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1. Unix is important, its responsible for computers as we know them today. Many of today's devices were inspired by Unix, from our mobile phones to the firmware on a router to personal computers, even the ps5 were very much possible due to Unix. Unix is the backbone of all modern-day operating system. Operating system is the middle man between the physical hardware you can touch and the digital software that you use.

Created in 1970 by Ken Thompson and his team, it started with the goal of simplifying the complications of the Multics operating systems but took a huge turn for better with the introduction of version 4 because of the invention of the C programming language by one of the inventors of Unix named Dennis Richie. Unix distinguished itself from its predecessors as the

first [portable](https://en.wikipedia.org/wiki/Software_portability) operating system, almost the entire operating system is written in the [C programming language](https://en.wikipedia.org/wiki/C_(programming_language)), which allows Unix to operate on numerous

platforms. Operating systema that came about this technology are BSD, Minix, SunOS, Solaris, NEXTSTEP OS which became the popular Mac OS, Linux. The creation of the Unix inspired the creation of the windows OS but note, windows did not branch off of the Unix OS.

Linux is not the same as Unix but its "Unix-Like", although it is not a direct descendant of Unix, it embodies the same theme as Unix. Linux is an open-source operating system, created in 1991 by Linus Torvalds whose goal was to create a free version of the Minix OS which is based on Unix. Linux became a world-wide sensation that

that found its application in everyday use like in the web-servers, embedded apps like smart-TV, mobile devices, personal computers etc.

Over the years, Linux has grown to birth many distros that has been used for more specific purposes, like the Red hat for servers, Ubuntu for personal computers, Arch, Fedora, Debian, OpenSUSE, CentOS just to name a few. At the core we have the kernel, which is like a seed from which the rest of the operating system grows. The kernel is divided

into smaller subsystems like the process scheduler, device drivers. They are exposed with the system call interface which itself is wrapped with the C standard library called GNU meaning(GNU is Not Unix) which provides API that users can interact with.

2. Function requirement is a description of the service that the software must offer. It describes a software system or its components. In software programming, a functional requirement defines a function of a system or its component, where a function is described as a specification of behavior

between inputs and outputs. Functional requirements may involve calculations, technical details, data manipulation and processing, and other specific functionality that defines what a system is supposed to accomplish. Functional in software engineering is also known as functional specification. Functional requirement helps you to capture the intended behavior of the system.

Functional requirements are supported by non-functional requirements also known as "quality requirements", which impose constraints on the design or implementation

such as performance requirements, security, or reliability. Generally, functional requirements are expressed in the form "System must do requirement".

Benefits of Functional Requirement

Helps you to check whether the application is providing all the functionalities that were mentioned in the functional requirement of that application

A functional requirement document helps you to define the functionality of a system or one of its subsystems.

Functional requirements along with requirement analysis help identify missing requirements. They help clearly define the expected system service and behavior.

Errors caught in the Functional requirement gathering stage are the cheapest to fix.

Types of Functional Requirements

Here are the most common functional requirement types:

Transaction Handling

Business Rules

Certification Requirements

Reporting Requirements

Administrative functions

Authorization levels

Example of Functional Requirements:

The software automatically validates customers against the ABC Contact Management System

The Sales system should allow users to record customers sales

The background color for all windows in the application will be blue and have a hexadecimal RGB color value of 0x0000FF.

Only Managerial level employees have the right to view revenue data.

The software system should be integrated with banking API

3. Backbone of modern technologies: Unix is the backbone of Internet services and all the various other services such as chat and Netflix. Red Hat, which is a popular version of Linux, is an instance of Unix with a command line and GUI available for its disposal. UNIX or Linux command prompt tools are much superior to Windows counterpart in terms of flexibility, speed, and versatility, etc.

Licensing: Unix was created as an open-source operating system using the C and Assembly programming languages. Since its creation as an open-source project, Unix and its numerous Linux editions have become the most widely used operating system in the world. While the source code for Unix is open to everyone, the source code for the Windows Operating System is not available to the public since it is a private software owned by Microsoft.

Processing: The Unix operating system allows for multiprocessing, which means that multiple processes can run at the same time. Every process in multiprocessing has

its own address space, and CPUs can be added to increase computing capability.

Reliability: Unix is well-known for being a relatively stable operating system. Although Windows’ stability has improved greatly in recent years, most Unix systems remain far superior in this regard.

Regular Expression: Unix popularized regular expressions syntax that later became quite widespread. The uses of the Unix programming interface are now the basis for designing an operating system interface standard.

4. Unix is referred to as the scientist OS because it was the breakthrough in innovation in the yet advanced technology world.

5. C is a “pseudo high level programming language”. It is pseudo high level procedural, imperative programming language because it has the attributes of both the high level as well as low level language. It is not as tightly coupled to the processor as assembly language, it also allows management of memory.

6. A C program basically consists of the following parts -

Documentation: This section consists of the description of the program, the name of the program, and the creation date and time of the program. It is specified at the start of the program in the form of comments. Documentation can be represented as:

// description, name of the program, programmer name, date, time etc.

Preprocessor Commands: All the header files of the program will be declared in the preprocessor section of the program. Header files help us to access other’s improved code into our code. A copy of these multiple files is inserted into our program before the process of compilation. e.g.

#include<stdio.h>

#include<math.h>

Functions and Variables:

Main() Function

Every C program must have a main function. The main() function of the program is written in this section. Operations like declaration and execution are performed

inside the curly braces of the main program. The return type of the main() function can be int as well as void too. void() main tells the compiler that the program

will not return any value. The int main() tells the compiler that the program will return an integer value. e.g.

int main()

void main()

A variable is nothing but a name given to a storage area that our programs can manipulate.

Sub Programs: User-defined functions are called in this section of the program. The control of the program is shifted to the called function whenever they are called from the main or outside the main() function. These are specified as per the requirements of the programmer.

Comments: The line which contains /\*...\*/ will be ignored by the compiler and it has been put to add additional comments in the program. So, such lines are called comments in the program.

7. Open a text editor and write your code.

Save the file as filename.c

Now, the file has been saved as a C program file.

Open a command prompt and go to the directory where you have saved the file.

Type gcc filename.c and press enter to compile your code.

If there are no errors in your code, the command prompt will take you to the next line and would generate a .out executable file.

Now, type a .out to execute your program.

You will see the output "Hello World" printed on the screen.

$ gcc filename.c

$ ./a.out

Hello, World!

Make sure the gcc compiler is in your path and that you are running it in the directory containing the source file filename.c.