

## PYTHON PLUS

**Q:** What is function in Python?

**A:** A function is a block of code which is executed only when it is called. To define a Python function, the `def` keyword is used.

**Q:** Explain Python functions.

**A:** A function is a section of the program or a block of code that is written once and can be executed whenever required in the program. A function is a block of self-contained statements which has a valid name, parameters list, and body. Functions make programming more functional and modular to perform modular tasks. Python provides several built-in functions to complete tasks and also allows a user to create new functions as well. There are two types of functions: Built-In Functions: `copy()`, `len()`, `count()` are the some built-in functions. User-defined Functions: Functions which are defined by a user known as user-defined functions.

**Q:** How do we write a function in Python?

**A:** We can create a Python function in the following manner.

Step-1: to begin the function, start writing with the keyword `def` and then mention the function name.

Step-2: We can now pass the arguments and enclose them using the parentheses. A colon, in the end, marks the end of the function header.

Step-3: After pressing an enter, we can add the desired Python statements for execution.

## SQL

Q: What is a Database?

A: A database is an organized collection of data, generally stored and accessed electronically from a computer system. In simple terms, a database is a collection of data stored in a computer system. When you order a product on a commercial website, your order is stored in a database. You withdrew money from your bank account. Your bank stores this transaction in the database. Social media platforms such as Facebook, Instagram, Twitter use databases to store data like members, their friends, member activities, messages, advertisements, etc.

Q: What is a table, column and row?

A: A table is an organized collection of data stored in the form of columns and rows. Columns can be categorized as vertical and rows as horizontal. The columns in a table are called fields while the rows can be referred to as records.

Q: What is SQL?

A: SQL stands for Structured Query Language and used to communicate with a database. With SQL, you can access or manipulate data stored in the database.

Q: What are some common clauses used with SELECT query in SQL?

A: WHERE clause, ORDER BY clause, GROUP BY clause and HAVING clause

Q: What is an aggregate function?

A: An aggregate function performs operations on a collection of values to return a single scalar value. Aggregate functions are often used with the GROUP BY and HAVING clauses of the SELECT statement.

## GIT & GITHUB QUESTIONS

### What is Git?

Git is a free and open source, distributed version-control system for tracking changes in source code during software development.

### What is the major focus of a Version Control System?

A major focus of version control system (also known as revision control or source control) is to manage the changes to the files, programs, logs, and other information related to code development, code deployment, and code operation.

### What is a Repository?

A repository is a directory or storage space where your projects can live. You can keep code files, text files, image files, etc. inside a repository.

### What are the Git states?

- Modified,
- Staged,
- Committed.

### How do you create an empty local repo?

I execute the command

```
$ git init
```

in the file that I want to create the repo.

### How do you add your files to staging area from the working area?

With the command

```
$ git add .
```

Q: What is the difference between Git and GitHub?

A: Git is a version control system that lets you manage and keep track of your source code history locally. GitHub is a cloud-based hosting service that lets you manage Git repositories.

Q: What is GitHub?

A: GitHub is a Git repository hosting (Source Code Hosting) service , but it adds many of its own features. It is a web-based platform used for version control and it provides a Web-based graphical interface. It also provides access control and several collaboration features, such as a wikis and basic task management tools for every project.

Like GitHub, there are other source code hosting platforms but GitHub is the most popular one.

### What is Git?



Programming language



Text editor



Version control system



Website for programmers

### What is a repository?



Version control system



Version control system hosting site



Directory or storage space where your projects can live



Git command creating a project

### Which is not a Git command?



git add



git forget



git status

☐ git commit

**Which command initiates a new local repository?**

☐ git start

☐ git commence

☐ git init

☐ git status

**How many states does Git have?**

☐ 2

☐ 3

☐ 4

☐ 5

**Choose the correct Git states.**

☐ Registered

☒ Modified

☐ Suspended

☒ Staged

☒ Committed

☐ Cleared

**Choose the source code hosting facility/facilities. Select one or more:**

☒ GitLab

☐ GitBucket

☒ GitHub

☒ Bitbucket

**What is GitHub? Select one:**

☒ Source Code Hosting Service

☐ Git Stage

☐ Git Command

☐ Same as Git

**Which command adds local git repository to GitHub? Select one:**

☐ git local add remote

 `git remote add origin`

 `git add local to remote`

 `git local add remote`

## LINUX QUESTIONS

Q: What is Linux?

A: Linux is an operating system based on UNIX and was first introduced by Linus Torvalds. It is based on the Linux Kernel and can run on different hardware platforms manufactured by Intel, MIPS, HP, IBM, SPARC, and Motorola. Another popular element in Linux is its mascot, a penguin figure named Tux.

Q: What is the difference between UNIX and LINUX?

A: Unix originally began as a propriety operating system from Bell Laboratories, which later on spawned into different commercial versions. On the other hand, Linux is free, open source and intended as a non-propriety operating system for the masses.

Q: What is BASH?

A: BASH is short for Bourne Again SHell. It was written by Steve Bourne as a replacement to the original Bourne Shell (represented by /bin/sh). It combines all the features from the original version of Bourne Shell, plus additional functions to make it easier and more convenient to use. It has since been adapted as the default shell for most systems running Linux.

Q: What is Linux Kernel?

A: The Linux Kernel is a low-level systems software whose main role is to manage hardware resources for the user. It is also used to provide an interface for user-level interaction.

Q: What is the advantage of open source?

A: Open source allows you to distribute your software, including source codes freely to anyone who is interested. People would then be able to add features and even debug and correct errors that are in the source code. They can even make it run better and then redistribute these enhanced source code freely again. This eventually benefits everyone in the community.

Q: What are the basic components of Linux?

A: Just like any other typical operating system, Linux has all of these components: kernel, shells and GUIs, system utilities, and an application program. What makes Linux advantageous over other operating system is that every aspect comes with additional features and all codes for these are downloadable for free.

Q: Describe the root account.

A: The root account is like a systems administrator account and allows you full control of the system. Here you can create and maintain user accounts, assigning different permissions for each account. It is the default account every time you install Linux.

Q: What is CLI?

A: CLI is short for Command Line Interface. This interface allows the user to type declarative commands to instruct the computer to perform operations. CLI offers greater flexibility. However, other users who are already accustomed to using GUI find it difficult to remember commands including attributes that come with it.

Q: What is GUI?

A: GUI, or Graphical User Interface, make use of images and icons that users click and manipulate as a way of communicating with the computer. Instead of having to remember and type commands, the use of graphical elements makes it easier to interact with the system, as well as adding more attraction through images, icons, and colors.

Q: How do you change permissions under Linux?

A: Assuming you are the system administrator or the owner of a file or directory, you can grant permission using the chmod command. Use + symbol to add permission or – symbol to deny permission, along with any of the following letters: u (user), g (group), o (others), a (all), r (read), w (write) and x (execute). For example, the command chmod go+rw FILE1.TXT grants read and write access to the file FILE1.TXT, which is assigned to groups and others.

Q: What are filenames that are preceded by a dot?

A: In general, filenames that are preceded by a dot are hidden files. These files can be configuration files that hold important data or setup info. Setting these files as hidden makes it less likely to be accidentally deleted.

Q: What is the pwd command?

A: The pwd command is short for print working directory command.

Q: What are the kinds of permissions under Linux?

A: There are 3 kinds of permissions under Linux:- Read: users may read the files or list the directory- Write: users may write to the file or new files to the directory- Execute: users may run the file or lookup a specific file within a directory

Q: What are the different modes when using vi editor?

A: There are 3 modes under vi:- Command mode – this is the mode where you start in- Edit mode – this is the mode that allows you to do text editing- Ex mode – this is the mode wherein you interact with vi with instructions to process a file

Q: Why we use LINUX?

A: LINUX is used widely because it is completely different from other operating systems where every aspect comes with something extra i.e. some additional features. Some of the major reasons to use LINUX are listed below

- It is an open-source operating system where programmers get the advantage of designing their own custom OS
- Software and the server licensing required to install Linux is completely free and can be installed on many computers as required
- It has low or minimum but controllable issues with viruses, malware, etc
- It is highly secured and supports multiple file systems

Q: Enlist some Linux distributors (Distros) along with its usage?

A: Different parts of LINUX say kernel, system environment, graphical programs, etc are developed by different organizations. LINUX Distributions (Distros) assemble all these different parts of Linux and give us a compiled operating system to be installed and used.

There are around six hundred Linux distributors. Let us see some of the important ones

- Ubuntu: It is a well known Linux Distribution with a lot of pre-installed apps and easy to use repositories libraries. It is very easy to use and works like a MAC operating system.
- Linux Mint: It uses cinnamon and mates desktop. It works on Windows and should be used by newcomers.
- Debian: It is the most stable, quicker and user-friendly Linux Distributors.
- Fedora: It is less stable but provides the latest version of the software. It has a GNOME3 desktop environment by default.
- Red Hat Enterprise: It is to be used commercially and to be well tested before release. It usually provides a stable platform for a long time.
- Arch Linux: Every package is to be installed by you and is not suitable for beginners.

Q: Explain the Linux Directory commands along with the description?

A: Enlisted below are the directory commands along with descriptions

- **pwd**: It is a built-in command which stands for 'print working directory'. It displays the current working location, working path starting with / and directory of the user. Basically, it displays the full path to the directory you are currently in.
- **ls**: This command list out all the files in the directed folder.
- **cd**: This stands for 'change directory'. This command is used to change to the directory you want to work from the present directory. We just need to type cd followed by the directory name to access that particular directory.
- **mkdir**: This command is used to create an entirely new directory.
- **rmdir**: This command is used to remove a directory from the system.

Q: Explain Linux Shell?

A: For executing any commands user uses a program known as the shell. Linux shell is basically a user interface used for executing the commands and communicating with Linux operating system. Shell does not use the kernel to execute certain programs, create files, etc. There are several shells available with Linux which includes the following

- BASH (Bourne Again SHell)
- CSH ( C Shell)
- KSH ( Korn Shell)
- TCSH

Q: What is a Shell script?

A: As the name suggests, the shell script is the script written for the shell. This is a program file or says a flat text file where certain Linux commands are executed one after another. Although the execution speed is slow, Shell script is easy to debug and can also simplify everyday automation processes.

Q: Explain the Linux 'cd' command options along with the description?

A: 'cd' stands for change directory and is used to change the current directory on which the user is working.

cd syntax : `$ cd {directory}`

Following purposes can be served with 'cd' commands

- Change from current to a new directory
- Change directory using the absolute path
- Change directory using the relative path

Few of the 'cd' options are enlisted below

- cd~: Brings you to the home directory
- cd-: Brings you to the previous directory
- .: Bring you to the parent directory
- cd/: Takes you to the entire system's root directory

Q: What are the basic components of Linux?

A: Just like other operating systems, Linux has all components like kernel, shells, GUIs, system utilities and application programs.

Q: Define shell

A: It is an interpreter in Linux.

Q: Name the Linux loader.

A: LILO is the Linux loader.

Q: If you have saved a file in Linux. Later you wish to rename that file, what command is designed for it?

A: The 'mv' command is used to rename a file.

Q: What is the maximum length for a filename in Linux?

A: 255 characters.

Q: How to delete information from a file in vi?

A: The following commands are used to delete information from vi editors.

- x deletes a current character.
- dd deletes the current line.



## HTML QUESTIONS

Q: What do you mean by HTML?

A: HTML is known as Hypertext Markup Language. This Language is used for World Wide Web. It's a standard Language which is used for creating the web pages.

Q: What are the parts of the HTML page?

A: Basically, there are two parts of the web pages: Content and Tags which are responsible for the format of an HTML page.

Q: What do you mean by Tags?

A: In HTML page content is placed between the Tags which are basically responsible for the formatting of the page. Tags are written between less than symbol (<) and greater than (>) symbol.

Q: Do all HTML tags are written in a pair?

This is the most common HTML Interview Questions asked in an interview. No, there are some HTML tags are present which can be used as single.

Q: What are the list types available in HTML?

A: The common list type are available in HTML are given below:

- Ordered list
- Unordered list
- Definition list
- Menu list
- Directory list

Q: Give the example for putting a comment in the HTML page?

A: <!--Text for comment -->

Q: How to apply Hyperlink in an HTML page?

A: We can use <ahref> tag for HTML page. For eg: <ahref> Text </a>

Q: How to change the font colour in the HTML page?

A: <font color="color">...</font>

Q: How to write the paragraph in the HTML page?

A: For the paragraph tag <p> text you want to show the paragraph </p> will be used.

Q: Which browser supports the HTML5?

A: Google Chrome, Apple Safari, Mozilla Firefox, and Opera all support most of the HTML5 features.

Q: What are the different types of heading format supported by HTML?

A: HTML heading is use to highlight the content of HTML document. the heading tags which are used in HTML are <h1> to <h6>.

Q: How to create a table in HTML?

A: By using <table> tag we create the table in HTML.

Q: What are the frames?

A: By using frames we can make the navigation of the site easier.

Q: What is HTML5?

A: HTML5 is the fifth version of HTML language and it is the currently running version of HTML.

Q: Which new tags are included in the HTML5?

A: video> and <audio> are the new tags which are introduced in the HTML5. They are basically used as a replacement of flash player and Silverlight to play multimedia items in the web pages.

Q: What is the Canvas element in the HTML?

A: For representing charts, 2D images, graphs on the web page we use Canvas element.

Q: What are the storage types of HTML5?

A: Two storage type of HTML5 are:

Session Storage– It will store the data related to the current.

Local Storage– In this data will not be erased when the browser is closed

Q: How can we get the geographic position of a user in HTML5?

A: By using Geolocation API we can retrieve the location of the user.

Q: What do you mean by HTML attribute?

A: Additional information given with the elements is known as an attribute. For Eg

```
<font size="10" color="red">
```

Q: How we use JavaScript with HTML?

A: By using script tag we can use JavaScript with HTML. For Eg:

```
<script>
```

```
document.getElementById("demo").innerHTML = "Hello JavaScript!";
```

```
</script>
```

Q: What is the Get and Post Method?

GET is used to request the data from server and POST is used for submitting the data to a server.

A: What is SPAN tag is used for?

Span is used for formatting elements in the SPAN block. It is used to select inline text.

Q: What does HTML Stand for?

HTML Stands for Hypertext Markup Language. This language is basically used for creating web applications and also for web pages as well. It is a standard markup language with cascading style sheets and JavaScript which form a triad for WWW i.e. worldwide Web. HTML came into existence in 1980 when a great computer professor Sir Tim Berners Lee (a contractor and author of HTML) proposed an idea in CERN, to basically sharing and using documents. So in this way, a great language came into existence.

Q: What is the XHTML?

A: XHTML means Extensible Hypertext Markup Language, which is basically a part of Family of XML markup language. It usually extends the most popularly used HTML i.e. Hypertext Markup Language, the pages in which the web pages are formulated.

Q: What does DOCTYPE mean?

A: DOCTYPE or Document Type Declaration is a type of instruction which usually works in association with particular SGML or XML documents basically. Let us take an example to understand it more thoroughly, for example, A Web page with a document type definition i.e. DTD is the best to understand. In a well serialized and a proper form of the document, it manifests and also the contribution of it is a lot as a short string of markup that usually conforms to a particular syntax.

Q: What new features were added to HTML5?

It introduced several semantic components, which refers to the elements that express the meaning. Some of the new semantic components are <header>, <footer>, <section>, and <article>. That means they are not in simple containers, but they tell the browser more about their contents.

A: There are additional form element types such as "Number", "Date", "Calendar" and "Range". Video and audio elements are included, and new graphic elements like <svg> and <canvas> have been added.

Q: What is SVG element?

A: SVG is followed by the XML format; It has scalable vector graphics used to create vector graphics with interactive and animated support.

Resolution is independent of SVG because it does not lose its size or rearrange its quality.

Q: What is the difference between directory and menu lists and unordered lists?

A: The main difference is that directory and menu lists do not have attributes to change bullet styles.

Tell me two advantages of HTML5 web storage

Two main advantages of HTML5 Web Storage are:

It can save up to 10 MB data, which is definitely more than what cookies are.

Web Storage Data can not be changed with HTTP request. It helps to increase the performance of the application.

Q: Explain five new input types provided by HTML5 for shapes?

A: The following important, new data types are provided in HTML5:

Date: This allows the user to select a date.

Data Time-Local: This input type allows user time and time to select a date and time.

Date: This input type allows user time and time to select a time and time.

Month: It helps the user choose a month and year

Q: What is Semantic Elements?

A: Semantic elements expresses its meaning for the web browser and developer.

Eg: Header , Footer

Q: A developer has been given an assignment to create a webpage for a shopping application. Which of the below language he need to learn to create the basic structure of the webpage?

A: markup.

Q: A developer wants to create a HTML page. In which part of the code he can keep the information about the page?

A: head section.

Q: Is it possible to nest HTML lists?

A: Yes

Q: Webpage can be linked to itself by creating \_\_\_\_\_.

A: Bookmark

## PYTHON QUESTIONS

Q: What is Python?

A: Python is a programming language. It allows you to control the computer. The benefits of Python are that it is simple and easy, portable, extensible.

Q: What are the main differences of Python from other programming languages.

A: Programs can be developed very quickly with this language. In addition, the simple and clean syntax of the Python programming language has made it a preferred language by many programmers. It's easy to write programs and read a program written by others. It has a wide range of countless libraries. It has built-in data structure and also it is free and open source programming language. So, it has been widely used - especially in Data Science - and has received lots of demands in recent years.

Q: What is PEP 8?

A: PEP stands for Python Enhancement Proposal. PEP 8 is a coding convention, a set of recommendation, about how to write your Python code more readable. In other words, PEP 8 is a document that gives coding conventions for the Python code comprising the standard library in the main Python distribution.

Q: What are the comments and how do you write it in Python?

A: Comments are used to explain code when the basic code itself isn't clear. Python ignores comments, and so will not execute code in there, or raise syntax errors for plain English sentences. Comments in Python start with a # character. '#' character converts all subsequent characters to the comment form that Python does nothing.

```
# this is a single line comment
```

```
print("Hello World!") # this is an inline comment
```

Q: What is docstring in Python?

A: Docstrings are - unlike regular comments - stored as an attribute of the function or the module they document, meaning that you can access them programmatically. Docstring runs as an explanatory text of codes and it should be written between triple quotes.

Q: Which of the following is an invalid statement?

A:

- a) `x, y, z = 1, 22, 333`
- b) `x_y_z = 1,234,567`
- c) `xyz = 1,234,567`
- d) `x y z = 111 222 333`

Spaces are not allowed in variable names

Q: What are the numerical data types in Python and their properties?

A:

- Integers : they are whole numbers (positive, negative or zero), including no decimal point.
- Floats : they stand for real numbers with a decimal point.
- Complexes : they are written in the form, `x + yj`, where `x` is the real part and `y` is the imaginary part.

Q: What are the 'type conversion' and basic methods of that in Python?

A: Type conversion refers to the conversion of one data type into another.

- `int()` – converts some data types into integer type.
- `float()` – converts some data types into float type.
- `str()` – converts any data type into string type.

Q: What are the basic data types except the numerical and collection types?

A: String and Boolean types.

Q: Describe the Boolean types in detail.

A: Boolean types are called `bool` and their values are the two constant objects `True` and `False`. They are used to represent truth values (other values can also be considered false or true).

In numeric contexts (for example, when used as the argument to an arithmetic operator), they behave like the integers 0 and 1, respectively.

Bools are important data types that are widely used in Python as they can find use in every aspect of our daily lives. For example, imagine, whether the TV is turned on or off in your home or if the weather is rainy can be explained easily with bools.

Q: What is the 'variable' and how do you assign a value to it?

A: Variable is a location designated where a value can be stored and accessed later. Imagine a box where you store something. That's a variable.

Python variables do not need an explicit declaration to reserve memory space. The declaration happens automatically when you assign a value to a variable.

To create a variable in Python, all you need to do is specify the variable name and then assign a value to it.

Q: What is a boolean in Python?

A: Boolean is one of the built-in data types in Python, it mainly contains two values, and they are True and False.

Q: Python has three built-in Boolean operators. What are they?

A: They are and, or, not.

Q: What is the order of priority of the logical operators?

A: not, and, or

Q: What are the values evaluated to False when applied to a Boolean operator?

A:

- None and False.
- Zero of any numeric type: 0, 0.0, 0j.
- Empty sequences and collections: "", [], {}.
- Any remaining value is evaluated as True.

Q: What is the output of print(str[4:]) if str = 'Python Language' ?

A: on Language

Q: What is the output of print("%.5s" % x) if x = "HelloWorld!" ?

A: Hello

Q: There are several ways in Python that we use when processing and using string data structures. What are the most important of these:

A:

- Arithmetic syntax (+, \* and =),
- % operator formatting,
- string.format() method,
- f-string formatting.

Q: If you want to use multiple 'f-string formatting' lines without parentheses, what will be the other option that you can use?

A: You can use backslashes \ between f-lines.

Q: What does the title() method do in Python?

A: Python provides the title() method to convert the first letter in each word to capital format while the rest turns to lowercase.

Example:

```
str = 'pYtHoN lAngUaGe'
```

```
print(str.title())
```

The output: Python Language

Q: print("Actions speaks louder than words".upper().swapcase().capitalize()), will this code work? If yes, what will be the output? Describe how?

A: Yes it works. The syntax is : 'string.method()'. Changing the string using these methods returns string type again. The output is :

Actions speaks louder than words

Follow the additional examples below :

- string.upper() # returns string type
- string.upper().lower() # also returns string type
- string.upper().lower().title() # returns string type again

Q: What are the 'string.startswith()' and 'string.endswith()' method used for? Describe how?

A: To search patterns in a string there are two useful methods called `startswith()` and `endswith()` that search for the particular pattern in the immediate beginning or end of a string and return `True` if the expression is found.

Q: In Python what is slicing?

A: A mechanism to select a range of items from sequence types like list, tuple, strings etc. is known as slicing.

Q: What does `list[::-1]` do?

A: `list[::-1]` is used to reverse the order of a sequence of the elements in the list.

Q: What is the difference between list and tuple?

A:

LISTs :

- Lists are mutable i.e they can be edited.
- Lists are slower than tuples.
- Syntax: `list_1 = [True, 'Space', 20]`

TUPLES :

- Tuples are immutable (tuples are lists which can't be edited).
- Tuples are faster than list.
- Syntax: `tup_1 = (True, 'Space', 20)`

Q: What is a dictionary in Python?

A: Python dictionary is one of the supported data types in Python. It is an unordered collection of elements. The elements in dictionaries are stored as **key-value** pairs. Dictionaries are indexed by **keys**. For example, below we have a **dict** named **my\_dict**. It contains two **keys**, **fruit** and **vegatable**, along with their corresponding **values**, **banana** and **onion**.

```
my_dict = {'fruit': 'banana', 'vegatable': 'onion'}
```

Q: Which one of the following is not the correct syntax for creating a set in Python?

A:

- a. `set([ [1,2], [3,4], [4,5] ])`
- b. `set([1,2,2,3,4,5])`
- c. `{1,2,3,4}`
- d. `set((1,2,3,4))`

**Explanation:** The argument given for the set must be an iterable

Q: What are the two major loop statements?

A: **for** and **while** loops.

Q: How does for loop and while loop differ in Python and when do you choose to use them?

A: **For loop** is generally used to iterate through the elements of various collection types such as list, tuple, set and dictionary.

**While loop** is the actual looping feature that is used in any other programming language. This is how Python differs in handling loops from the other programming languages.

Q: What are Python iterators?

A: Iterators in Python are array-like objects which allow moving on the next element. We use them in traversing a loop, for example, in a **for** loop.

## AGILE-SCRUM-KANBAN-JIRA QUESTIONS

Q: Do you know about Agile Manifesto & its Principles? Explain in brief.

A: There are four values in the manifesto. Individuals and interactions, working software, customer collaboration and responding to the changes are the values. Stemming from these values there are 12 principles in agile. These principles can be summarized as to satisfy the customer, to welcome changing requirements, good cooperation between business people and developers (working together), face to face conversation, motivated individuals and simplicity.

Q: What is the duration of a scrum sprint?

A: It depends on the number of people in the development team and the size of the project. In general, a scrum sprint is completed in 1-4 weeks.

Q: What is the role of the Scrum Master?

A: Scrum Master coaches the team, protects the team from organizational distraction, clears any obstacles encountered and helps team members focus on what they do. Scrum Master ensures that scrum is understood well by the team members and it is working properly. Scrum Master constantly improves the team's environment. While the product owner has a directing role, Scrum Master has an enabling role in a scrum team.

Q: What is a User Story?

A: It describes a software feature from the customer's perspective and includes the type of user, what they want, and why they want it. Therefore, it answers the 'who', 'what' and 'why' in a simple language. The product owner has the responsibility of user stories. Leaving out the technical aspect, it should describe the behavior from a user's perspective. Examples of User Story: As a registered user, I want to add items to the cart so that I can purchase multiple items at once.

Q: Explain the term 'increment' in Scrum.

A: The Product Increment is the sum of all the product backlog items finished during the sprint. In other words, by the end of each sprint, the development team creates a new software that gets built into the main product and this new software is called product increment. The product increment aims to invest in small amounts in the new features of the main product. This helps to shorten the time before receiving feedback. As the name implies, product increment continues to increase within the subsequent sprints. That means each product increment includes all the previous sprint increment values as it is cumulative.

Q: What are different ceremonies and their importance in Scrum?

A: In the scrum process, a series of meetings called ceremonies are held regularly. These ceremonies aim to minimize the need for meetings that are not defined in the scrum and to ensure regularity. These ceremonies are: 1. Sprint Planning Meeting, 2. Grooming Meeting, 3. Daily Stand Up Meeting or Daily Scrum, 4. Sprint Review Meeting, 5. Sprint Retrospective Meeting.

Q: What is the scrum of scrums?

A: Suppose there are 6 teams working on a project and each team has 6 members. Each team leads its own special scrum meeting. However, in order to coordinate and communicate with different teams, it is required to organize a separate scrum meeting. The meeting organized to hold coordination between scrum teams is called the scrum of scrums. There is one team leader from every group, known as ambassador, who is responsible to represent his team in the scrum of scrums.

Q: What is the purpose of a retrospective?

A: Like sprint review meetings this meeting is also held at the end of each sprint. The attendees of this meeting are the development team, the scrum master and the product owner. In this meeting, all the participants discuss:

- What went well in the previous sprint?
- What didn't work well?
- What are the improvement areas to increase team performance?

Q: What is the use of burn-down charts?

A: A burn-down chart demonstrates the amount of work remained to complete a project. So, the burn-down chart is used to trace the progress of a project.

Q: Why aren't user stories simply estimated in man-hours?

A: Estimation of user stories on the basis of man-hours is possible but not preferred. Because in that case, you won't be able to concentrate on the quality product to be delivered to the customer. In addition to that, you will concentrate on the cost and budget of the management while using man-hours. Rather than man-hours, story points are used, as it provides a complete idea about both the complexity of work and required efforts.

Q: What do you know about the Velocity in Scrum?

A: At the end of each sprint, velocity is calculated by summing up the story points for completed user stories. Points from not completed or partially completed user stories should not be considered in calculating velocity. After calculating the velocity at the end of the first sprint, the team can make a new estimation of how long the project will

take to complete. Suppose the total story points for the remaining user stories is 80, and the total story points for the completed user stories in the first sprint is 20. That means the team needs 4 more sprints to complete the whole project.

Q: Explain what is Kanban.

A: A Kanban is like a flash card carrying all the information about the current status of your work and the work required to be done on the product at each stage of the software development process.

Q: Describe the places where 'Scrum' and 'Kanban' are used?

A: Scrum is a better choice when you need a more prominent process. However, if you want improvement in running the process without much changes in the whole scenario, you should use Kanban

Q: How does Kanban improve visibility?

A: Kanban uses digital or physical boards to demonstrate the team's workflow. The tasks demonstrated by cards move from left to right representing the progress. So at any given time, the organization can see progress, capacity, productivity, and efficiency.

Q: Ideally, how WIP limit is calculated with respect to team size?

A: You can start with a WIP limit of 1 to 1.5 times the number of people taking part in each stage or each column. For example, if team size is 4 in a particular stage, max 6 items can be in progress at any given time.

Q: What is lead time in Kanban?

A: Lead time is the period between creating a task in your workflow and its final departure from the kanban board. Therefore, kanban helps you monitor workflow, identify blockages, and make adjustments to improve the flow for reducing the lead time.

Q: Are there any drawbacks of the Agile model? If yes, please explain.

A: Yes, there are some drawbacks of the Agile method, some of them are as follows:

1- It is not easy to make an estimation of the effort required to complete a task. It becomes more complex in the case of large projects as it becomes difficult to make a prediction about the total effort required.

2- In case the desired requirements of the client are not understood properly, the final project will not meet the customer requirements. Thus, this will lead to customer dissatisfaction.

3- Only the leader who has considerable experience in the Agile model is capable to take important decisions. The team members with less or no experience are not involved in the decision-making process, thus they don't have a chance to advance their knowledge.

Q: What is Jira?

A: Jira is a tool developed to help teams for project management, bug tracking, and issue tracking. In simple terms, it is an issue tracker. Jira is widely used by big companies in software development and software testing.

Q: List the Atlassian products that are members of Jira family.

A: Jira is divided into four different products and the term Jira is referred to as a common platform in which all these products are created. The four products of the Jira family are: Jira Software, Jira Align, Jira Core, and Jira Service Desk.

Q: Which hosting options are available for Jira Software?

A: There are three hosting options available: Atlassian Cloud, Server, and Data Center (Amazon Web Services (AWS) and Microsoft Azure).

Q: What is an issue in JIRA Software?

A: In Jira, teams use issues to track individual pieces of work that must be completed. During the sprint planning, users can create issues that they plan to work on and add them to the backlog.

Q: What is referred as issues in Jira?

A: Depending on how a team uses Jira, an issue can represent followings: Project task, Feature, Help-desk ticket, Leave request form, Enhancement, Software bug.

Q: List and briefly describe the issues types in Jira Software.

A: Issue types can be defined in short sentences as follows: A bug is a problem which impairs or prevents the functions of a product. An epic is a big user story that needs to be broken down. A subtask is a piece of work that is required to complete a task. A user story is the smallest unit of work that needs to be done. A task represents work that needs to be done.

Q: Explain how an issue is created in Jira Software.

A: Follow these steps to create an issue:

1. Click on "+" button from the global navigation bar or press the C key on the keyboard. This will direct you to the "Create issue" dialogue box.



2. Select the relevant Project and Issue Type in the Create Issue dialog box.
3. Provide a Summary in the Create Issue dialog box.
4. Fill in the additional fields in the Create Issue dialog box.
5. Click on the "Create" button.

Q: What is a subtask in Jira Software?

A: A subtask can be created to divide an issue into smaller pieces and allow them to be assigned to different people. If you find that a subtask is large enough at an issue level, you can convert it into an issue. Likewise, if you see that an issue is really just a subtask of another issue, you can convert it into a subtask.

Q: Explain how a subtask is created in Jira Software.

A: Follow these steps to create a subtask.

1. Click on an issue where you want subtasks to be created.
2. From the dialog box, click on the "Create subtask" button.
3. Add a summary to your subtask and click on "Create" button.
4. Click on a subtask that you have created and you can do the followings:
  - Attach file
  - Link issue
  - Link page
  - Change status
  - Assign an assignee
  - Assign an reporter
  - Edit labels
  - Determine priority

Q: What is project key in Jira Software?

A: A project key is a unique code for your project. Jira Software will automatically generate a short project key in accordance with your project name. However, if you want to specify this auto-generated key yourself, you can change it.

Q: Is it possible to access JIRA cloud site via a mobile device?

A: You can access your Jira Software site from mobile devices by typing the address of your site into web browsers.

Q: What are the agile reports in Jira Software?

A: The reports generated by any Scrum project in JIRA are:

- Burndown Chart
- Burnup Chart
- Sprint Report
- Velocity Chart
- Cumulative Flow Diagram
- Version Report
- Epic Report
- Control Chart
- Epic Burndown
- Release Burndown.

Q: How many sidebars are available in Jira Software and what are they? What does sidebar colors mean?

A: The sidebar consists of two parts:

1. A global sidebar where you can search, create issues, and manage your profile settings.
2. Either an application sidebar or a project sidebar, depending on your context.

The sidebar shows different navigation and menu items, depending on where you are in Jira.

The sidebar colors help keep you oriented when navigating: Blue means you're at the product level. Gray means you're at the project level.

Q: Explain briefly what is backlog.

A: A backlog is a list of issues that can be created for your project. You can create issues and sprints in the backlog. Then, you can add issues to a sprint so that your team can work on it.

Q: Explain briefly what is version.

A: The versions represent the points of a project over time. With versioning, you can plan the order in which new features and fixes for the product will be released to your customers.

Q: What is an epic in Jira Software?

A: An epic is a set of jobs that can be divided into manageable and shippable user stories based on the needs of customers. Epic is the best way to group similar user stories. It may take several sprints to complete an epic.

Q: What is Jira Workflow?

A: A Jira workflow is a set of statuses and transitions that an issue moves through during its lifecycle, and typically represents a process within your organization. Workflows can be associated with particular projects and, optionally, specific issue types by using a workflow scheme.

## COMPUTER FUNDAMENTALS QUESTIONS

Q: What is a computer?

A: A computer is an electronic device that can come up with four tasks. These tasks are receiving input, storing, processing and giving output.

Q: What is Computer Hardware?

A: Computer hardware is what you can physically touch. Hardware is the collection of physical parts of a computer system. This includes the computer case, monitor, keyboard, and mouse. It also includes all the parts inside the computer case, such as the hard disk drive, transistors, chips etc.

Q: Can you give us examples of persistent and non persistent storage devices?

A: Random Access Memory (RAM) is an example of non persistent storage and Hard Disk Drive(HDD) or Solid State Disks (SSD) are persistent storage examples.

Q: What is Operating System?

A: Operating System is a software program that enables the computer hardware to communicate and operate with the computer software

Q: What is a deadlock in operating systems?

A: Deadlock is a situation when two or more processes wait for each other to finish and none of them ever finish. Consider an example when two trains are coming toward each other on same track and there is only one track, none of the trains can move once they are in front of each other. A similar situation occurs in operating systems when there are two or more processes hold some resources and wait for resources held by other(s).

Q: What is the difference between multiprocess and multithread?

A: Multiprocessing uses different CPU and memories so they used different sources but multithreading use same resources such as memory.

Q: Which operating system/systems do you use and have you ever used open source operating system?

A: (You should know which operating system do you use with its version) I am using Ubuntu 19.10/Windows 10.1. I have used OSX last year. Linux operating systems are open source and I am using Linux-Ubuntu operating system. I am also using Android/iOS operating system on my mobile phone. Android operating system is also open source.

Q: What is a shell?

A: Shell is an interface between the user and the kernel. Even though there can be only one kernel; a system can have many shell running simultaneously. So, whenever a user enters a command at command line from terminal, the shell communicates with the kernel to execute it and then gives the output.

Q: What is Directory?

A: Every file is assigned to a directory. A directory is a specialized form of a file that maintains a list of all files in it.

Q: How many bit combinations are there in a byte?

A: 256 possible combinations (from 0 to 255) A byte is made of 8 bits. Bits can only be on or off (0 or 1). 00000000 = 0, 00000001 = 1, 00000010 = 2, 00000011 = 3, 00000100 = 4, ... 11111111 = 255.

Q: What is ASCII?

A: Ascii is a character encoding standard adopted by the Institute of Electrical and Electronics Engineers (IEEE) in 1963. ASCII is an abbreviation for American Standard Code for Information Interchange. It is a method of representing text characters in a binary representation recognized by computers, communications equipment, and other technological devices.

Q: What is the difference between gigabyte and gigahertz?

A: Gigabyte is storage metric that is equal to 1024 megabyte. But gigahertz is a measure of speed. One gigahertz is 1 billion cycles per second

Q: What is Software?

A: Software is a set of instructions, data or programs used to operate computers and execute specific tasks. Opposite of hardware, which describes the physical aspects of a computer, software is a generic term used to refer to applications, scripts and programs that run on a computer.

Q: What is Assembler?

A: An assembler is a program that converts assembly language into machine code. It takes the basic commands and operations from assembly code and converts them into binary code.

Q: What is the difference between compiler and interpreter?

A: A compiler takes entire program and converts it into object code which is typically stored in a file. The object code is also refereed as binary code and can be directly executed by the machine after linking. An Interpreter directly executes instructions written in a programming or scripting language without previously converting them to an object code or machine code.

Q: What is a software library used for?

A: A software library generally consists of pre-written code, classes, procedures, scripts, configuration data and more. So Software Libraries save programmers' time from writing routine processes' codes every time. For example, when developing a mathematical program or application, a developer may add a mathematics software library to the program to eliminate the need for writing complex functions

Q: What is Frontend and Backend?

A: The frontend of a website or application is what you see and interact with on your device screen. Also referred to as "client-side", it includes everything the user experiences directly: from text and colors to buttons, images, and navigation menus.

The backend (or "server-side") is the portion of the website you don't see. It's responsible for storing and organizing data, and ensuring everything on the client-side actually works. The backend communicates with the front-end, sending and receiving information to be displayed as a web page.

Q: What Is LAN?

A: Local Area Network. A LAN allows users to share files between computers, send e-mail and access the Internet. Most companies use Local Area Networks so that users can access information within or outside the LAN.

Q: What is WAN?

A: Wide Area Network (WAN) is more complex than LAN and covers a large span of the area typically a large physical distance. The Internet is the largest WAN which is spread across the world. WAN is not owned by any single organization but it has distributed ownership.

Q: What Is A Protocol?

A: A protocol is a method of communication between two devices. You can think of it as the language the devices use to communicate with each other, although it is not the same as a programming language (by which a human programmer controls a computer). Different brands of printers, for example, each use their own protocol (or "language") by which a computer can communicate with the printer. This is why a driver program must be written for each printer.

Q: What do you mean by the TCP/IP Model?

A: TCP/IP stands for Transmission control protocol and Internet protocol. It describes how the data will get transmitted and routed from end to end communication.

Q: What do you mean by DNS?

A: DNS Stands for Domain Name System. It's an internet address mapping process with the local name. We can also call it as an internet phonebook.

Q: Explain Web Server.

A: A Web server is a server on the Internet that holds Web documents and makes them available for viewing by remote browsers.

Q: Explain Database and Database Management System.

A: A database is an organized collection of structured information, or data, typically stored electronically in a computer system. A database is usually controlled by a database management system (DBMS). Some examples of popular database software or DBMSs include MySQL, MongoDB, PostgreSQL, Microsoft SQL Server.

Q: What is SQL and have you heard about NoSQL?

A: SQL is a programming language used by nearly all relational databases to query, manipulate, define data and to provide access control. A NoSQL, or nonrelational database, allows unstructured and semistructured data to be stored and manipulated (in contrast to a relational database)

Q: What are the three V's of big data?

A: Variety: Refers to the different data types i.e. various data formats like text, audios, videos, etc.

Velocity is the rate at which data grows. Social media contributes a major role in the velocity of growing data.

Volume represents the volume i.e. amount of data that is growing at a high rate i.e. data volume in Petabytes(1 Petabytes = 1024 Terabytes).

Q: What Is Web Browser?

A: A web browser is a program that you use to view web pages. Some of the most popular web browsers are Microsoft Internet Explorer, Google Chrome, Mozilla Firefox.

Q: What is status code in HTTP?

A: It is a standard response code given by web servers on the Internet. It helps to identify the cause of a problem when a web page or other resource does not load properly. There are two major group of HTTP status code error exist:

4xx Client Error

## 5xx Server Error

Q: What are the header fields in HTTP?

A: HTTP header fields allow the client and server to pass information with the request and response message. Following are the header fields in HTTP:

General header: It applies for both request and response message.

Request header: It contains information for the request message.

Response header: It is used to contain response header information sent by the web server.

Entity header: It is used to contain more information about the body of the entity.

Q: What are SSL certificates?

A: SSL is a standard security protocol which ensures confidentiality and integrity of data while in transit. It encrypts the data flow between the web browser and web server, hence ensures confidentiality. Also, web server and browser exchanges key to decrypt the data, which ensures the integrity of data.

Q: What are the benefits of HTTPS certificate?

A: The major benefits of HTTPS certificate are:

Customer information like credit card number and ATM pin is encrypted and cannot be easily tracked.

Customers trust and prefer to purchase from the sites that use HTTPS protocol.

This protocol shows authenticate register domain as secure connection.

Q: What is Cookie?

A: Cookie provides a simple way to identify session among a group of HTTP/HTML requests. The cookie value is often an index into a table stored in the memory of a Web server that points to an in-memory object holding the user's records. This has many potential problems: If the user's request is routed to a different server in a subsequent request, the session information is unknown to the server.

If the user is routed to a different server and the server is part of an application cluster, then all the servers that could receive the user's request must have a way to synchronize the session data. Storing cookies and synchronizing sessions among clusters of server usually requires configuration, storage space, and memory.

Q: Explain Phishing and how to prevent it.

A: Phishing is a Cyberattack in which a hacker disguises as a trustworthy person or business and attempt to steal sensitive financial or personal information through fraudulent email or instant message.

You can prevent Phishing attacks by using the following practices:

Don't enter sensitive information in the webpages that you don't trust

Verify the site's security

Use Firewalls

Use AntiVirus Software that has Internet Security

Use Anti-Phishing Toolbar

Q: Define Spyware.

A: Spyware is a malware that aims to steal data about the organization or person. This malware can damage the organization's computer system.

Q: Explain SQL Injection and how to prevent it.

A: SQL Injection (SQLi) is a code injection attack where an attacker manipulates the data being sent to the server to execute malicious SQL statements to control a web application's database server, thereby accessing, modifying and deleting unauthorized data. This attack is mainly used to take over database servers.

You can prevent SQL Injection attacks by using the following practices:

Use prepared statements

Use Stored Procedures

Validate user input

Q: What is plaintext or cleartext?

A: The decrypted message, when it is returned back into its plain or original state of context which is comprehensible and decipherable, is also known as cleartext or plaintext.

Q: What is ciphertext?

A: When the message is encrypted into a state which is totally incomprehensible and indecipherable, this is known as the ciphertext. So, to illustrate all of this, with the previous example, when the sending party creates the written

message of "I LOVE YOU", this is the plaintext or the cleartext. Once this message is encrypted into the format of "UYO I VEOL" and while it is in transit, it becomes known as the ciphertext. Then, once the receiving party gets this ciphertext and then decrypts it into a comprehensible and understandable form of "I LOVE YOU," this message then becomes the plaintext or the cleartext again.

Q: What exactly are encryption and decryption?

A: The terms "scrambling" and "descrambling" are commonly known as "encryption" and "decryption."

For example: when the written message "I LOVE YOU" is scrambled by the sending party, it becomes what is known as the "encrypted message." This means that the written message has been disguised in such a manner that it would be totally meaningless, or in the terms of cryptography, it would be undecipherable.

Encryption can also be described as the conversion of information from a readable state to apparent nonsense. When the receiving party receives this encrypted written message, it must be unscrambled into an understandable and comprehensible state of the context. This process of unscrambling is also known as decryption.

Q: What is the hashing function?

A: The hashing function is a one-way mathematical function. This means that it can be used to encode data, but it cannot decode data. Its primary purpose is not to encrypt the ciphertext; rather, its primary purpose is to prove that the message in the ciphertext has not changed in any way, shape or form. This is also referred to as "message integrity." If the mathematical function has changed in any way, the message has then changed.