Lecture 1

Contents: Introduction; Content management system; Blog; WordPress plugin architecture; Two versions of WordPress; Advantages of WordPress; Some details of WordPress; Exercises

1.1 Introduction

WordPress is a Web content management system, developed initially as a tool to publish blogs. Currently, it also supports publishing other Web content, including traditional websites, mailing lists and Internet forum, media galleries, membership sites, learning management systems and online stores. It is a free and open-source software for Web content management.

WordPress is written in PHP and along with a MySQL or MariaDB database. Features of WordPress include a plugin architecture and a template system. These are referred as "Themes".

It was released in 2003 by Mike Little and Matt Mullenweg. WordPress Foundation owns WordPress, WordPress related projects and trademarks. Current software version of WordPress is 6.4.2 as released in 2023.

A website contains variety of information such as product information, service information, customer feedbacks, blog posts and press releases. Apart from text data, a website typically contains media such as images, audio and videos. Managing the content of a website is an important issue, and WordPress serves as a content management system.

1.2 Content management system (CMS)

It is a type of software that allows us to create, modify, and publish website content with the help of technical knowledge and coding skills. Content management systems may have components like text editor, version control, search functionality, media libraries, and user management. By incorporating a user-friendly interface with a CMS, it becomes easier and faster to publish Web content. It can reduce the time and effort in managing the websites. Some features of a CMS are given below.

Security: Ensuring security of business from cyber-attacks is very important. Normally, a CMS contains a robust set of security features. Some recommended features include the following.

- o   Two-factor authentication such as with password and PIN code

- o   Application of captchas

- o   Addition of "honeypot" fields in login forms

- o   Application of strict permission rules

- o   Use of strict password rules

- o   Firewalls and antivirus protection against malware attacks

- o   Setting of password expiration time frame

Create, edit and publish website content: These are a minimum requirement of a CMS. One can develop high quality content with the applications of these tools.

Multi-channel delivery: Web content may be published through multiple channels, devices, and interfaces. Some CMSs allows us to create content once and deliver it anywhere. But others make it easy to add new channels and load the existing content onto them.

User and role-based administration: A CMS with customizable roles and user administration, helps in accessing content and features to prevent mistakes, and allows to expand as per needs.

Multilingual support: This feature is required to serve international companies / people. It involves multilingual editing tools and intuitive translation workflows. The CMS should provide information governance controls that comply with the local regulations.

Search through repository of content: Visitors can be given opportunity to search relevant information available in the website.

User-friendliness: Consider a CMS that supports a website of a multinational company. With the help of user-friendliness of interface, employees in different countries can quickly re-use branded components such as images, designs, and experiences for localization. This allows users to use the system in their preferred language.

Testing: A CMS has built-in experimentation capabilities for easy testing of content and experience elements using desktop computer, mobile, and other channels.

Analytics: A content management system that has a built-in analytics engine helps the company in many ways. Marketing teams, content creators and brand managers can spot visitor trends. Company can improve using digital experience using local visitor data.

Scalability: Scaling is a way to handle workload variations by adjusting infrastructure. An increased workload could be triggered by events like an influx of users, a large volume of simultaneous transactions, or an event that pushes the software beyond its designed capacity.

Integration: When a business requires more specialized features that fit its online business model, it is increasingly difficult to find CMS solutions that meet all those requirements. It may require to integrate CMS with external applications.

Some examples of content management system are WordPress, Joomla, Wix, and Squarespace. WordPress is the most widely used CMS, amounting to more than 60% of all websites that use a CMS. WordPress and Joomla are both open-source and free software. They can be modified and distributed. Wix and Squarespace use drag-and-drop technique. They have no-code website builders with a built-in content management system.

1.3 Blog

A blog, that is a weblog, is an informational website consisting of discrete, often informal diary-style text entries, called posts. These posts are placed in reverse chronological order so that the most recent post appears at the top of the web page.

Initially, blogs were often the work of a single individual, occasionally of a small group, and often covered a single subject or topic. From year 2010, "multi-author blogs" (MABs) have emerged. It involves writing of multiple authors. MABs from newspapers, other media outlets, universities, think tanks, advocacy groups, and similar institutions account for an increasing quantity of

blog traffic. Twitter and other microblogging systems integrate MABs and single-author blogs into news media.

As a verb form, blog means *to* maintain or add content to a blog.

1.4 WordPress plugin architecture

Plugin architecture allows users to extend or depreciate the features and functionalities of a website or blog. A WordPress plugin is software that adds specific features to a website. They help users customize and extend functionality without coding. Plugins are easy to install, with thousands available for free or purchase. Examples include adding social media buttons, optimizing site speed, creating forms, and managing backups.

More than 50,000 plugins are available in `WordPress.org` apart from premium plugins. These premium plugins are not listed in the `WordPress.org` repository. These are third party plugins available through their own websites, many of which are paid packages.

1.5 Two versions of WordPress

Two working versions of WordPress come into picture due to existence of `WordPress.com` and `WordPress.org`. Both the versions differ in ways the WordPress is supported to users. Interestingly, the same WordPress software powers both `WordPress.com` and `WordPress.org` sites.

`WordPress.com` gives users a quick and easy way to get started for free and can expand to more custom paid options as they grow. `WordPress.org` provides advanced customization and monetization options.

One of the main differences is how one can host the website. Web hosting is a service that allows website to be published and accessible on the Internet.

`WordPress.com` includes managed hosting. This helps to optimize the website for speed, security, and performance. Managed hosting takes care of many technical aspects of the website. `WordPress.com` has many plans with increasingly powerful features for different site types and budgets.

`WordPress.org` allows us to download the WordPress source code for free and upload it with a hosting provider that we choose. This is also called self-hosting WordPress. Thus, one needs to find and pay for separate hosting and be more involved on the technical side to build and maintain the website effectively.

1.6 Advantages of WordPress

There are many advantages of WordPress, and some of them are given here.

Easy to install and setup: WordPress is easy to setup and install; no coding is required.

Easy to use: It comes with intuitive design, directions, and tutorials to start and use it. Non-technical persons also find it easy.

Search engine and SEO facilities: WordPress has built-in facilities to search using search engines like Google, Yahoo, and Bing. Also, if a website is built-in using WordPress, it can get lots of search engine traffic to website over a long time.

Lecture 2

Contents: General guidelines; WordPress server requirements; Downloading XAMPP server; Connecting to MySQL; Downloading WordPress; Exercises

2.1 General guidelines

In this book, we shall learn WordPress using features that are provided free. At the beginning, we shall learn WordPress development by opening an account with `wordpress.com`.

In Lectures 3 to 19, we discuss how to open an account with `wordpress.com` and play around the free features that are available in it. With the help of these lectures, learners will have a fair idea of what WordPress can do or support for us. Also, if a learner gets convinced, he or she can register for a custom domain with `wordpress.com` and subscribe other features and plugins.

For localhost WordPress development, we shall install XAMPP server. In Lecture 2, we shall discuss the process of installing XAMPP server as well as WordPress within it. From Lecture 20 onwards, we shall give a general idea of local WordPress development with (XAMPP) server. We shall discuss why localhost WordPress development is an important issue. Many web hosting companies support WordPress web hosting. In that case, the user is responsible to perform all the settings on his or her own. There are some helps that may be extended during WordPress development when using `wordpress.com`.

2.2 WordPress server requirements

First, we shall check the requirements of server. Server requirements involve several elements such as RAM, database version, processing power, disk space, and the web server. Later, we shall learn afterwards how to install WordPress in XAMPP server. First, we shall install XAMPP server. See below the requirements of WordPress server.

Web server: WAMP (Windows), LAMP (Linux), XAMPP (Multi-platform), MAMP (Macintosh)

Disk space: 1 GB or more

PHP: Version 7.4 or higher

Database: MySQL 5.7 or higher / MariaDB 10.4 or higher

RAM: 512 MB or more

CPU: 1.0 GHz or more

HTTPS support

2.3 Downloading XAMPP server

WordPress requires MySQL database, and MySQL is available in XAMPP. First, we shall install XAMPP server.

We shall be working on Windows operating system. XAMPP contains A for Apache, M for MariaDB, P for PHP and another P for Perl, where the first letter X in XAMPP indicates that it is a cross-platform software. MariaDB is known as MySQL. MySQL was replaced with MariaDB on 19th October, 2015. The current version 8.1.6 of XAMPP is released in May, 2022.

To download the software, we give a search on Google using keyword "download xampp on windows". Follow the first link as it appears after search.
https://www.apachefriends.org/download.html

Download the highlighted version of XAMPP as given in Fig. 2.1 and follow as directed. One can see the following YouTube video for installing XAMPP software.

https://www.youtube.com/watch?v=VQpATELDSEI

We create a folder `OurPHP` under `C:\xampp\htdocs`. We shall save PHP programs in folder at `C:\xampp\htdocs\OurPHP`.

In this context, we shall use XAMPP software to work with MySQL.

Go to: `Start → All Apps → XAMPP → XAMPP Control Panel` and click. Then click "Start" button of Apache and "Start" button of MySQL. We get screen as shown in Fig. 2.2. Now we can work with MySQL.

Consider the file `C:\xampp\phpMyAdmin\config.inc.php`. One can open the file using editor like `Notepad` or `Notepad++` software to edit the file. We assume that the given password for "root" is "". This password can be set using the following statement.

`$cfg['Servers'][$i]['password'] = '';`
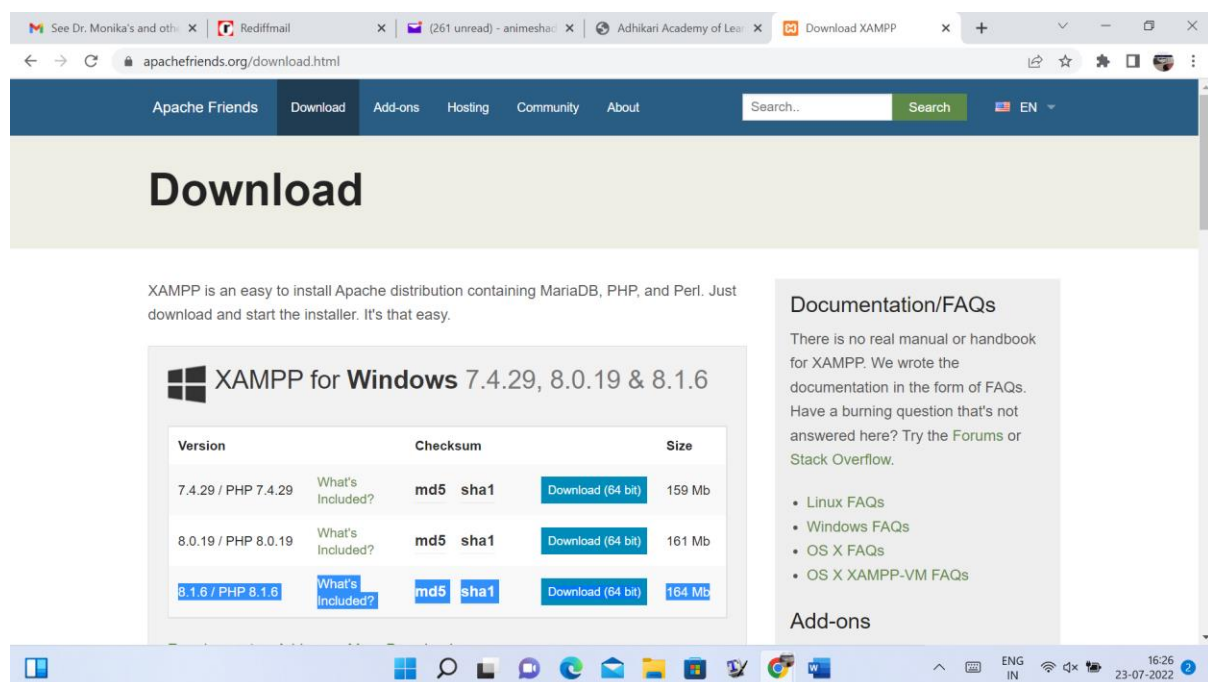
We have user: `root@localhost` with password: `nil`

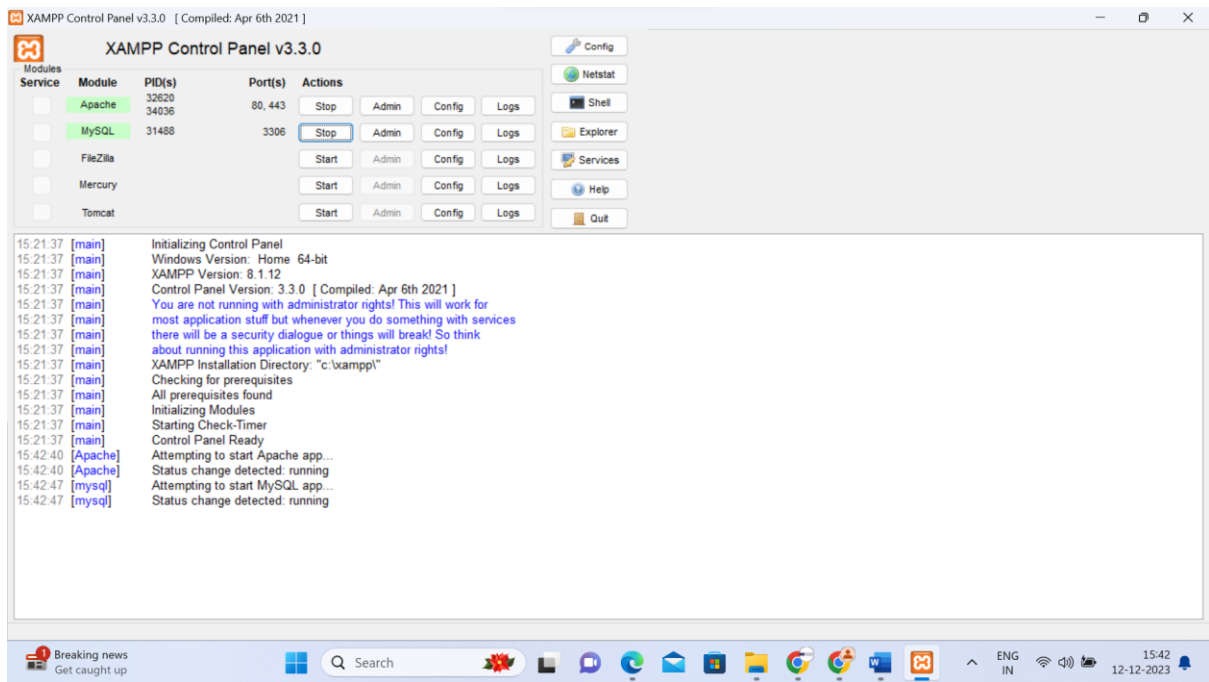**Figure 2.1:** Screen to download XAMPP for Windows

Figure 2.2: XAMPP control panel after activating Apache and MySQL

2.4 Connecting to MySQL

We shall use MySQL database using MySQLi extension, where "i" stands for "improved". Use the code in Fig. 2.3 to open a connection. (`connect.php`)

```php
<?php
$server = "localhost";
$user = "root";
$password = "";
// create connection
$conn = new mysqli($server, $user, $password);
// test connection
if ($conn->connect_error) {
  die("Connection has failed: " . $conn->connect_error);
}
echo "Connected successfully!";
?>
```

Figure 2.3: A program to connect MySQL database server (`connect.php`)

Program `connect.php` is saved in `C:\xampp\htdocs\OurPHP`. This program can be executed by copying the following path in the address bar, and pressing Enter key.

`http://localhost/Our-PHP-Programs/connect.php`

The output of the program is given below: (highlighted)

Connected successfully!

Now, enter the address: http://localhost/dashboard/ in the address bar of the browser and press Enter. Then click `phpMyAdmin`. We get the following screen as shown in Fig. 2.4.

Lecture 3

Contents: Website versus blog; Writing a blog; Exercises

3.1 Website versus blog

Some features like content and update frequency show the differences between a blog and a website.

In blogs, the posts are kept in reverse chronological order and updated regularly. In normal websites, contents are typically remained the same for long period of time and arranged by category or topic.

Blogs enable us to make money using various methods such as joining an affiliate program, writing sponsored posts, and building a subscriber list. To make money using websites, there are various forms of services that vary from website to website. A few services are mentioned below.

- opening online stores

- offering professional services like consulting

- offering services like online recharging of mobiles and TVs

- offering various online financial services

Blogs can be part of a larger website. Often, larger websites have a blog section where they regularly create content to inform and educate their customers. A blog does not contain a full website. One can use WordPress to create both a website and a blog.

Readers of a blog post can leave their feedbacks and the blog post author can respond. This results in creating an ongoing dialog between author and readers about the blog post.

3.2 Writing a blog

Different people have different requirements regarding hosting a website or a blog. If you wish to start with free a domain name and hosting your site with a third-party web hosting facility, WordPress is a good solution. We shall be working here with hosted service offered at WordPress. In Lecture 2, we have downloaded WordPress available at `WordPress.org`, and install in XAMPP server. We shall be discussing later about self-hosted version of `WordPress.org`.

Type `www.wordpress.com` in the address bar of the browser and press Enter key. We get the page as shown in Fig. 3.1. Now click on "Get started" button, and continue with `Email` option as given. Then create an account with your email. We select option "Select your domain later". We land up in the following screen. (Fig. 3.2)

We start with the option "Free" among the several options offered, and click on "Start with Free" button. We get the screen as given in Fig. 3.3.
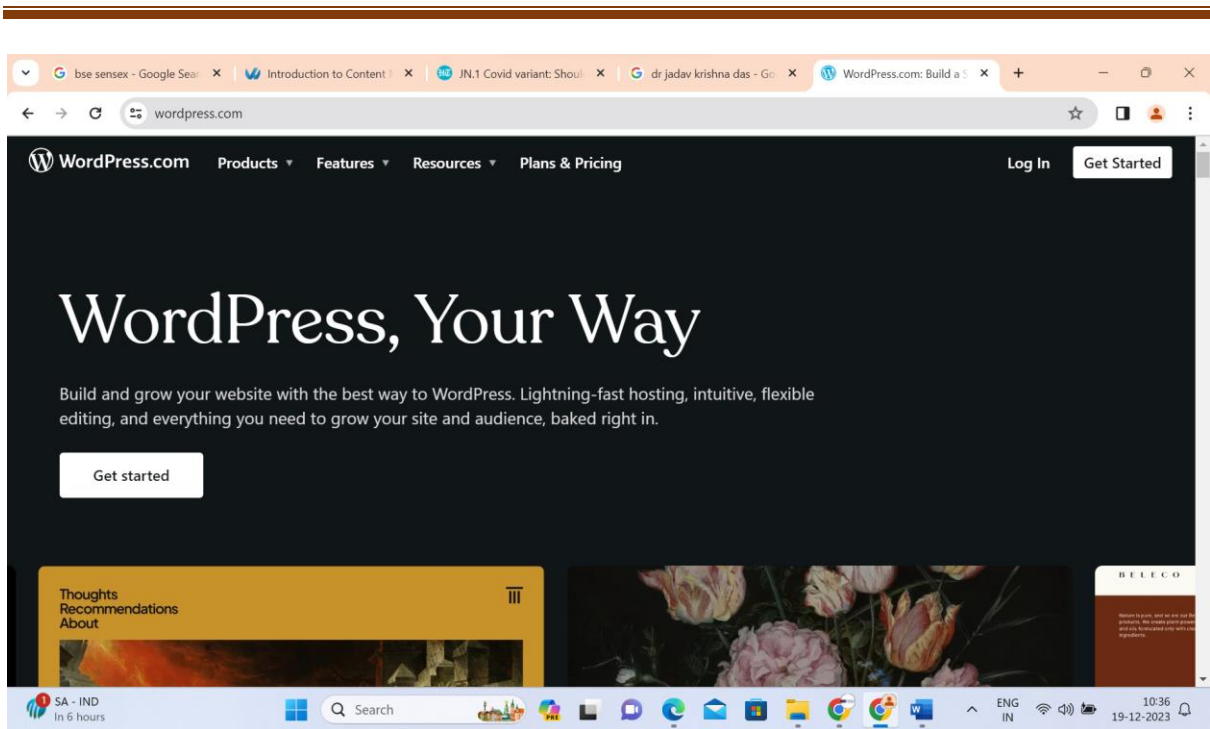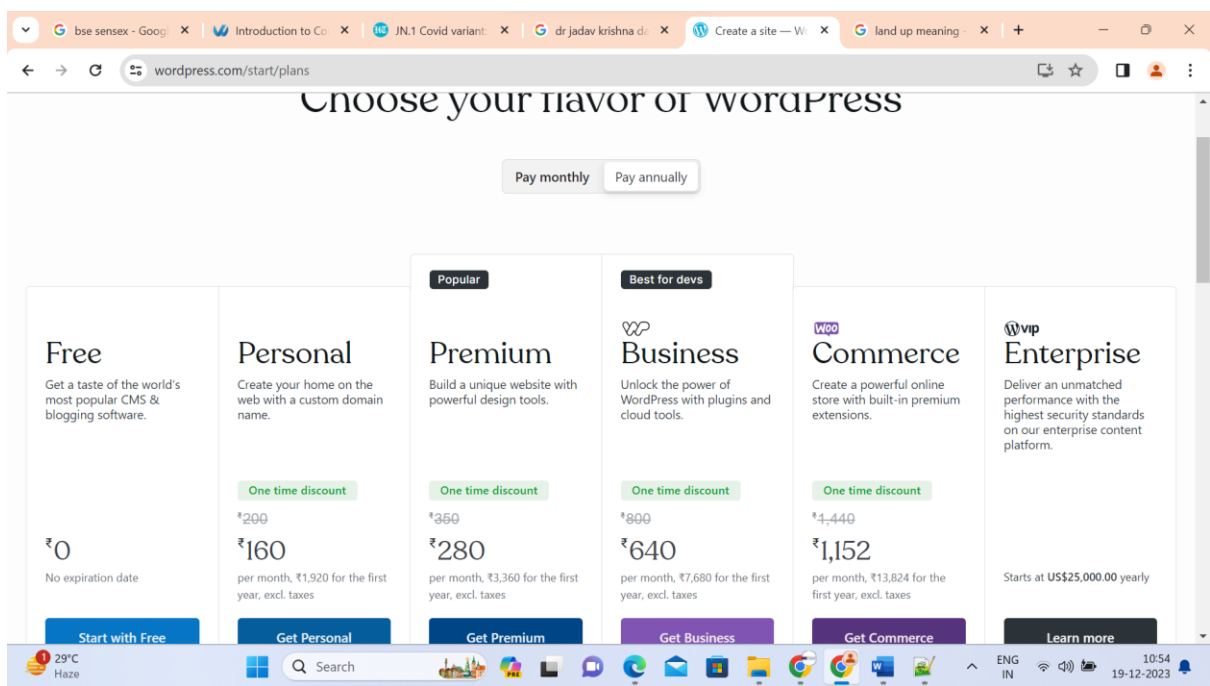
Figure 3.1: Home page of wordpress.com

Figure 3.2: Flavours of WordPress

Now, we choose option "Write & Publish". We select Site title (Blog name) as "Books in Computer Science and Information Technology". The first blog written is shown in Fig. 3.4.
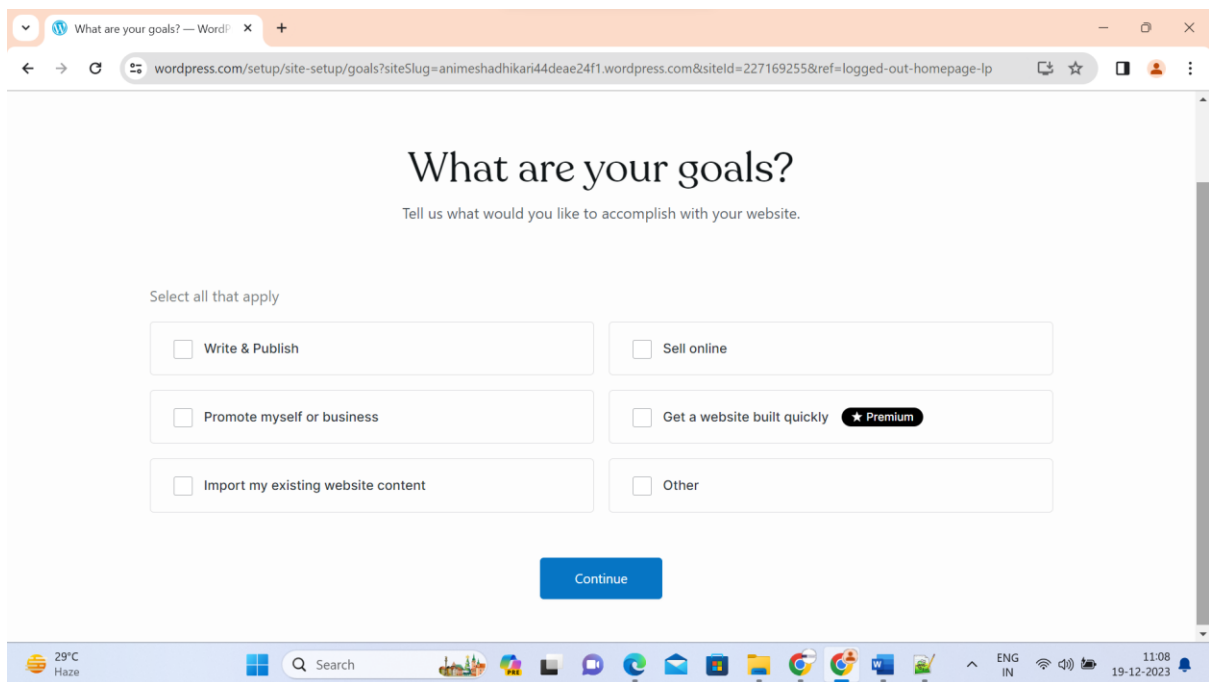
Figure 3.3: Goal options as given under "Free"
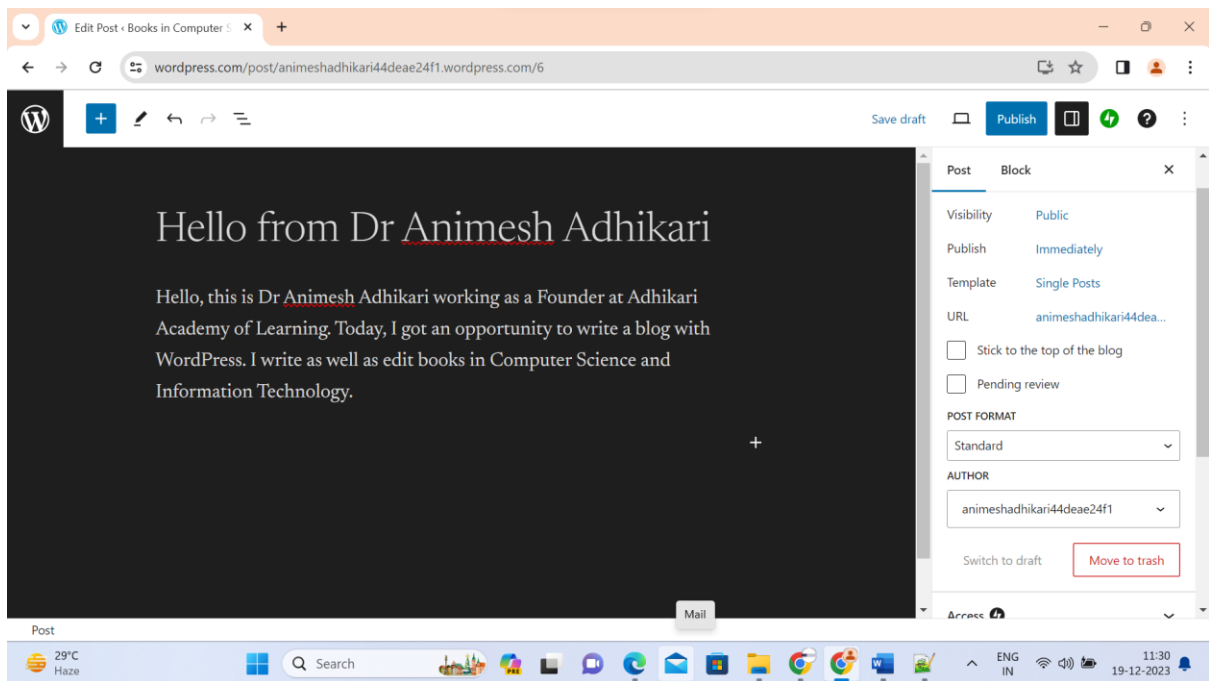

Figure 3.4: Writing the first blog

Then click on "Publish" button given on top-right corner of the screen. See the first post as given in Fig. 3.5.