it. OS needs to make sure all the peripherals are working so they can use it when needed. Sometimes it may return an error message to the user and sometimes it may just halt the whole system.

The same goes for the CEO of the company. It makes sure that all the departments are functioning properly. It checks that departments are not consuming too many resources, or if some departments need more funding than others. CEO also needs to make sure if all of its partners are not betraying them. CEO makes sure their partners are fully capable of fulfilling their demands. Just like illegal memory accessing in computers sometimes rare cases like wars can happen in that case the CEO can decide to close the whole company for some period.

System Calls

System calls happen in response to the actions in an interface provided by a system. These are like a subroutine, and many of these will be executed to complete a task. When we try to delete a file that is currently open then the system gives us the error message. There are lots of system calls hidden inside it. First, it needs to take the user input, read the input, locate the file, request for deletion, and maybe that system call will throw an error which will call different error system call. Then that error system call will take that message and send it to the output system call, which will finally display to us the error message.

The same goes for the CEO. If the company is going under loss and it decides to kick some of its employees. Then it calls its all departments to get rid of some people. Each department will analyze it sub-departments and all its remote office to find if they need to close some remote office or kick some people so they can save money. They will start kicking their most useless employee and keep updating the CEO at the same time. When the CEO is satisfied, or the order is met then the process stops. Like in the OS, there are many small steps in the company that needs to be performed by other members to meet the plan of the CEO.

3. Structure

According to our book, “In Microkernel Architecture the client program and service never interact directly. Rather they communicate indirectly with the help of microkernels.” The smaller microkernels behave as a semi-independent OS. It makes an extension of OS easier.

The same goes for the CEO of Google. The big departments and other sister companies like SuperAi, Android, Youtube works as a semi-independent company. Just like microkernel additions as well as deletion of these departments are easier and it won’t affect the task done by CEO will impact the minimum in his efficiency. In microkernels, ”In one service fails it won’t affect in the performance of other services.” Even in the case of Google, if Youtube goes down and its market is taken by another service than Chrome will still be fully functioning.

OS => CEO (Sundar Pichai)

System => Company/ (Google and SuperAI)

Command => Market

Data => Employee

Electricity => Money

Output => Product

Process => Departments

Network => Alphabet

Illegal Memory Access => Wars

Microservice => Chrome, Youtube, Android

Resources:

[1] Silberschatz, Galvin, and Gagne, *Operating-System Concepts - Essentials, 2ndEdition*. Wiley, 2014.