<u>CERTIFICATE</u>

Name: Suraj.Dinesh.Oza

Roll No: 55.   Programme: BSc IT.   Semester: II

This is certified to be a bonafide record of practical work done by the above student in the college laboratory for the course **IT PLATFORM, TOOLS AND PRACTICES** for the partial fulfilment of Second Semester of BSc IT/CS during the academic year 2021-22.

The journal work is the original study work that has been duly approved in the year 2021-22 by the undersigned.

_____   _____

External Examiner   Mrs. Sweety Garg
                                                             (Subject-In-Charge)

Date of Examination: (College Stamp)

Sr. No.	DATE	TITLE	SIGN
1.		Creating account, repository on GitHub and Cloning repository in GitHub Page	
2.		WRITING EMAIL	
3.		BASIC UNDERSTANDING ON FREE AND OPEN-SOURCE SOFTWARE a) Describe Open-Source Software with Example. b) Describe Free Software with Example c) Difference between Free and Open-Source Software.	
4.		INTRODUCTION and CONTRIBUTING TO WIKIPEDIA a) What is Wikipedia? b) Steps to Create Account on Wikipedia c) Creating Page on Wikipedia d) Edit your page	
5.		Using practical examples, describe green computing. List and explain the steps that you take to contribute to green computing	
6.		WRITING BLOGS	
7.		Implementing coding practices in Python using PEP8.	
8.		Importance of The Multidisciplinary Nature of Environmental Studies	
9.		Importance of Going Paperless	
10.		Define the terms renewable resource and non-renewable and give examples of each resource type that are related to forage production	

Practical 01:- Creating account, repository on Github and cloning repository in Github Page.
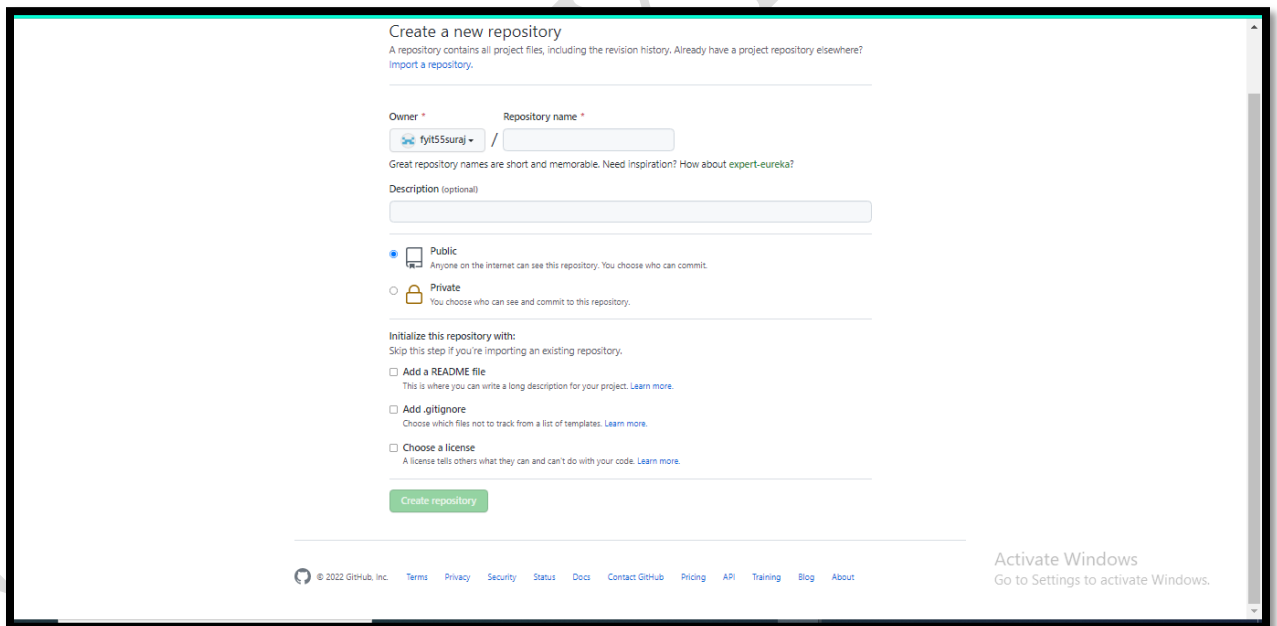
A. Creating Account:-

• Go to github.com on your web browser.

• Click on Sign up.

• Enter the details asked.

• Click on 'Create Account.

• Verify your E-mail id.

• Select your preferences and submit
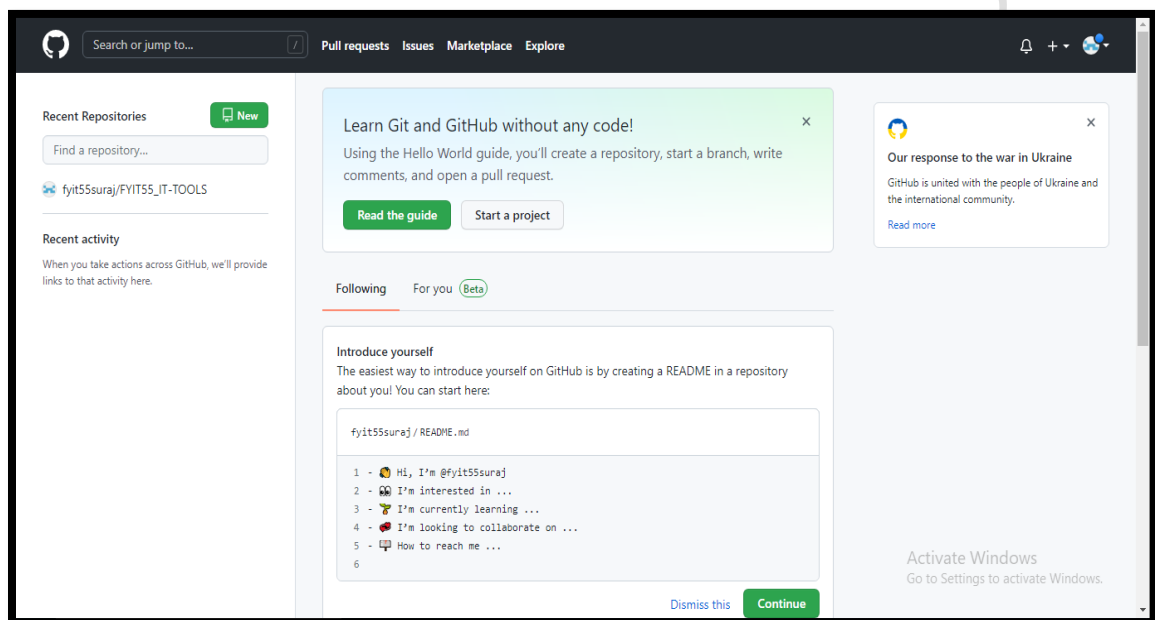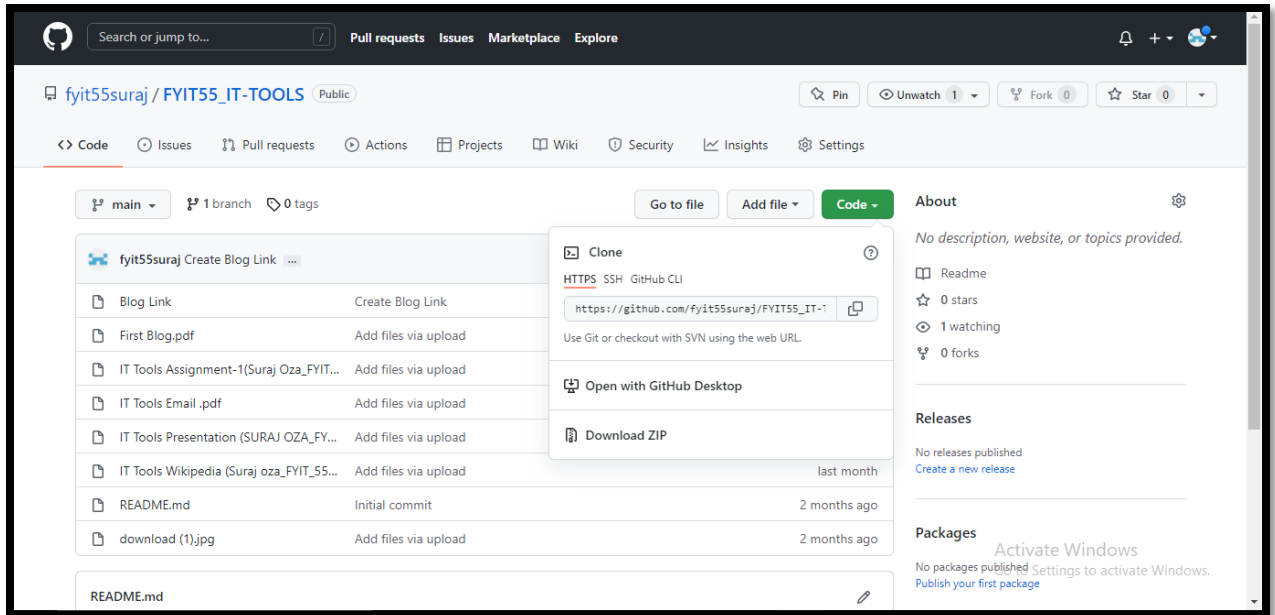

B. Creating Repository and cloning reposito

• Login into your github account.
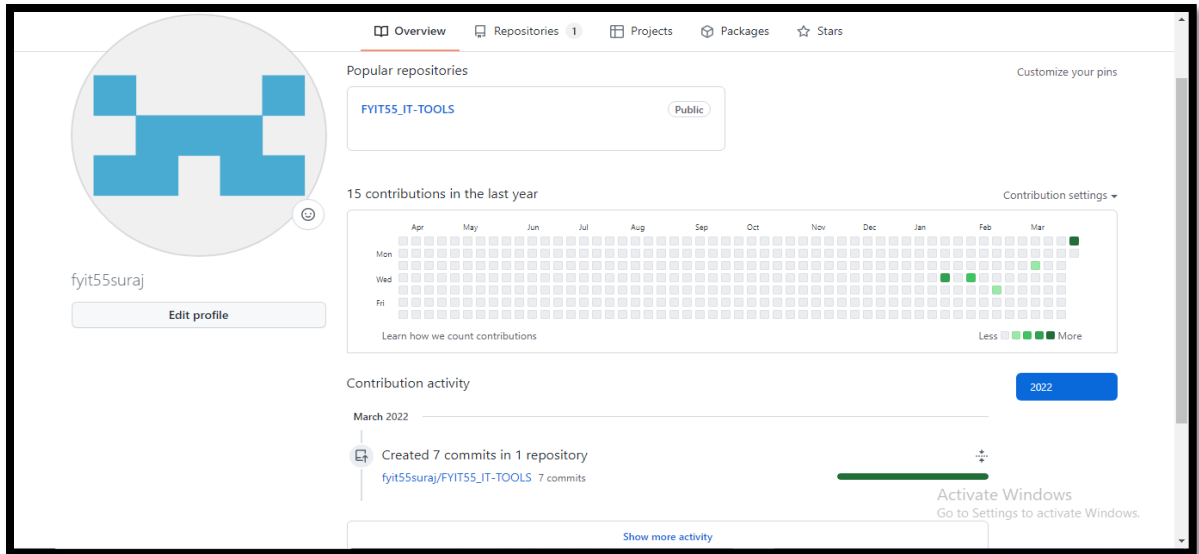
• Click on New repository option.

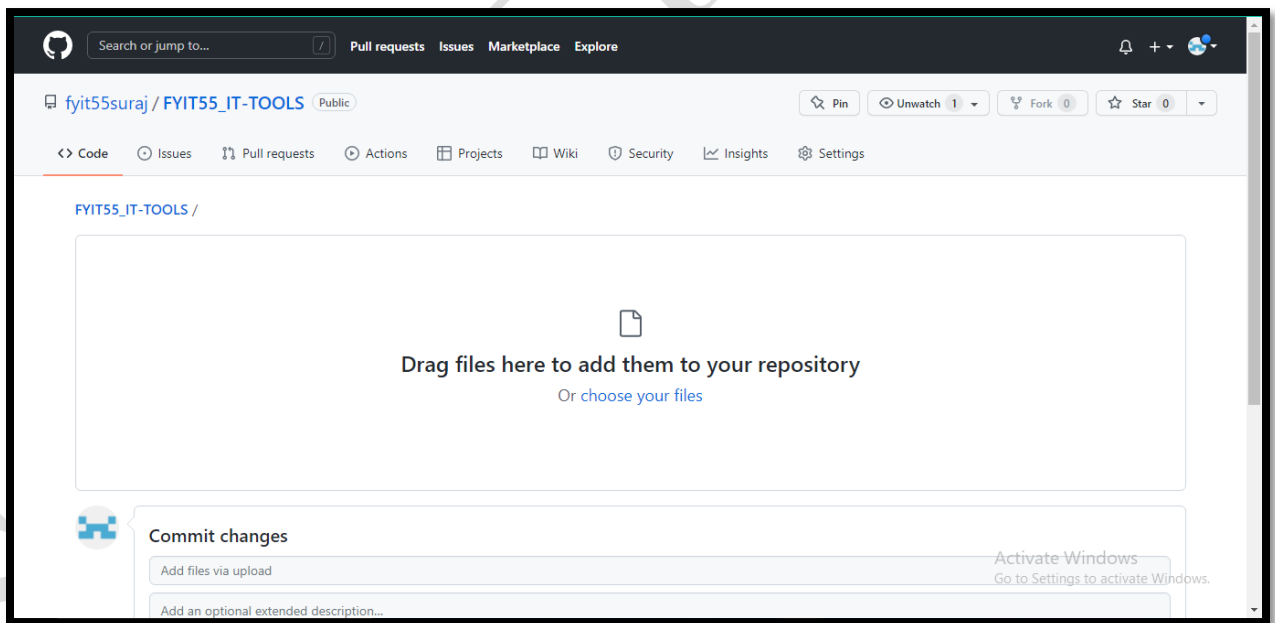
• After clicking New repository, name your project and choose the visibility and click on 'Create Repository' button.
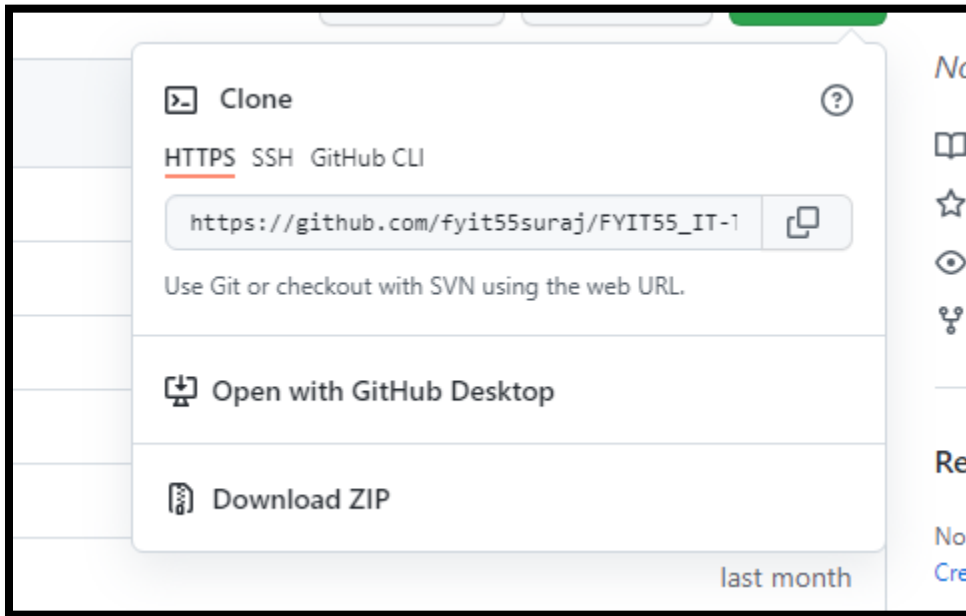
• Now click on the 'Upload files' button and choose the file you want to upload.

• After that now 'Click on commit changes' and you can see the uploaded files.

C. **To clone the repository :- • To clone the repository select the link visible and paste where you want.**

Practical 02:- Sending an E-mail.

• Practical 02 Sending an E-mail:-

❖ Make sure you have an appropriate email id.

❖ On your device, go to Gmail.

❖ Click on "Compose"

❖ In the 'To' field add recipients.

❖ Add subject.

❖ Write your Message .

❖ And in the bottom of the page "click Send".

❖ You can check your mail in the "sent" option available there.
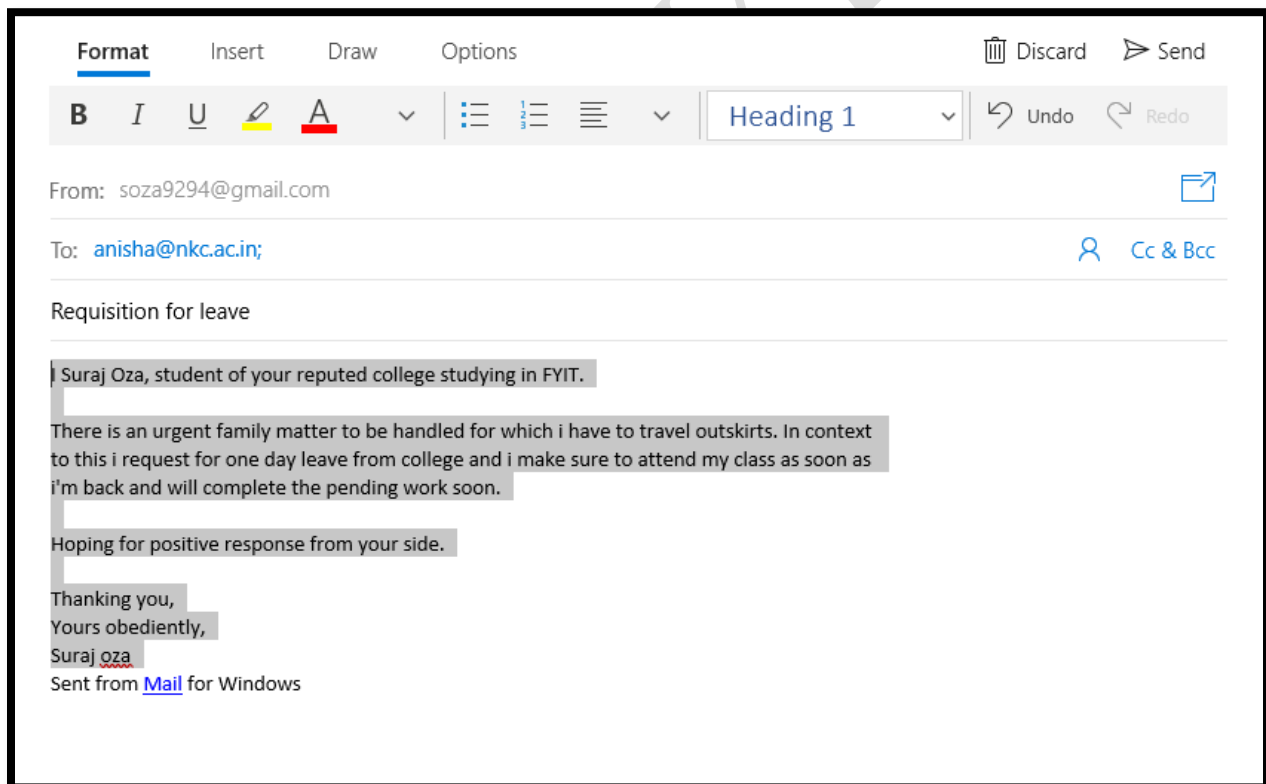
<u>Practical 03</u>:- BASIC UNDERSTANDING ON FREE AND OPENSOURCE SOFTWARE.

A. Describe Open-Source Software with Example.

Open source software is software with source code that anyone can inspect, modify, and enhance."Source code" is the part of software that most computer users don't ever see; it's the code computer programmers can manipulate to change how a piece of software—a "program" or "application"—works. Programmers who have access to a computer program's source code can improve that program by adding features to it or fixing parts that don't always work correctly.Some software has source code that only the person, team, or organization who created it—and maintains exclusive control over it—can modify. People call this kind of software "proprietary" or "closed source" software. Only the original authors of proprietary software can legally copy, inspect, and alter that software. And in order to use proprietary software, computer users must agree (usually by signing a license displayed the first time they run this software) that they will not do anything with the software that the software's authors have not expressly permitted. Microsoft Office and Adobe Photoshop are examples of proprietary software. Open source software is different. Its authors make its source code available to others who would like to view that code, copy it, learn from it, alter it, or share it. LibreOffice and the GNU Image Manipulation Program are examples of open source software. As they do with proprietary software, users must accept the terms of a license when they use open source software—but the legal terms of open source licenses differ dramatically from those of proprietary licenses. Open source licenses affect the way people can use, study, modify, and distribute software. In general, open source licenses grant computer users permission to use open source software for any purpose they wish. Some open source licenses—what some people call "copyleft" licenses—stipulate that anyone who releases a modified open source program must also release the source code for that program alongside it. Moreover, some open source licenses stipulate that anyone who alters and shares a program with others must also share that program's source code without charging a licensing fee for it. By design, open source software licenses promote collaboration and sharing because they permit other people to make modifications to source code and incorporate those changes into their own projects. They encourage computer programmers to access, view, and modify open source software whenever they like, as long as they let others do the same when they share their work.

B. Describe Free Software with Example.

A program is free software if the program's users have the four essential freedoms: The freedom to run the program as you wish, for any purpose (freedom 0). The freedom to study how the program works, and change it so it does your computing as you wish (freedom 1). Access to the source code is a precondition for this.The freedom to redistribute copies so you can help others (freedom 2).The freedom to distribute copies of

your modified versions to others (freedom 3). By doing this you can give the whole community a chance to benefit from your changes. Access to the source code is a precondition for this. A program is free software if it gives users adequately all of these freedoms. Otherwise, it is nonfree. While we can distinguish various nonfree distribution schemes in terms of how far they fall short of being free, we consider them all equally unethical. Some of the best-known examples include the Linux kernel. The concept of free software is the brainchild of Richard Stallman, head of the GNU Project , the BSD and The best Linux operating systems, the GNU Compiler Collection and C library; the MySQL relational database; the Apache web server; and the Sendmail mail transport agent. known example of free software is Linux, an operating system that is proposed as an alternative to Windows or other proprietary operating systems. Debian is an example of a distributor of a Linux package.

C. Difference between Free and Open-Source Software.

FREE SOFTWARE	OPEN SOURCE SOFTWARE
Software is an important part of people's lives.	Software is just software. There are no ethics associated directly to it
Software freedom translates to social freedom	Ethics are to be associated to the people, not to the software
Freedom is a value that is more important than any economical advantage.	Freedom is not an absolute concept. Freedom should be allowed, not imposed.
The Free Software Directory maintains a large database of free-software packages. Some of the best-known examples include the Linux kernel, the BSD and Linux operating systems, the GNU Compiler Collection and C library; the MySQL relational database	Prime examples of opensource products are the Apache HTTP Server, the ecommerce platform osCommerce, internet browsers Mozilla Firefox and Chromium (the project where the vast majority of development of the freeware Google Chrome is done) and the full office suite LibreOffice

## **Practical 04:- Working with Wikipedia.**

1. What is Wikipedia?

→ Wikipedia is a free online encyclopedia that provides open content to its users. It is written collaboratively and openly by a community of both actual and self-proclaimed experts who call themselves Wikipedians. It was created Jimmy Wales and Larry Sanger and was initially slated to be a for-profit website used to support Wales' and Sanger's earlier venture into online encyclopedia space, Nupedia. It is a type of website designed to make collaboration and modification of both content and structure easy, called a "wiki." Its purpose and scope eventually became a website that stores information on nearly all topics known to man, as in an encyclopedia, and thus it was named Wikipedia as an amalgamation of these two concepts. Wikipedia was founded by Jimmy Wales and Larry Sanger on January 15, 2001 and is supported by the Wikimedia Foundation, a nonprofit parent organization. Wikipedia started as a complementary project for an earlier encyclopedia project called Nupedia, which has been defunct since September 26, 2003. It came about because of the stringent review process of Nupedia experts that drove away contributors and stifled its growth. Wales wanted to create another wiki that could foster open collaboration without the fear of humiliation for contributors with articles that they could eventually properly review and then move to Nupedia proper. But the concept grew and quickly overtook the number of articles in Nupedia – Wikipedia had 13,000 articles as of September 25, 2001 as opposed to Nupedia's measly 21 approved articles in its first year. All articles from Nupedia were absorbed into Wikipedia after its demise in 2003. Articles posted and written for Wikipedia were covered under the GNU Free Documentation License (GFDL) during its initial release, but the Creative Commons License was released in 2002 and it gained ground with bloggers and others who were distributing content over the Web. Since GFDL and the Creative Commons License are incompatible, the Free Software Foundation (FSF) released a new version of the GFDL to suit Wikipedia and relicense its content to be under the Creative Commons Attribution-ShareAlike (CC BY-SA). By law the contributions are still owned by their writers and are allowed to use their articles in any way. However, articles with multiple authors would require permission from all contributors. Wikipedia also has sister projects which include Wikibooks, Wiktionary, Wikiquote, Wikiversity, Meta-Wiki, Wikispecies and Wikisource. The site is run by the principles articulated by Jimmy Wales, which dictates an adherence to a neutral point of view.

2.Steps to create Wikipedia account.

a. Open a Web browser to Wikia.com.

b. Near the top there will be a Create Wiki button, click on it.

c. Pick a name for your wiki, followed by a Web address.

d. Sign up for an account on Wikia if you don't have one already.

e. Enter a description for the type of wiki you are creating

f. Pick a theme. And you are ready to use your account.
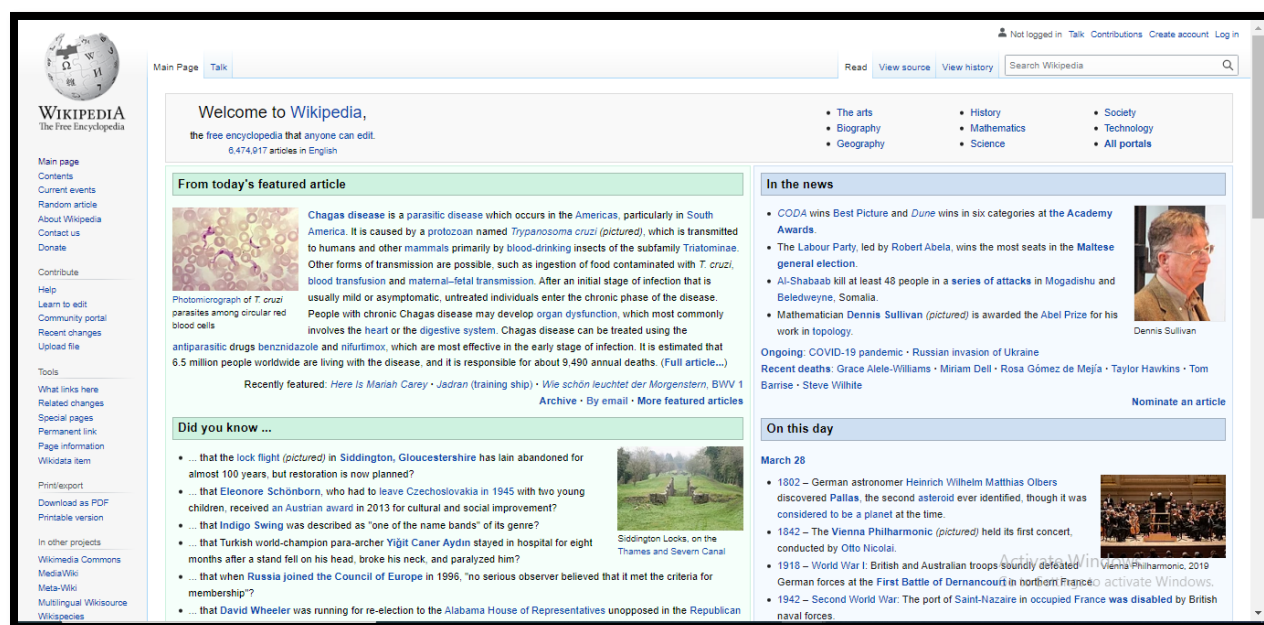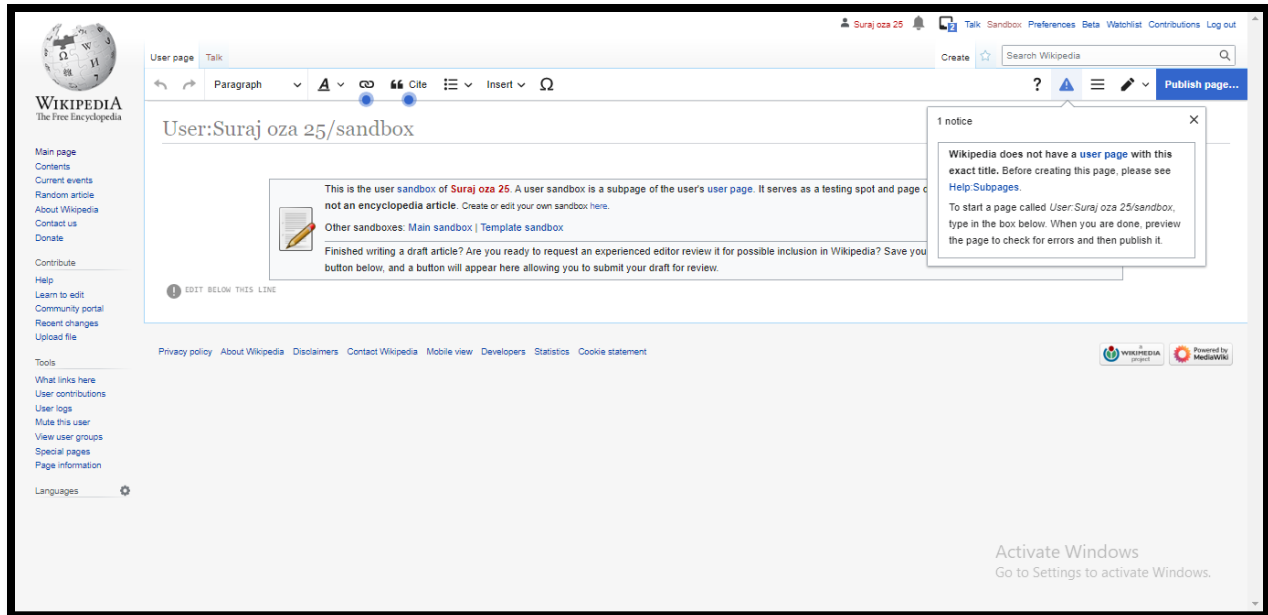

3.Creating a page on Wikipedia.

a. To start with creating a page remember to Research Your Topic and Gather Resources .

b. Click on the sandbox and Create an outline.

c. Write a draft of your wikipedia page.

d. Submit your article for review.

e. Publish your changes

4. Editing Wikipedia document.

a. Select the edit option.

b. Edit your page.

c. Publish change.

Practical 05:- Using practical examples, describe green computing. List and explain the steps that you take to contribute to green computing.

Q1. What is Green Computing?

Green computing is an approach towards environmentally sustainable use of computing. It involves manufacturing, designing, disposing, and using computers and related resources effectively and efficiently with minimal to no negative effects on the environment. This sustainable approach helps save electricity and ensures computers generate less heat. It also helps protect the environment from hazardous materials and their impacts. It is an effective strategy to reduce the carbon footprints that IT systems leave. Using information & communication technologies (ICT) helps grow segments affecting carbon emission. In addition, green computing applies management technologies and strategies to reduce energy wastage.
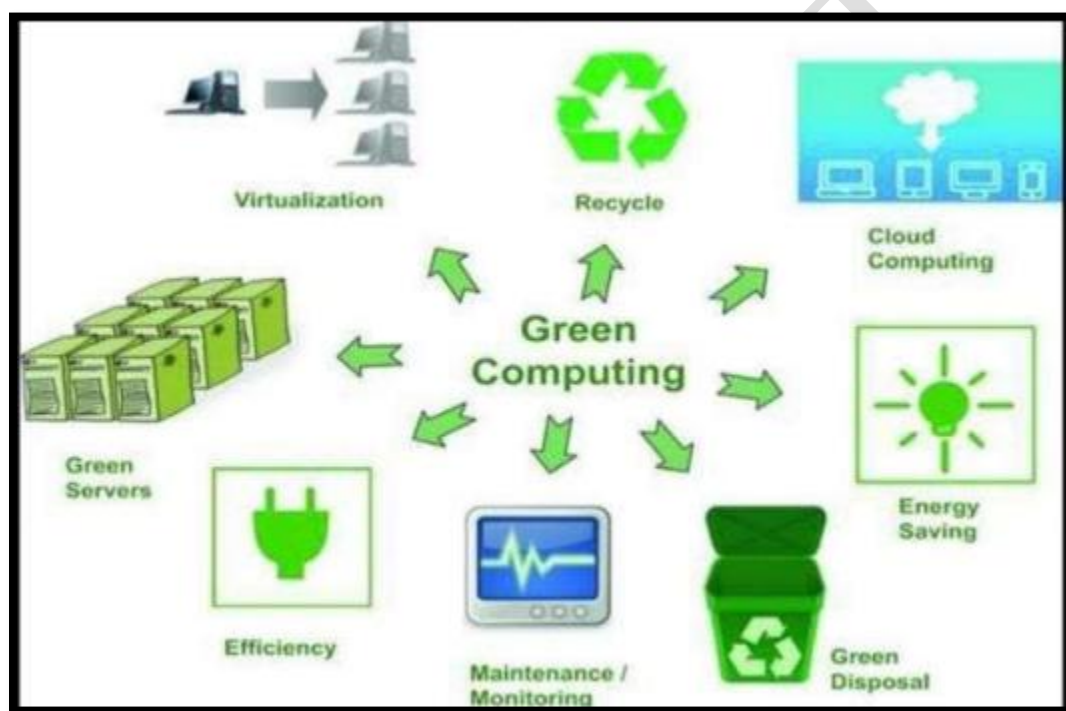
Q2. Some examples of Green Computing.

1. Responsible handling of electronic equipment is critical in order to minimize the university's impact on the environment. Companies like Dell, Inc and Mac, Inc are adapting sustainable, environmentally responsible practices and standards which apply for the life of their computers, from design, production and packaging to recycling after the machine's useful life has ended.

2. Outdated Apple equipment is processed through Apple's Trade-In Program, often for purchase credit. Apple either refurbishes the equipment or recycles it in an environmentally safe

manner. Other outdated equipment is processed through the university's recycling partner, GreenPC Electronic Recycling. Such equipment is then refurbished and resold to other users.

3.TapeTape is a popular method of green storage that is widely used. Tape has no moving parts that use up energy, is portable and has a longer shelf-life than other storage technology.
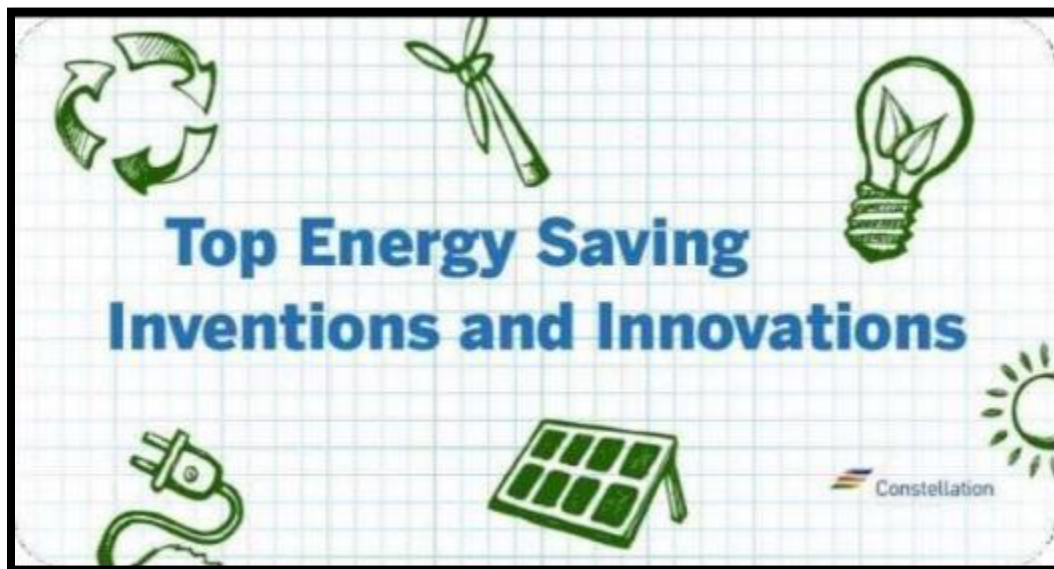
4.Green Drives: Green hard drives are drives that reduce the amount of power they use through a variety of mechanisms, including unloading the heads during idle time to reduce aerodynamic drag. The drives calculate the optimum seek speed to use just the amount of power necessary.

Q3. Steps to contribute towards Green Computing.

1. **Proclamation of the Green Intentions:** It is always best to begin Green IT initiatives by communicating intentions to adopt an environment-friendly IT infrastructure. The push for energy efficiency should be cascaded down to every staff, setting the stage for collaboration between various departments. Once they learn about the initiatives, they will know that everyone needs to be involved.

2. **Appointment of a Working Group for Green IT Compliance Assurance :** Once the ball is set to roll, you need to have a committee that will monitor and ensure that the company's plans are adhered to by all members of the organization. One of the most important tasks that the appointed Green IT Committee must focus on is the acquisition of energy efficient IT infrastructure. This team should make sure that the IT groundwork meets all the criteria that are set for the protection of the environment.

3. **Measurement of Current Carbon Footprints Produced by IT Components:** Where the company stands in terms of carbon footprint brought about by information technology services, is an important information to be known. Quickly establish a carbon footprint

reference point. Check on the power usage in the IT center and compare it with existing power efficiency standards and metrics for industry.

4. **Planning More Centralized IT Operations:** It is relatively easy for an organization to centralize its information technology (IT) system. With server virtualization, carbon footprints can be significantly reduced

5. **Usage of More Efficient Computer Applications**: By using more powerful computer applications, your IT systems can better deal with inefficiencies. Besides, faster software spares the servers from regularly operating at maximum capacity, thereby consuming lesser power. If one can only increase the speed of the computer applications that is used, one can have a corresponding positive effect on the energy use and carbon emissions.

6. **Usage of More Efficient Cooling Systems**: To reduce your CRAC (Computer Room Air Conditioning) power consumption for green computing, invest in supplemental cooling systems that are placed in between the rows of servers in data center. Thus, they can minimize the number of timesin a day that the bigger CRAC units are required to work on full power. Apply new Data-Centre design technology that minimizes hotzones.

7. **Careful Weightage of Life-cycle of IT Devices and Accessories:** Consider the projected life-cycle of existing IT hardware. Can it be recycled? Will it decay in time? If not, then disposing of existing hardware can far outweigh. the environmental benefits that you intend to achieve by buying newer more power-efficient computer hardware.

8. **Business Performance Enhancement through Green IT Policies:** Make sure that the drive for a green IT fits in your overall business operation. Better yet, ensure that environment-friendly IT and the business goals complement each other. By doing so, you will be able to achieve both green policies and bottom line goals.

9. **Work with Everyone Involved in IT Process Life-cycle:** Now that you have taken the steps to ensure that company uses green IT, you need to get everyone involved in the initiative. The human resources department can support initiatives by regularly posting announcements and notices that touch on the subject of environment-friendly computing.

10. **Result Monitoring and Continuous IT Optimization:** Lastly, you should always check the results of green IT initiatives. Compare this data with the benchmarks and metrics that is set for the company. A good example is checking total power consumption for each month. If it has significantly dropped, then one can say that we have effectively reduced your organization's carbon footprint.

Practical 06:- **Writing Blogs.**

A blog is a discussion or informational website published on the World Wide Web consisting of discrete, often informal diary-style text entries (posts). Posts are typically displayed in reverse chronological order, so that the most recent post appears first, at the top of the web page. Site used : https://www.blogger.com/blog/post/edit/774740526827557896/21416729 6349819398 0 Wix.com Ltd. is an Israeli software company publicly listed in the US that provides cloud-based web development services. It allows users to create HTML5 websites and mobile sites through the use of online drag and drop tools. Along with its headquarters and other offices in Israel, blogge also has offices in Brazil, Canada, Germany, India, Ireland, Lithuania, the United States, and Ukraine Users can add social plug-ins, e-commerce, online marketing, contact forms, email marketing, and community forums to their web sites using a variety of bloggedeveloped and third-party applications. The blogger website builder is built on a freemium business model, earning its revenues through premium upgrades.

 • **To get started with your blog first you need to create an account by clicking signing in and then entering your login details.**

 • **Select your way to sign in and add details.**
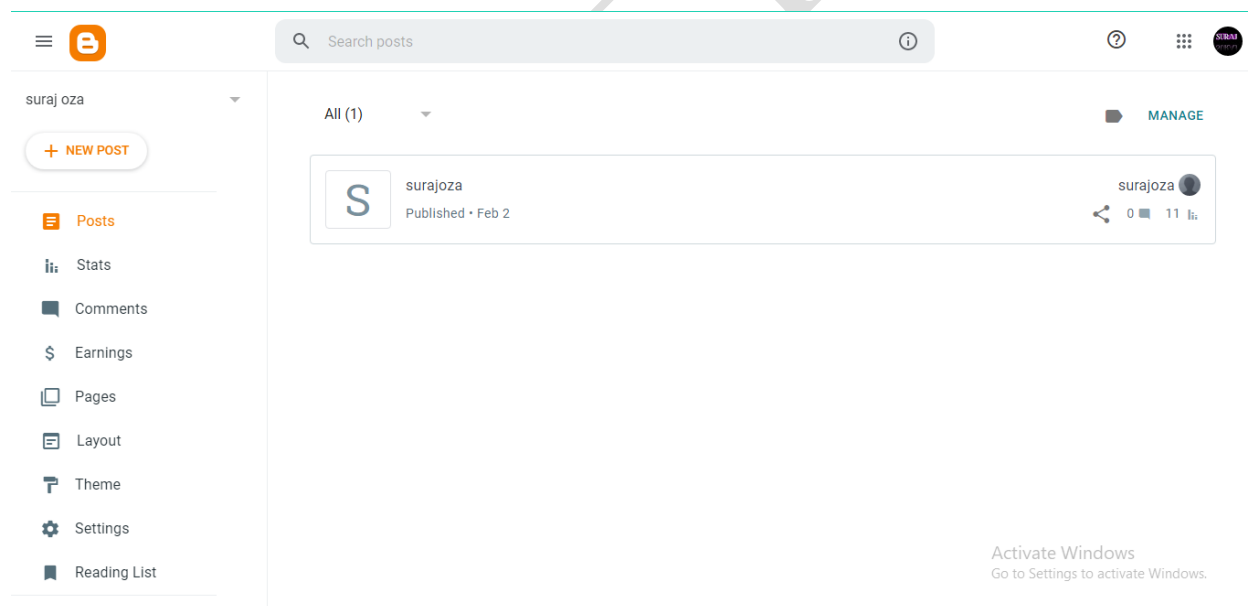
• **And it'll lead you to the Home Page where you will be allowed to perform various actions like track your site, manage it, edit it, publish new sites etc**.

BASIC UNDERSTANDING ON FREE AND OPEN-SOURCE SOFTWARE.
a) Describe Open-Source Software with Example.

Ans:-Open source software is software with source code that anyone can inspect, modify, and enhance."Source code" is the part of software that most computer users don't ever see; it's the code computer programmers can manipulate to change how a piece of software a "program" or "application" works. Programmers who have access to a computer program's source code can improve that program by adding features to it or fixing parts that don't always work correctly.

Example:-LibreOffice,GNU/Linux.are some of the example of open-source software.

b) Describe Free Software with Example.

 Ans:-"**Free software**" means software that respects users' freedom and community. Roughly, it means that **the users have the freedom to run, copy, distribute, study, change and improve the software**. Thus, "free software" is a matter of liberty, not price. We sometimes call it "libre software," borrowing the French or Spanish word for "free" as in freedom, to show we do not mean the software is gratis.You may have paid money to get copies of a free program, or you may have obtained copies at no charge. But regardless of how you got your copies, you always have the freedom to copy and change the software, even to sell copies.

Example:-Some of the best-known examples include the **Linux kernel**, the BSD and Linux operating

Example:-Some of the best-known examples include the **Linux kernel**, the BSD and Linux operating systems, the GNU Compiler Collection and C library; the MySQL relational database; the Apache web server; and the Sendmail mail transport agent.

c) Difference between Free and Open-Source Software.

Ans:-**Free Software:**
"Free software" means software that respects users' freedom and community. Roughly, it means that the users have the freedom to run, copy, distribute, study, change and improve the software.

The term "free software" is sometimes misunderstood—it has nothing to do with price. It is about freedom.

Example:-Some of the best-known examples include the Linux kernel, the BSD and Linux operating systems, the GNU Compiler Collection and C library; the MySQL relational database; the Apache web server; and the Sendmail mail transport agent.

Open Source Software:
Open Source Software is something which you can modify as per your needs, share with others without any licensing violation burden. When we say Open Source, source code of software is available publicly with Open Source licenses like GNU (GPL) which allows you to edit source code and distribute it. Read these licenses and you will
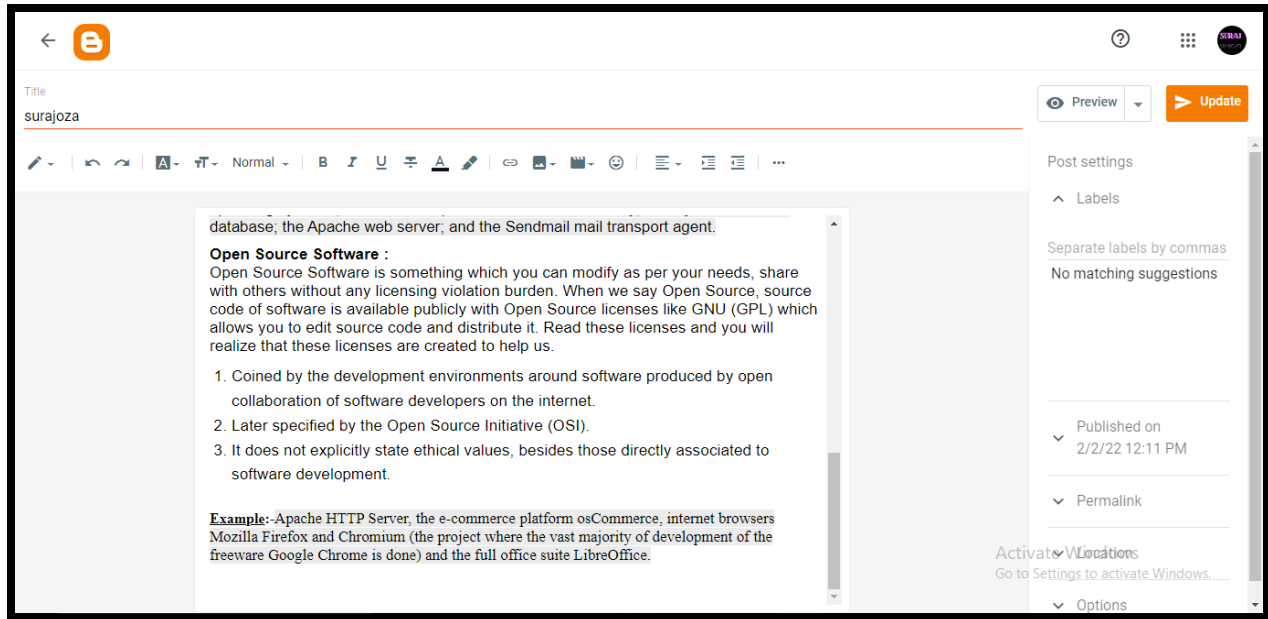
And you can publish your blog as you are done editing.

<u>Practical 07</u>:- Implementing coding practices in Python using PEP8.

01.What is Pep ?

The PEP is an abbreviation form of Python Enterprise Proposal. Writing code with proper logic is a key factor of programming, but many other important factors can affect the code's quality. The developer's coding style makes the code much more reliable, and every developer should keep in mind that Python strictly follows the order and format of the string.

Adapting a nice coding style makes the code more readable. The code becomes easy for the end-user PEP 8 is a document that provides various guidelines to write the readable in Python.

PEP 8 describes how the developer can write beautiful code. It was officially written in 2001 by Guido van Rossum, Barry Warsaw, and Nick Coghlan. The main aim of PEP is to enhance the readability and consistency of code.

02.Naming Convention :-

When we write the code, we need to assign name to many things such as variables, functions, classes, packages, and a lot more things. Selecting a proper name will save time and energy. When we look back to the file after sometime, we can easily recall what a certain variable, function, or class represents. Developers should avoid choosing inappropriate names.

The naming convention in Python is slightly messy, but there are certain conventions that we can follow easily. Let's see the following naming convention.

Single lowercase letter

1. a = 10

Single upper case letter

1. A = 10

Lowercase

1. var = 10

Lower_case_with_underscores

1. number_of_apple = 5

UPPERCASE

1. VAR = 6

UPPER_CASE_WITH_UNDERSCORES

1. NUM_OF_CARS =20

CapitalizedWords (or CamelCase)

1. Number_Of_Books = 100.

03. Name Style:

TYPE	NAMING CONVENTION	EXAMPLES
Function	We should use the lowercase words by the underscore.words or separates	Myfunction,my_function
Variable	We should use a lowercase letter, words, or separate words to enhance the readability	a,var,variable_name
CLASS	The first letter of class name should be capitalized; use camel case. Do not separate words with the underscore.	MyClass,Form, Model
METHOD	We should use a lowercase letter, words, or separate words to enhance readability.	Class method, method
COSTANT	We should use a short,uppercase letter, words, or separate words to enhance the readability	MYCONSTANT, CONSTANT, MY CONSTANT
MODULE	We should use a lowercase letter, words, or separate words to enhance the readability.	Module_name.py, module.py
PACKAGE	We should use a lowercase letter, words, or separate words to enhance the readability. Do not separatewords with the underscore	package, mypackage,

04. Code Layout:-

Indentation: Unlike other programming languages, the indentation is used to define the code block in Python. The indentations are the important part of the Python programming language and it determines the level of lines of code. Generally, we use the 4 space for indentation. Let's understand the following example.

x = 5

if x == 5:

 print('x is larger than 5')

In the above example, the indented print statement will get executed if the condition of if statement is true. This indentation defines the code block and tells us what statements execute when a function is called or condition trigger. Indentation following Line break It is essential to use indentation when using line continuations to keep the line to fewer than 79 characters. It provides the flexibility to determining between two lines of code and a single line of code that extends two lines.

For eg.

first line doesn't has any argument .

We add 4 spaces from the second line to discriminate arguments from the rest. def function_name(argument_one, argument_two, argument_three, argument_four): print(argument_two)

4 space indentation to add a level. foo = long_function_name(var_one, var_two, var_three, var_four)

Use docstring

Python provides two types of document strings or docstring-

● Single line

● Multiple line

We use triple quotes to define a single line or multiline quotes. Basically, these are used to describe the function or particular program .

For eg.

def add(a, b):

"""This is simple add method""" """

This is a simple add program to add the two numbers. """ The line break before or after a Binary operation is a traditional approach. But it affects the readability extensively because the operators are scattered across the different screens, and each operator is kept away from its operand and onto the previous line.

For eg.

easy to match operators with operands

Total_marks = (English_marks + math_marks + (science_marks - biology_marks) + physics_marks Importing Module We should import modules

in separate lines as follows:

import pygame

import os

importsys

 OR

 from subprocess import Popen, PIPE

The import statement should be written at the top of the file or just after any module comment. Absolute imports are the recommended because they are more readable and tend to be better behaved. import mypkg.sibling.

from mypkg import sibling

from mypkg.sibling import example

However, we can use the explicit relative imports instead of absolutes import, especially dealing with complex packages.

 Blank Lines

 Blank lines can improve the readability of Python code. Top-level function and classes with two lines- Put the extra vertical space around them so that it can be understandable. class FirstClass=

 Pass

 class SecondClass:

pass

 def main_function():

return None

2. Single blank line inside classes- The functions that we define in the class is related to one another.

class FirstClass:

 def method_one(self):

 return None

```
 def second_two(self):
```

```
return None
```

3. Use Blank lines inside the function- While writing a complicated functions which includes several steps before the return statement hence blank lines between each step is added to make it readable. def cal_variance(n_list):

```
list_sum = 0
for n in n_list:
 list_sum = list_sum + n
mean = list_sum / len(n_list)
 square_sum = 0
 for n in n_list:
square_sum = square_sum + n**2
 mean_squares = square_sum / len(n_list)
 return mean_squares - mean**2
```

Put the closing braces
 PEP8 allows us to use closing braces in implies line continuation.

● Line up the closing brace with the first non-whitespace. list_numbers = [

```
5, 4, 1,
 4, 6, 3,
 7, 8, 9
 ]
```

 Line up closing braces with the first character of line.

```
 list_numbers = [
 5, 4, 1,
4, 6, 3,
7, 8, 9
 ]
```

 Both methods are suitable to use.
 Comments
 Comments are the integral part of any programming language. While writing a comment there are certain points to keep in mind :-

● Start with the capital latter, and write complete sentence.
● Update the comment in case of a change in code.
● Limit the line length of comments and docstrings to 72 characters. Block Comment They are useful while we perform a single action such as iterating a loop. There are certain rules to write a block comment:-
● Indent block comment should be at the same level.

● Start each line with the # followed by a single space.

● Separate line using the single #. For eg. for i in range(0, 5): # Loop will iterate over i five times and print out the value of i # new line character print(i, '\n') Inline Comments Inline comments are used to explain the single statement in a code. Certain points to remember:-

● Start comments with the # and single space.

● Use inline comments carefully

● We should separate the inline comments on the same line as the statement they refer. For eg. a = 10 # The a is a variable that holds integer value. Avoid Unnecessary Whitespaces Use of unnecessary whitespace can make the code much harder to understand therefore we should avoid adding whitespaces. This is known as trailing of whitespaces.

## 05. Programming Recommendation.

● Avoid comparing Boolean values using the equivalence operator.

● Empty sequences are false in if statements.

● Do not use 'not' in the if statement. For eg. # Recommended if x is not None:

 return 'x exists!

PRACTICAL0 8:- Importance of The Multidisciplinary Nature of Environmental Studies

The word environment is derived from the French word 'environner' which means to 'encircle or surround'. Thus our environment can be defined as "the Social, Cultural and Physical conditions that surround, affect and influence the survival, growth and development of people, animals and plants". This broad definition includes the natural world and the technological environment as well as the cultural and social contexts that shape human lives.

EVS is a multidisciplinary academic field that is involved with the exploration, research, and expansion of an understanding of the living and physical environment. It also helps in a better understanding of the natural, political, technological, economic, social, and cultural aspects of environments. It can also be said that Environmental Studies or EVS is the science of physical phenomena in the environment.
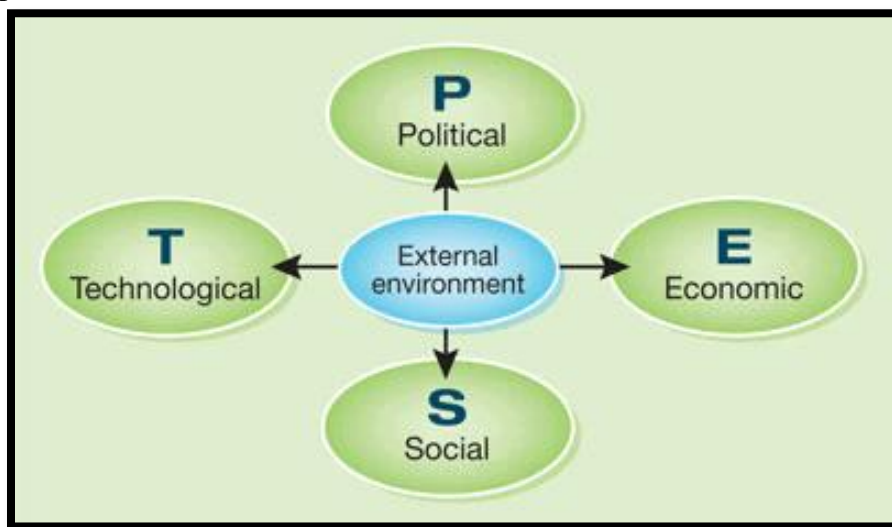
The word 'disciplinary' means to have a disciplined study in a particular field. On the contrary, multidisciplinary refers to the combination of more than one discipline or field of study. It defines the multi-sectoral, and multi-dimensional study in various fields. For instance, when you study various subjects such as Science, Social Science, Mathematics, English, etc., then it is considered a multidisciplinary course of study.

What do you understand by the Multidisciplinary Nature of Environmental Studies?
Environmental Study is a vast subject to be studied upon. It has all the aspects of various subjects such as anthropology, science, social science, statistics, economics, computers, geology, health, and sociology. It illustrates the multi-sectoral and multi-dimensional study in various fields. It also educates us about the Physical, Social, Cultural, and Biological aspects.
It brings our natural environment and human impacts altogether. It is a multidisciplinary approach that deals with every issue that affects an organism. It covers the impacts of environmental science and social aspects of the environment as well.

Why is EVS known as the Multidisciplinary Nature of Environmental Studies?
Environmental Studies consist of different components. They are listed below:

- Anthropology – It is the study of human characteristics, their biological and psychological wellbeing, their societies and cultures, their development and evolution. EVS is related to anthropology as it deals with the study of humans and their environment as well across space and time.
- Biology – It is a branch of science that is concerned with the study of living organisms. It includes their physical structure, chemical processes, molecular interactions, development, and evolution. EVS is related to biology as it deals with the natural habitat of the living organisms.
- Chemistry – It is a branch of science that studies chemicals and the substances of which matter is composed of. In EVS, for the understanding of natural phenomena, we require knowledge of chemistry.
- Computers – With the advancing world, computers have become everyone's requirement. The Environmental Protection Agency uses computers to maintain a record and to investigate chemicals that are used in soil and water.
- Economics – It is a branch of knowledge that is concerned with the production, consumption, and distribution of goods and services. To protect the environment from pollution, global warming, and climate change, various economic policies have been developed in analysing and finding solutions or remedies for environmental issues.
- Geology – It is the study of physical structures and the substances that are present on earth, their history, and the processes they go through. EVS also deals with the study of the earth and the environment.
- Physics – It is a branch of science that studies the energy and matter in space and time and their relationship with each other. Physics works on energy conservation, atmospheric models, and various issues related to the **environment.**
- Sociology – It is the study of social life, social change, social causes, and the social consequences of human behavior. It also deals with the relationship between modern societies and the environment.
- Statistics – It is the study of collecting, analysing, interpreting, and presenting quantitative data. It is also used to analyze data to discover patterns and suggest the best growth of the environment.

Importance of Multidisciplinary nature of Environmental Studies

Environmental Studies is essential as it helps us to understand our surrounding environment and natural phenomena. Numerous points provide us the importance of the Multidisciplinary nature of Environmental Studies. They are:

- It helps in gaining knowledge about the current environmental issues. It provides us with the necessary skills to obtain solutions for various environmental issues such as pollution, global warming, and climate change.
- It helps in maintaining the ecological balance through fundamental knowledge of environmental systems and processes.
- It provides us information about the changes in the environment due to anthropogenic factors. It also provides us the skills for analysing different environmental systems and changes in the environment because of human activities.

- It aims to preserve and protect biodiversity. It makes us familiar with the various species of flora and fauna. It provides us with different ways to preserve and protect them.
- It provides us the consciousness about our duties towards the environment. It additionally educates us about the various environmental issues which need to be resolved at a faster pace. Environmental issues such as conservation of energy, toxic emissions, water conservation, proper disposal of wastes, rising global temperature, and many more are also explained to us by environmental studies.
- Various more issues such as the depletion of natural resources, growing human population, rising numbers of natural calamities, for instance, earthquakes, tsunamis, floods, drought, are all serious concerns that need to be taken seriously. EVS makes us understand the harmful and drastic effects of these issues on the environment, and humans as well.
- By studying Environmental Studies, people can explore and connect with their natural and surrounding environment. It helps people in developing their insights for understanding human processes, natural phenomena, and various changes in the environment.

What is the Scope of Multidisciplinary Nature of Environmental Studies?

The scope of Multidisciplinary Nature of Environmental Studies consists of various aspects such as biological, cultural, social, and physical. It is also related to other subjects such as science, geography, economics, statistics, health, technology, population, and ecology.

- Biological aspects – This is one of the most essential aspects of environmental studies. It is the solution of an organism, or a population, or a community to changes in its environment. Human beings, plants, animals, microorganisms, birds, insets are all included in the biological aspects.
- Cultural aspects – The environment gives knowledge about different customs, laws, dresses, values, and religious beliefs. They all are included under cultural aspects. Environmental studies help us in understanding these diverse aspects.
- Physical aspects – The environment which is shaped by human activities are considered as physical aspects, for example, bridges, roads, buildings, industries, etc. Apart from them, natural resources such as land, air, water, minerals, vegetation, landforms like hills, oceans, mountains, forests, etc.
- Social aspects – It illustrates the standard of living, tastes, preferences, educational status, and etiquettes of individuals living in society. Environmental Studies give acquaintance about people who have linguistic, cultural, and educational differences in societies.

How the Multidisciplinary Nature of Environmental Studies helps in solving environmental problems?

Environmental Studies deals with various areas – conservation of natural resources, controlling pollution, the impact of the growing human population on the environment. A multidisciplinary nature is required to address these complex environmental problems. These problems are connected with different sectors like agriculture, land degradation, economic loss, contamination

of natural resources, forestry, habitat fragmentation, ozone layer depletion, solid waste management, etc.

The emerging climatic and environmental concerns need multidisciplinary solutions. Environmental issues are an alarming indication of upcoming disasters. Therefore, to gain knowledge about these issues, the Multidisciplinary Nature of Environmental Studies is a must.

There are various ways in which our environment can be conserved. Some of them are listed below:

- Replacing disposal items with reusable ones.
- Proper disposal of wastes
- Recycling of paper, plastics, etc.
- Neutralizing the poisonous emissions by the factories
- Conserve resources like water and electricity
- Support eco-friendly products more
- Afforestation and reforestation
- Enhancement of the use of public transport
- Limit the use of paper
- By spreading awareness about the importance of the environment

A pure, harmless, and pollution-free environment is every individual's right. These issues can be solved when people acquaintance with the need of conserving the environment. For this, knowledge of Environmental Studies is needed.

Conclusion

EVS is a multidisciplinary academic field that is involved with the exploration, research, and expansion of an understanding of the living and physical environment. It has all the aspects of various subjects such as anthropology, science, social science, statistics, economics, computers, geology, health, and sociology. It brings our natural environment and human impacts altogether. Environmental Studies is essential as it helps us to understand our surrounding environment and natural phenomena.

It provides us with the necessary skills to obtain solutions for various environmental issues such as pollution, global warming, and climate change. It aims to preserve and protect biodiversity. Environmental Studies deals with various areas – conservation of natural resources, controlling pollution, the impact of the growing human population on the environment. Environmental issues such as conservation of energy, toxic emissions, water conservation, proper disposal of wastes, rising global temperature, and many more are also explained to us by environmental studies.

The emerging climatic and environmental concerns need multidisciplinary solutions. Environmental issues are an alarming indication of upcoming disasters. Therefore, to gain knowledge about these issues, the Multidisciplinary Nature of Environmental Studies is a must. The scope of Multidisciplinary Nature of Environmental Studies consists of various aspects such as biological, cultural, social, and physical. It is also related to other subjects such as science, geography, economics, statistics, health, technology, population, and ecology.

PRACTICAL 09:- Importance of Going Paperless

"Going Paperless" is a term that was coined not so long ago to describe the processes of "reducing the amount of paper used in a business context, exchanging printed pages for digital documents especially in internal processes."

Common paperless areas of choice by companies include receipts, invoices, tax returns and pay checks, among others. Areas that manual work adds no real value to the company and the steps required to have its work done are too time-consuming.

It should not be a surprise that, once this wave started, it was only a matter of time for it to become bigger. This happened mainly because of the rise of modern technology that is taking over companies worldwide, digitalising several processes that were previously made with tons of paper.

Seven reasons why going paperless may be beneficial for your small business:

1. Document organization

The ability to quickly locate and disseminate information may enhance your company's efficiency and professional image. Spending time hunting through piles of paper slows down response time in an age when most answers are only a few keystrokes away. By scanning electronic copies of receipts and invoices, documents can be sorted, filed, and organized for quick retrieval when it matters most.

2. Client communication is faster and less expensive

By maintaining a customer email list, you can instantaneously communicate sales and special offers without incurring postage and printing expenses. With the advanced technology of smart devices, most people have immediate access to emails. While it increases efficiency, electronic communication also decreases storage costs as the amount of paper copies littering your office will begin to dwindle.

3. Paperless files are easily saved and retrieved on the go

With the advent of photo-scanning apps, business travellers can easily back up expense reports without needing to save a pile of papers to bring back to the office. Electronic files can also be shared with co-workers over a network or via email. Shifting to paperless documentation also makes the transportation of data more efficient, without the need for cumbersome fax machines or document couriers.

4. Automatic backups

When you accidentally throw out an important paper, it's usually gone forever. However, maintaining electronic files allows for multiple backup points. Data can be saved on flash drives, in the cloud, or to an external hard drive. For vitally important financial data, cloud-based accounting systems provide automatic backups on a pre-scheduled basis, which eliminates the need for small business owners to set aside time for manual backups.

5. Data security

Customers will always be concerned about privacy and data protection, which requires companies to respond by implementing proper data security procedures beyond locked filing cabinets and paper shredders. Many of today's cloud-based accounting systems offer bank-level data security to protect financial and customer information, which is more than most small companies with limited technology staff can afford to build in-house.

6. Environmental friendliness

According to the Environmental Paper Network's most recent State of the Paper Industry report, paper usage in North America is decreasing while the amount of paper recovered for recycling is increasing. Companies are striving to recycle, yet office copy paper alone still accounts for over 20 percent of the total paper usage in the United States. But being green is more than just reducing paper production. A paperless environment may also mean less energy consumption. Small businesses use less energy when printers, faxes, and copiers are inactive.

7. Financial benefits

The savings of going paperless extends beyond just the cost of the paper, which can be substantial. The cost of other office supplies like ink cartridges also decreases. Additional upgrades or replacements to expensive office equipment such as copiers and fax machines may also decrease in a paperless office.

The shift toward a paperless environment increases each year as new technology becomes available to improve data storage and electronic communication. Taking action to reduce paper usage may help your business be more efficient and enhance the level of security that guards your most valuable information.

PRACTICAL 10:- Define the terms renewable resource and non-renewable and give examples of each resource type that are related to forage production

A **natural resource** is something supplied by nature that helps support life. When you think of natural resources, you may think of minerals and fossil fuels. However, ecosystems and the services they provide are also natural resources. **Biodiversity** is a natural resource as well.

Renewable Resources
Renewable resources can be replenished by natural processes as quickly as humans use them. Examples include sunlight and wind. Metals and other minerals are renewable too. They are not destroyed when they are used and can be recycled.


Wind is a renewable resource. Wind turbines like this one harness just a tiny fraction of wind energy.
Living things are considered to be renewable. This is because they can reproduce to replace themselves. However, they can be over-used or misused to the point of extinction. To be truly renewable, they must be used sustainably. **Sustainable use** is the use of resources in a way that meets the needs of the present and also preserves the resources for future generations.
Non-renewable Resources
Non-renewable resources are natural resources that exist in fixed amounts and can be used up. Examples include fossil fuels such as petroleum, coal, and natural gas. These fuels formed from the remains of plants over hundreds of millions of years. We are using them up far faster than they could ever be replaced. At current rates of use, petroleum will be used up in just a few decades and coal in less than 300 years. Nuclear power is also considered to be a non-renewable resource because it uses up uranium, which will sooner or later run out. It also produces harmful wastes that are difficult to dispose of safely.
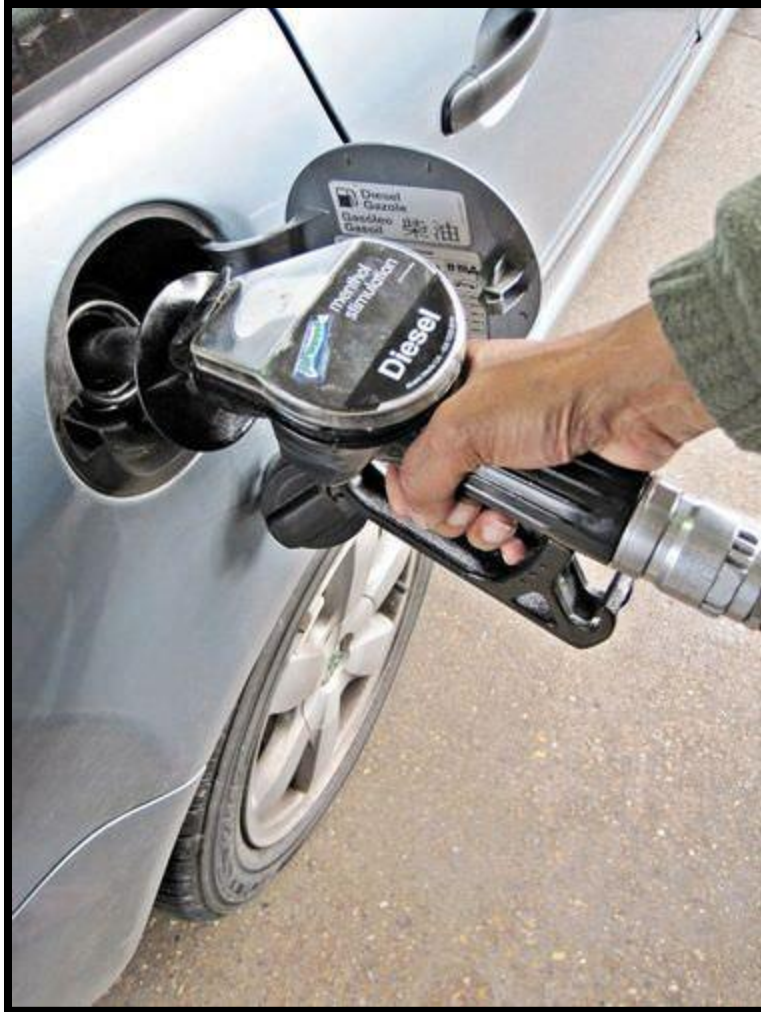
Gasoline is made from crude oil. The crude oil pumped out of the ground is a black liquid called petroleum, which is a non-renewable resource.

Coal is another non-renewable resource.

One environmental issue that has been of prominent concern in the 20th century has been the growth in human population. The chart below, from the population reference bureau, illustrates the dramatic growth in human population beginning around the year 1750. As human population has grown the demand for resources of all kinds has also grown. Supporting more people means producing more food, which in turn requires greater amounts of energy, soil nutrients, water, and other resources associated with agricultural production

There are many types of resources that go into producing food and producing forages. In general these resources have been grouped into two types: renewable resources and non-renewable resources. Renewable resources may be defined as resources that have the potential to be replaced over time by natural processes. The renewal process may be relatively quick, as with sunshine which comes on a daily basis. Or, the renewal process may be very slow, as in the formation of soil which may take hundreds of years. Non-renewable resources may be defined as resources whose stock or reserves is limited or fixed. The available supply of non-renewable resources may be replenished through recycling (e.g. recycling aluminium cans), but the overall supply remains relatively constant. The table below gives several examples of each type of resource.

Renewable Resources	Non-renewable resources
Solar Energy	Oil
Soil	Steel
Trees	Aluminium
Grass	Coal
Groundwater	Phosphates

Examining the resources listed in the table above suggests that modern agricultural production, including forage production, is dependent on a number of resources that are considered non-renewable. Farm equipment contains steel and aluminium parts and uses oil based fuels. The energy to manufacture fertilizer and other agrichemicals is derived from oil, coal, and natural gas. Phosphate fertilizers are widely used on crops. The realization of this dependence on non-renewable resources has led to increased interest in developing and implementing so called sustainable agricultural production systems.