1. Write briefly on Unix Operating system especially linux flavour.

Before Unix, there were undoubtedly computers and operating systems, but they were frequently hardware-dependent and written in languages like assembler, which is essentially a human-unreadable language that communicates with the hardware. Despite being extremely quick, these systems weren't portable.

At AT & T, two men named Ken Thompson and Dennis Ritchie created the Unix operating system in 1969. C programs have the advantage of being portable because they use a compiler to translate the C language into assemble on any type of hardware. This was its main strength. The University of California at Berkeley was one of the institutions to adopt and start creating their own variant of Unix,BSD UNIX is the name of its Unix variant.

Since Unix is a multi-user operating system, numerous users can log in simultaneously and run programs that compete for CPU and memory. Additionally, it is renowned for its improved system stability due to memory protection.

LINUX

Linus Torvalds, the program's creator, published Linux at the beginning of the 1990s. It was made available to the open source community, unlike Unix or Windows, which allowed it to be widely adopted.

Linux and Unix are comparable in that both are multi-user operating systems (a).
b) Both give system administrators and IT professionals access to advanced scripting languages and a command-line tool for management and programming.
They differ in that: a) Linux is an example of free and open source software development, whereas Unix is a widely used operating system in huge businesses, universities, and corporations.
b). Examples of Unix are sun, DSX, etc., whereas examples of Linus are Ubuntu, Red Hat, etc.

There are numerous Linux distributions available today, each with their own take on the fundamental Linux concept.

Ubuntu: The most well-known Linux distribution is Ubuntu, which receives more than 2,200 hits a day on the Distro watch website alone. It stands out for being simple to use and supporting the most recent technology.
Fedora: Red Hat's free version is called Fedora. It has great security features.
Linux Mint: Launched in 2006, Linux Mint is an Ubuntu-based distribution.

2. Write short note on software functional requirements.

Software Functional Requirements: These are the features that the system must provide that are considered essential by the end user. As a requirement of the contract, all of these functionalities must be built into the system. These are shown or described as the input to be provided to the system, the operation carried out, and the intended outcome. In contrast to non-functional needs, they are essentially the user-stated criteria that are visible in the finished product.

Different types of software functional requirements includes Authentication functions, authorization levels, algorithms, database, backup and recovery etc.

Functional requirements frequently describe how a system will act in specific situations. Additionally, it describes how the system responds to certain situations.

For consumers to perform their jobs, product features or functions must be developed by developers. Making them clear is crucial for both the development team and the stakeholders.

The system must provide the following features and services. For illustration:

– The system sends a permission request once the user enters personal data.

– A user can use a search tool to browse through several invoices if they wish to credit an issued invoice.

-- After creating a new user account, the system emails a confirmation.

3. Why is Unix preferred at some point?

A] When compared to operating systems like Windows, Unix is more stable and does not crash, hence it requires less administration and maintenance.

B] Compared to operating systems like Windows, Unix also has more security and authorization features.

C] The system and the internet both provide comprehensive documentation that is easily accessible, searchable, and available.

D] It can also manage simple tasks.

4. Why is Unix being referred to as Scientist OS?

The preferred operating system for scientific workstations is now Unix. For the reasons listed below, Unix is sometimes referred to as the "scientist operating system":

I] There are numerous and varied text and terminal-based editors, compilers, and tools available in the typical UNIX-like Terminal.

II] Because Unix is a multi-user, multi-tasking operating system, scientists can execute several tasks at once.

III] Unix is a platform for creating software.

5. What type of programming language is C?

Dennis M. Ritchie created the general-purpose and structured programming language C. It includes statements, functions, and commands that are organized systematically to finish a computing task or program. Since it bridges the gap between a machine level and a high level language, it is also known as an intermediate level language.

6. Structure of C programming language.

Several sections can be created within a C program:
A]. preprocessor: This section comprises header files that contain various library functions, such as "include."

B]. Definition: This preprocessor contains constants, which are various constants that have been declared using the define keyword.

C]. Declaring functions, global variables, static global variables, extern global variables, and functions allows for access to the defined variables and functions throughout the entire program.

[D]. Main() Function: The main() function is always necessary to add in order to prevent mistakes from occurring during program execution.

E]. Documentation: This section contains a description of the program and details the actions that each function and variable take.
This is consistently written as remarks.

F]. Local Declarations: These are variables that have been declared within a specific function or block.

G]. User Defined Function: This type of function was developed in response to a user's request, such as FindBiggerNum(), SolveQuadratic(), etc.

H]. Output Function: A class of functions use this control parameter to display a specific statement or result, such as printf ()

I]. Input Function: This function records user input from the keyboard and stores the outcome in the specified arguments, such as scanf() and fgets ()

J]. Return Value: The return statement sends the execution's flow back to the function that called it. When the statement is carried out, the program's flow immediately halts and reverses.

Structure of C program illustration

```
#include <stdio.h>  // Preprocessor
#define VALUE 14 // Definition
double grade;  // Global Declaration
double displayGrade (int cgpa); // Global Declaration

int main () // Main() Function
{
    char name[] = "Tosin"; // Local Declaration
    printf("Your CGPA is:%f\n",displayGrade(grade));
    return 0; //return value
}
// Create a function to displaygrade //Documentation
void displayGrade(int cgpa) //User Defined Function
{
   printf ("Enter your CGPA:"); //Output Function
   scanf("%lf",&grade); // Input Function

}
```

7. How to create a C code file

To change the current working directory to the root of your desktop, type cd Desktop in the Linux terminal. To create a directory, type mkdir MyProject after that. Then type cd MyProject to access the MyProject directory. Next, type nano hello.c to develop a straightforward C program that outputs "Hello World."

Next, enter the lines that follow in the terminal:

```
#include<stdio.h>
int main()
{
 printf("Hello World");
 return 0;
}
```

To save the file, press Ctrl+X and the simply type Y. The C program will then be compiled by typing gcc hello.c after pressing the Enter key, and it will then be run by typing./a.out.