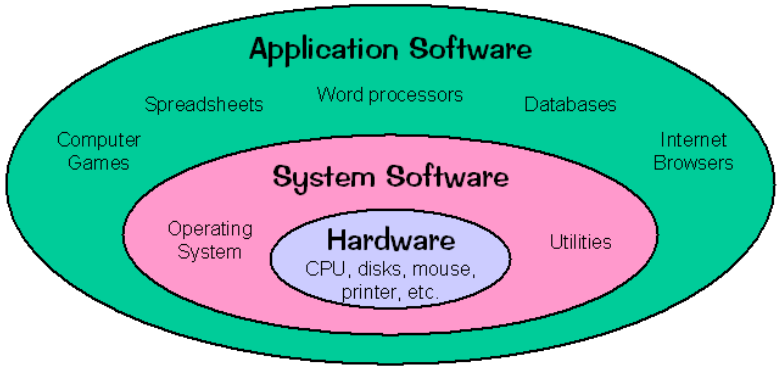
What is System programming?

- System programming **: is the use of system tools for program development.**
- In addition to programming information, it requires knowledge of computer architecture and operating system.
- While services are provided directly to the user through application programs, services are provided to application programs through system programs.
- In system programming, programs that interact with operating system services are written.

System programming

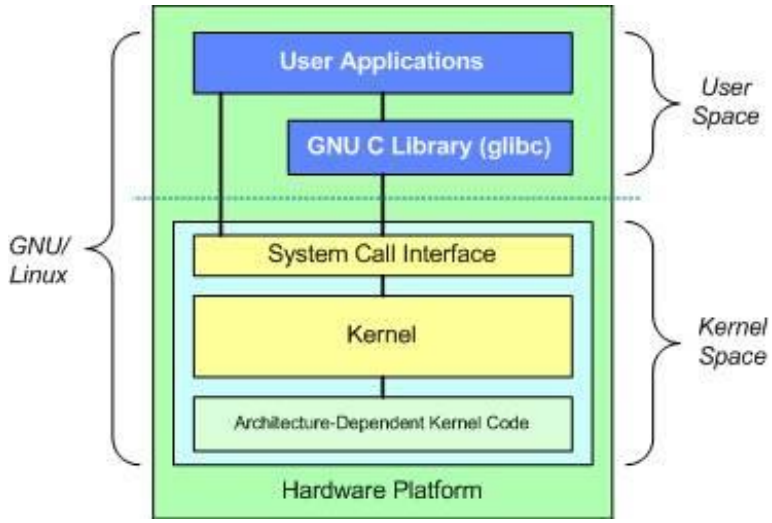
- Computer; It can be divided into three main parts: hardware, system software and application software.
- It is used to run hardware and system software application programs.
- System software creates an abstraction layer between hardware and application software.



kaynak: https://www.quora.com/What-is-systems-programming

System programming

- With the abstraction layer created by system libraries, we can use a function without knowing the details of the hardware.
- For example, the application can be used on that system as long as a system includes similar libraries, such as the GNU C library seen in the Linux architecture provided alongside.
- The use of system tools enables the creation of standards so that the developed programs are easily transferred to other computers.



Kaynak: http://www.ibm.com/developerworks/library/l-linux-kernel/

Why C in system programming

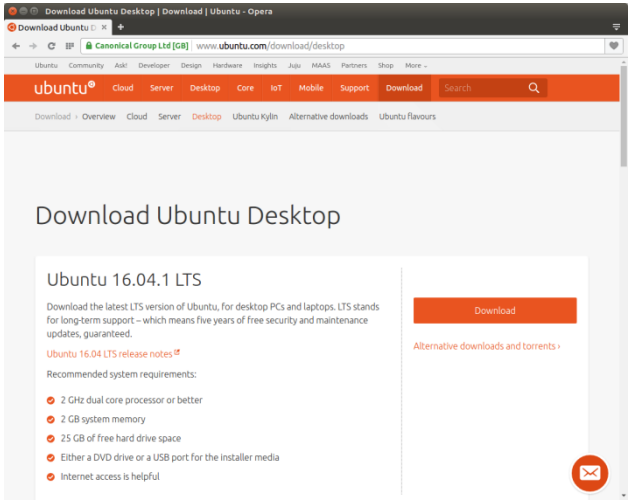
- Reasons for using C in system programming:
  C program; It is the basis of the modern computer by using in applications such as operating systems, device drivers, network servers.
- C programming has the least abstraction. Therefore, it is closer to the hardware.
- Many C statements can be converted directly to machine code.
- In C programming, memory can be accessed via pointers, thus enabling access to parts of the system.

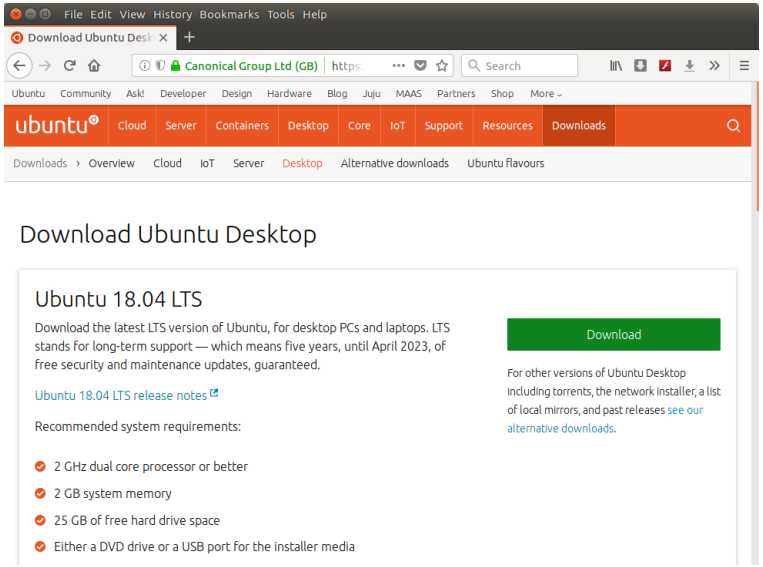
Why Linux in system programming?

- Because it is open source, Linux based operating system is preferred in system programming lesson.
- Details about the operation of the Linux-based operating system can be examined. Parts can be added or replaced.
- It is not a closed system because it is not commercial.

Operating system

- You can use the Linux-based Ubuntu operating system to perform the course-related applications.





https://www.ubuntu.com/download/desktop

Main topics

The main topics of the course can be listed as follows:

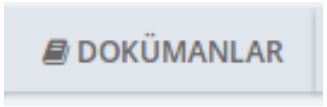
- Basic information about C programming language
- C Pointers, malloc, strings, etc…
- Files and directory files, Signals
- Links (links), Shell forwarding, Shell Script
- Reading / writing from file (File I / O), system calls and buffer usage
- System calls and in / out
- Symbolic language (Assembly) (local variables, functions, branching)
- Processes (processes) and related system calls (fork, exec, dup, pipe)
- Interprocess communication, signals

Evaluation

Çalışma Tipi	Oran
1. Ara Sınav	%75
1. Proje / Tasarım	%10
1. Performans Görevi (Uygulama)	%10
2. Performans Görevi (Uygulama)	%5
1. Final	%50

References

- Sabis course documents



- http://web.eecs.utk.edu/~plank/plank/classes/cs360/lecture_notes.html
- http://web.eecs.utk.edu/~huangj/cs360/lecture_notes.html