



**MALAD KANDIVALI EDUCATION SOCIETY'S
NAGINDAS KHANDWALA COLLEGE OF COMMERCE, ARTS &
MANAGEMENT STUDIES & SHANTABEN NAGINDAS KHANDWALA
COLLEGE OF SCIENCE
MALAD [W], MUMBAI – 64**

**AUTONOMOUS INSTITUTION
(Affiliated To University Of Mumbai)**

Reaccredited 'A' Grade by NAAC | ISO 9001:2015 Certified

CERTIFICATE

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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 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)

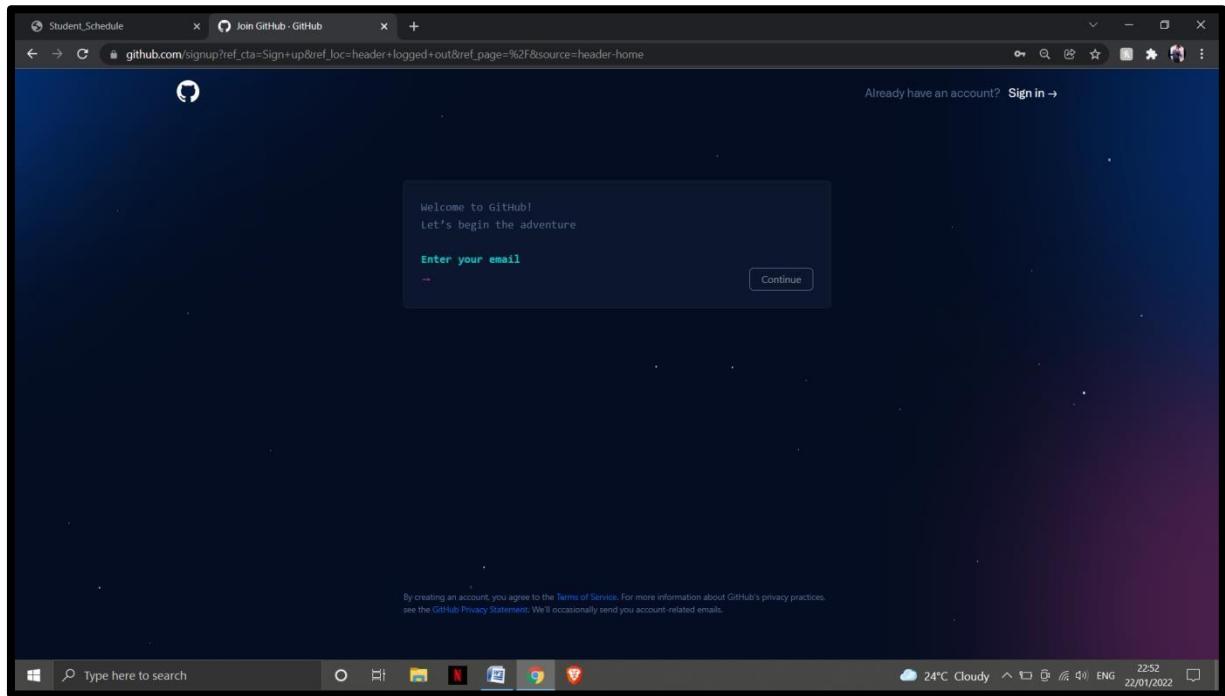
Date of Examination:

(College Stamp)

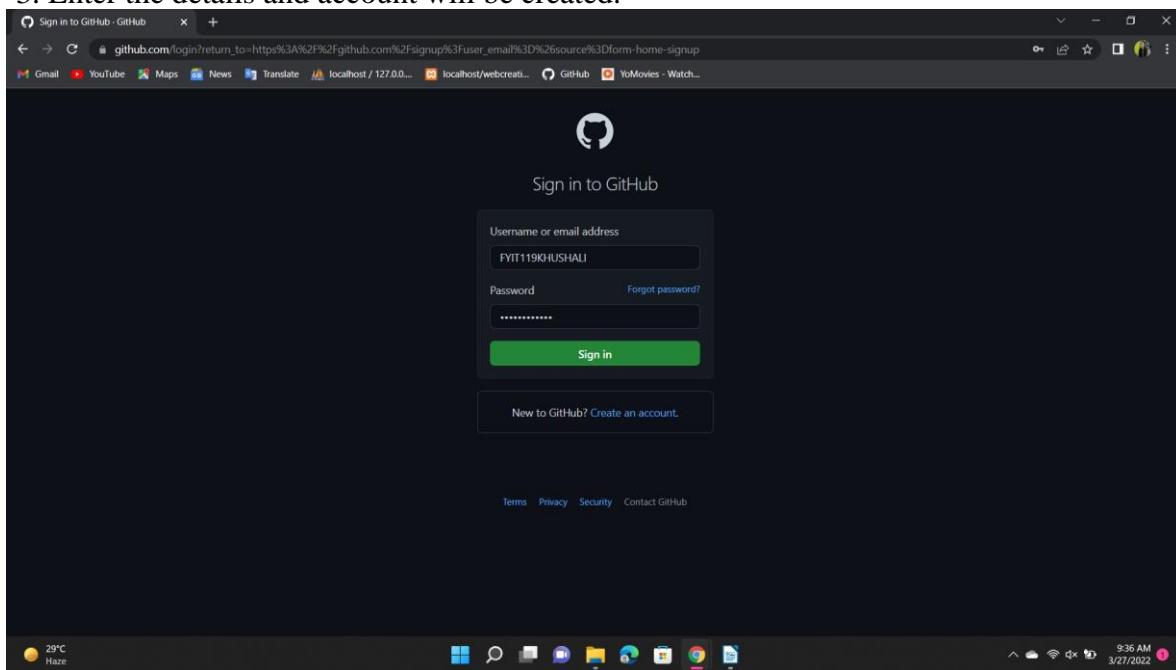
PRACTICAL 1: Creating account, repository on GitHub and Cloning repository in GitHub Page

a) Steps to create account:

1. Search Github.com on any browser.
2. Click on Sign Up and create an account.

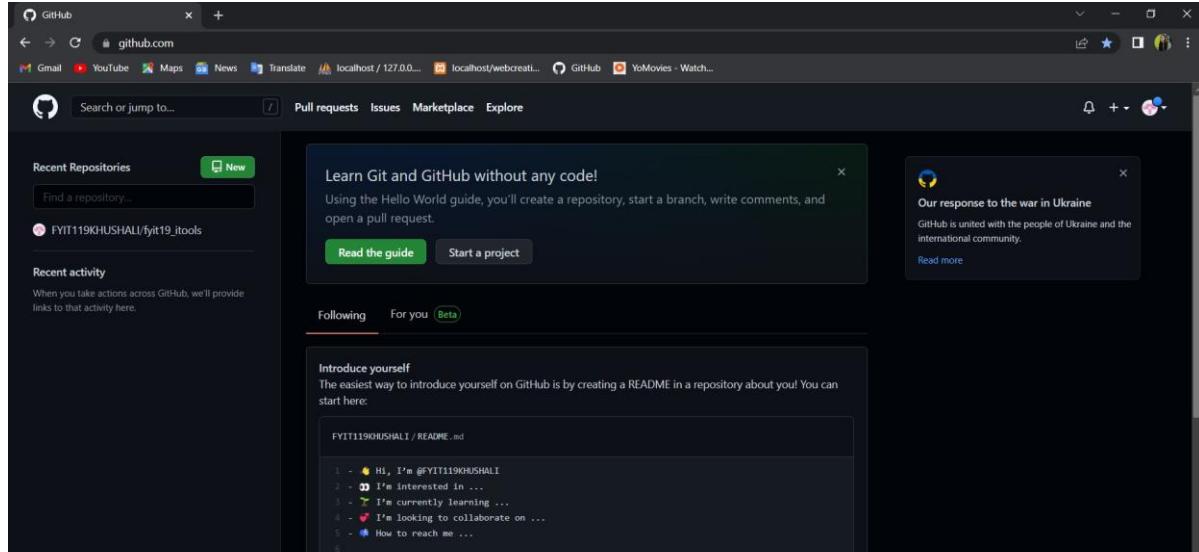


3. Enter the details and account will be created.

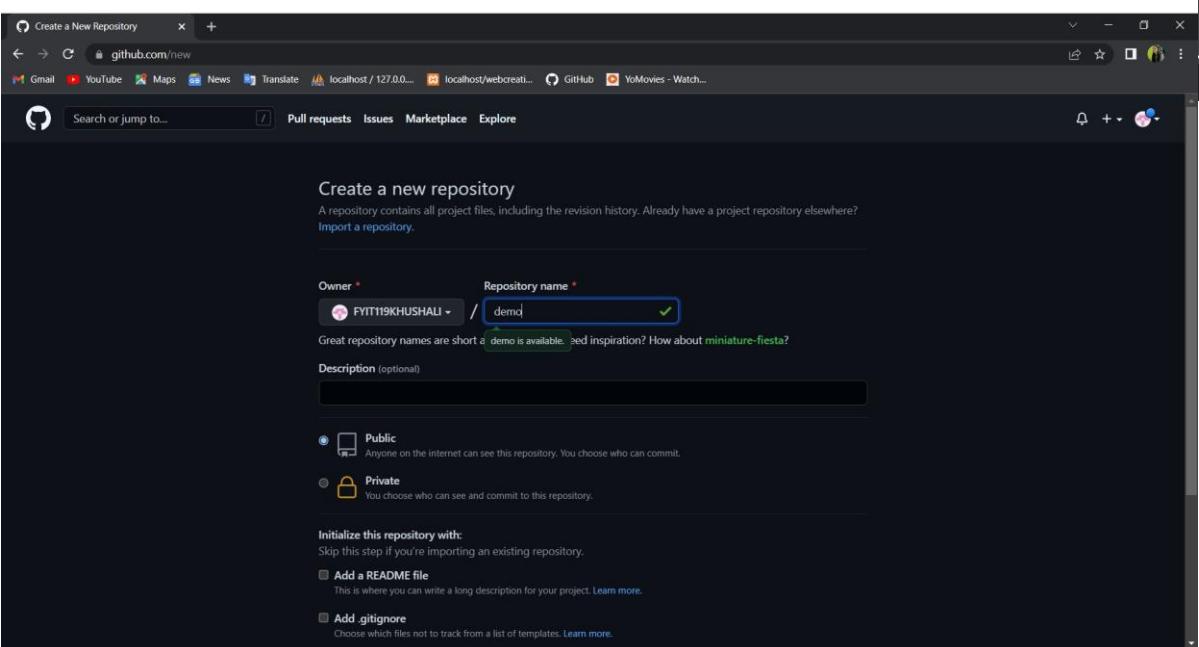


b) Steps to create repository:

1. Sign in to your GitHub account.
2. Click on New button on left panel.

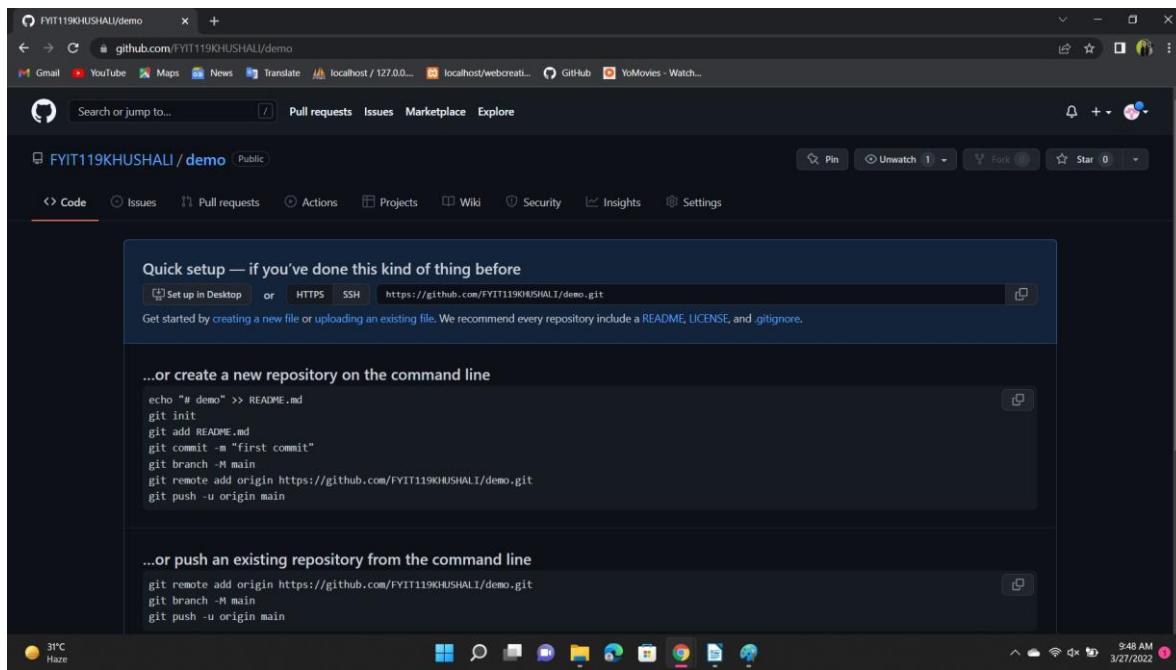


The screenshot shows the GitHub homepage. At the top right, there is a prominent green 'New' button. Below it, the main navigation bar includes 'Pull requests', 'Issues', 'Marketplace', and 'Explore'. On the left, there's a sidebar with 'Recent Repositories' and 'Recent activity'. A central callout box says 'Learn Git and GitHub without any code!' with a 'Read the guide' button. Another box on the right says 'Our response to the war in Ukraine' with a 'Read more' link. At the bottom, there's a large 'Create a new Repository' form.



The screenshot shows the 'Create a new Repository' page. It has fields for 'Owner' (set to 'FYIT119KHUSHALI') and 'Repository name' (set to 'demo'). There's a note about short repository names. Below that is a 'Description (optional)' field, which is currently empty. Under visibility, 'Public' is selected. In the 'Initialize this repository with:' section, 'Add a README file' is checked. At the bottom, there are options for 'Add .gitignore' and 'Choose which files not to track from a list of templates'.

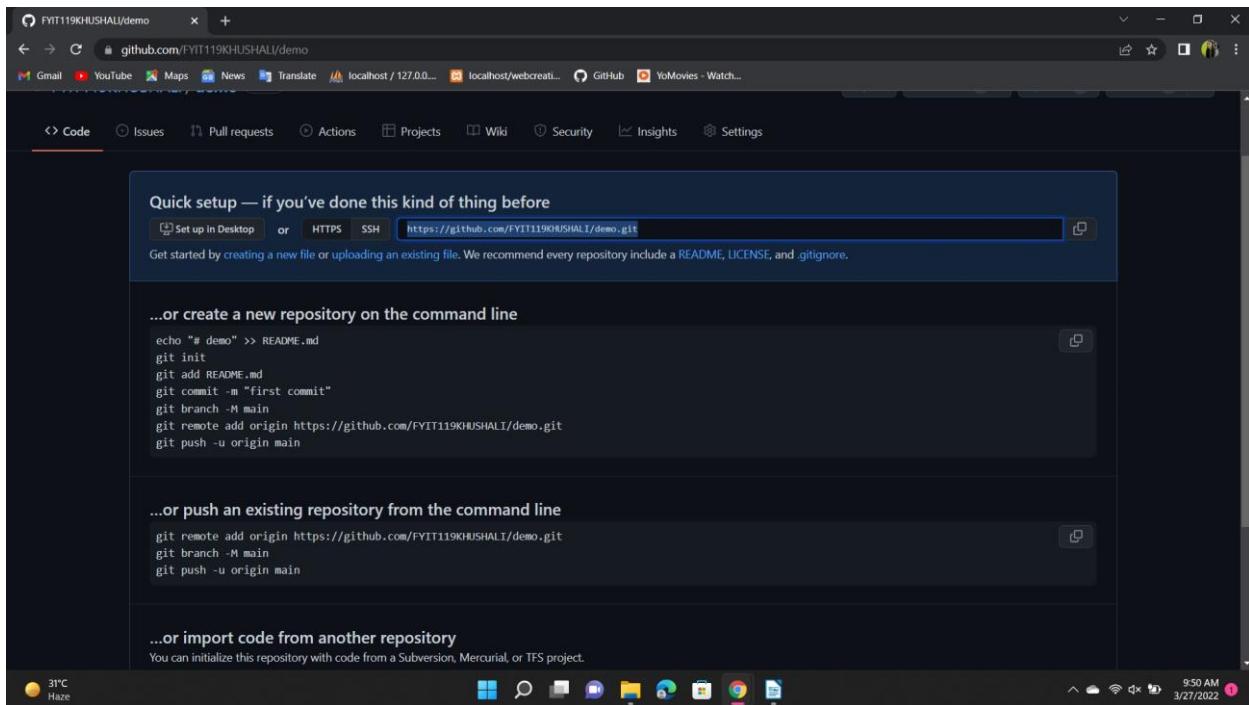
3. Enter a name for the repository, and then click on Create Repository button at the end. Repository created.



c) Cloning Repository:

To clone the Repository, copy the link of your repository and share.

<https://github.com/FYIT119KHUSHALI/demo.git>



Practical 2: Writing an E-mail

The screenshot shows a Gmail inbox with 821 messages. An email draft is open in the center:

FYIT-119 ISSUE IN SUBMITTING EXAM

Recipients: FYIT-119 ISSUE IN SUBMITTING EXAM

Respected Madam /Sir,

Good Morning,

I am Khushali Chandubhai Patoliya of FYIT roll number 119.

On the 7th of January we had an examination of Discrete Mathematics -1. After writing the whole paper, at the time of submitting it popped up an issue and displayed the review of my paper. But in the review of answer numbers 22 and 23 were not displaying what I wrote, it was half deleted automatically.

There might be some technical problems with E-learning

I kindly request you to look into the matter and do the needful.

Thanking you.

Yours faithfully,

Khushali Chandubhai Patoliya.

The email has a "Send" button at the bottom. The interface includes a toolbar with various icons for text styling and a search bar at the top. The right side of the screen shows a list of recent messages with their senders and dates.

PRACTICAL 3 TITLE: BASIC UNDERSTANDING ON FREE AND OPEN-SOURCE SOFTWARE

a) Describe Open-Source Software with Example.

Open-source software (OSS) is computer software that is released under a license in which the copyright holder grants users the rights to use, study, change, and distribute the software and its source code to anyone and for any purpose. Open-source software may be developed in a collaborative public manner. Open-source software is a prominent example of open collaboration, meaning any capable user is able to participate online in development, making the number of possible contributors indefinite. The ability to examine the code facilitates public trust in the software.

Example:

1. Magneto
2. Mozilla Firefox
3. Mozilla Thunderbird
4. FileZilla
5. Gnu Cash
6. Audacity

b) Describe Free Software with Example.

Free Software is computer software distributed under terms that allow users to run the software for any purpose as well as to study, change, and distribute it and any adapted versions. Free software is a matter of liberty, not price; all users are legally free to do what they want with their copies of free software (including profiting from them) regardless of how much is paid to obtain the program. Computer programs are deemed "free" if they give end-users (not just the developer) ultimate control over the software and, subsequently, over their devices.

Example:

1. Linux kernel
2. The BSD and Linux Operating Systems
3. The GNU compiler collection and C library
4. The MySQL relational database
5. The Apache Web Server
6. The Send mail Transport agent

c) Difference between Free and Open-Source Software.

Free Software	Open Source Software
<ul style="list-style-type: none"> • Free Software usually refers open source under GNU GPL license. Because the word free in English means cost the terms open source was created. 	<ul style="list-style-type: none"> • Your source code is accessible to anyone to read and modify and redistribute depending on license conditions. Publishing source code online without the public being able to modify them doesn't make lots of sense.
<ul style="list-style-type: none"> • Software is an important part of people's lives. 	<ul style="list-style-type: none"> • Software is just software. There are no ethics associated directly to it.
<ul style="list-style-type: none"> • Software freedom translates to social freedom 	<ul style="list-style-type: none"> • Ethics are to be associated to the people not to the software
<ul style="list-style-type: none"> • Users of free software may have access to and study the source code as part of their ability to modify it. 	<ul style="list-style-type: none"> • Open source code can be used for studying and allows capable end users to adapt software to their personal needs
<ul style="list-style-type: none"> • Freedom to run program for any purpose 	<ul style="list-style-type: none"> • It has distribution of license
<ul style="list-style-type: none"> • Freedom to distribute copies of software 	<ul style="list-style-type: none"> • Free distribution
<ul style="list-style-type: none"> • Free software is a social movement 	<ul style="list-style-type: none"> • Open software is a development methodology
<ul style="list-style-type: none"> • Free software focuses on providing a moral/ethical argument for open source 	<ul style="list-style-type: none"> • Open source tends to focus on providing an economic/business argument for free software
<ul style="list-style-type: none"> • Using free software is a good, morally right thing to do 	<ul style="list-style-type: none"> • Using open source software is beneficial to you and your business
<ul style="list-style-type: none"> • Examples: 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; 	<ul style="list-style-type: none"> • Examples: Prime examples of open-source products are the Apache HTTP Server, the ecommerce platform of Commerce, internet browsers Mozilla Firefox

PRACTICAL 4 TITLE: WIKIPEDIA, ACCOUNT CREATING, CREATING PAGE AND EDITING IT.

a) What is Wikipedia?

Ans. - Wikipedia is a free, open content online encyclopedia created through the collaborative effort of a community of users known as Wikipedians. Anyone registered on the site can create an article for publication; registration is not required to edit articles. The site's name comes from wiki, a server program that enables anyone to edit Web site content through their Web browser.

Jimmy Wales and Larry Sanger co-founded Wikipedia as an offshoot of an earlier encyclopedia project, Nupedia, in January 2001. Originally, Wikipedia was created to provide content for Nupedia. However, as the wiki site became established it soon grew beyond the scope of the earlier project. As of January 2015, the website provided well over five million articles in English and more than that number in all other languages combined. At that same time, Alexa ranked Wikipedia as the seventh-most popular site on the Internet. Wikipedia was the only non-commercial site of the top ten.

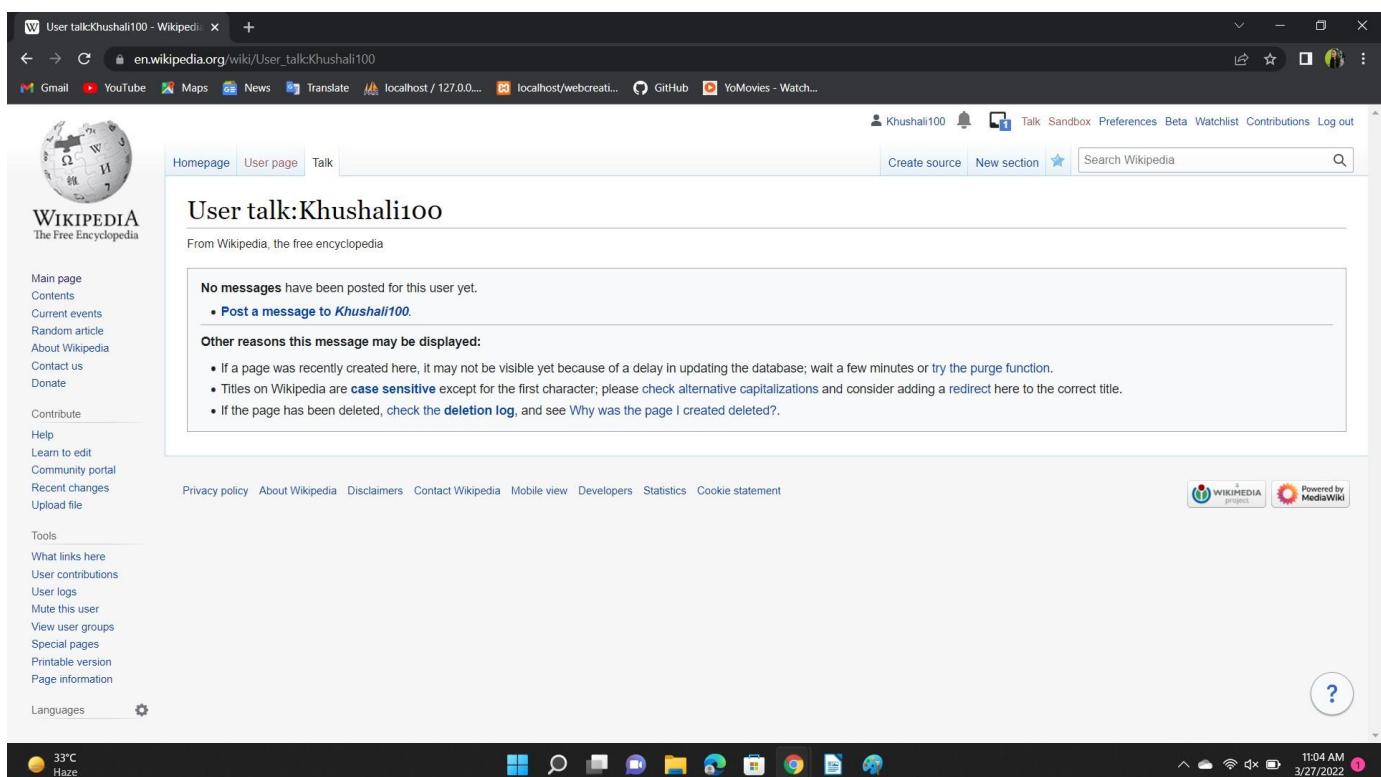
Criticisms of Wikipedia include assertions that its openness makes it unreliable and unauthoritative. Because articles don't include bylines, authors aren't publicly accountable for what they write. Similarly, because anyone can edit any article, the site's entries are vulnerable to unscrupulous edits. In August 2007, Virgil Griffiths created a site, WikiScanner, where users could track the sources of edits to Wikipedia entries. Griffiths reported that self-serving edits typically involved whitewashing or removal of criticism of a person or organization or, conversely, insertion of negative comments into the entry about a competitor. Wikipedia depends upon the vigilance of editors to find and reverse such changes to content.

The screenshot shows the English Wikipedia main page. At the top, there is a banner for "From today's featured article" featuring a portrait of James Abram Garfield. Below this, the "Did you know ..." section lists several interesting facts. The right side of the page features a "In the news" section with a large image of a mudslide in Petrópolis, Brazil, and a "On this day" section with a portrait of Lucy Hobbs Taylor. The left sidebar contains links for main page, contents, and various user and site navigation options.

b) Creating an Account.

Ans- Steps to create Wikipedia account:

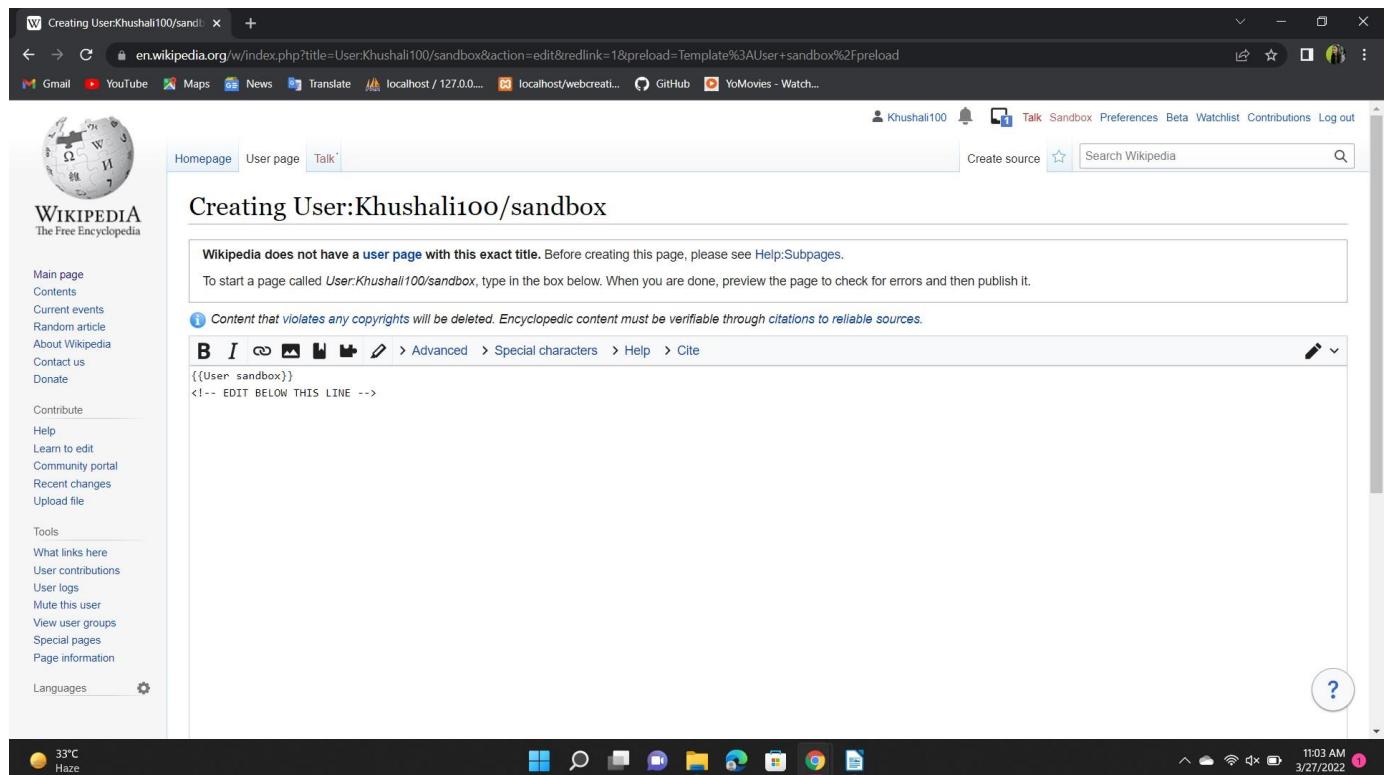
- a. Open a Web browser to Wikipedia.org.
- b. Near the top there will be a Create account button, click on it.
- c. Fill in the details asked in the form.
- d. After your account is created you can see your username at the top ribbon.
And you are ready to use your account.



c) Creating a page on Wikipedia.

Ans-

- 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.



d) Editing Wikipedia document.

Ans-

- Select the edit option.
- Edit your page.
- Publish changes.

The screenshot shows the Wikipedia editing interface for the article "Villarmarín". The page title is "Editing Villarmarín". The main content area contains the following wikitext:

```
{|name| = Villarmarín
|native_name| =
|official_name| =
|nickname| =
|settlement_type| = Locality
|motto| =
|image_skyline| =
|image_size| =
|image_caption| =
|image_flag| =
|flag_size| =
|image_seal| =
|seal_size| =
|image_map| =
|mapsize| =
|map_caption| =
|pushpin_map| = Spain Province of León#Spain Castile and León#Spain
|pushpin_label| = Villarmarín
|pushpin_label_position| = left
|pushpin_mpsite| =
|pushpin_map_caption| =
|subdivision_type| = [[List of sovereign states|Country]]
|subdivision_name| = {{ESP}}
|subdivision_type1| = [[Autonomous communities of Spain|Autonomous community]]}
```

The interface includes a toolbar with bold, italic, and other formatting options, a search bar, and navigation links like Article, Talk, Read, Edit source, View history, and Search Wikipedia.

PRACTICAL 5: Using practical examples, describe green computing. List and explain the steps that you take to contribute to green computing

- **What is green computing?**

Green computing, also called green technology, is the environmentally responsible use of computers and related resources. Such practices include the implementation of energy-efficient central processing units (CPUs), servers and peripherals as well as reduced resource consumption and proper disposal of electronic waste (e-waste).

“Green computing” is the name attached to this movement, which represents an environmentally responsible way to reduce power and environmental waste.

The goals of green computing are similar to green chemistry; reduce the use of hazardous materials, maximize energy efficiency during the product's lifetime, and promote the recyclability or biodegradability of defunct products and factory waste research continues into key areas such as making the use of computers as energy-efficient as possible, and designing algorithms and systems for efficiency-related computer technologies.

Simple Steps to Green Computing:

1. Develop a sustainable green computing plan
2. Recycle
3. Make environmentally sound purchase decisions
4. Reduce Paper Consumption
5. Conserve energy

- **Why go green?**

1. Climate Change:

First and foremost, conclusive research shows that CO₂ and other emissions are causing global climate and environmental damage. Preserving the planet is a valid goal because it aims to preserve life.

2. Saving:

Green computing can lead to serious cost saving overtime. Reduction in energy cost from server, cooling, and lighting are generating serious savings for many corporations.

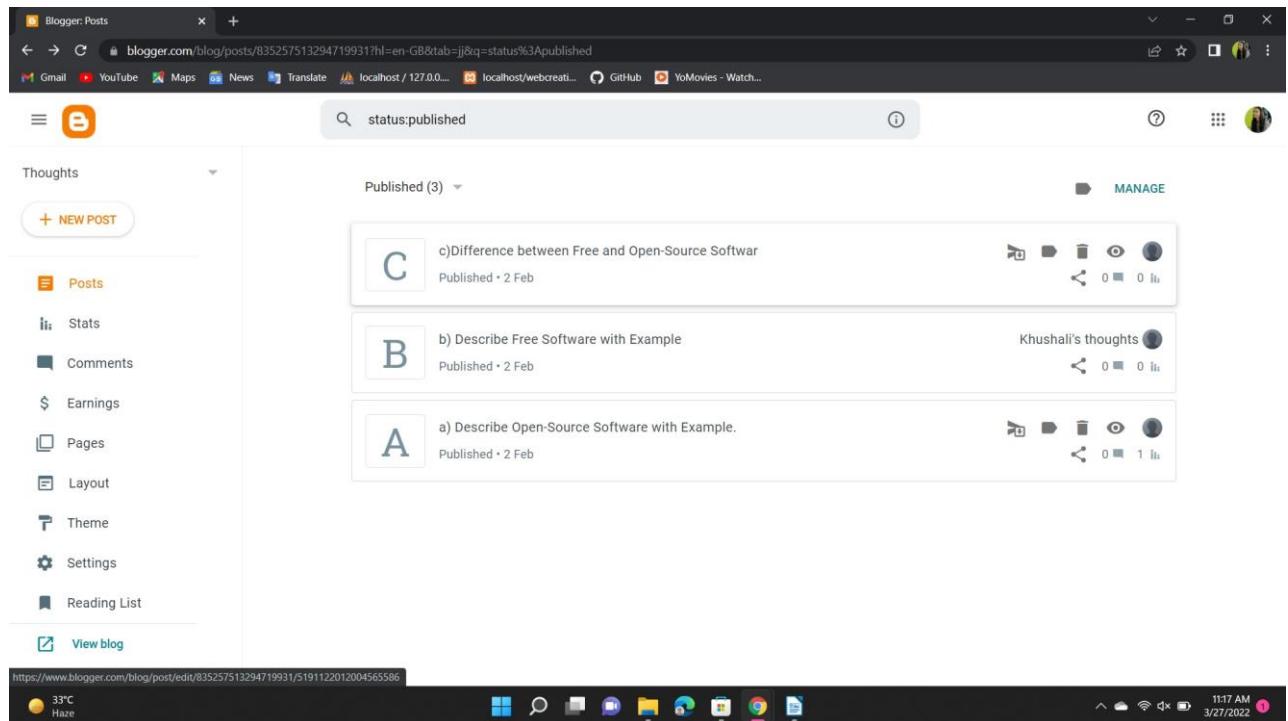
3. Reliability of power:

As energy demands in the world go up, energy supply is declining or flat. Energy efficient systems help to ensure healthy power systems. Also, more companies are generating their own electricity, which further motivates them to keep power consumption low.

- **Steps that I would take to contribute to green computing are as follows:**

1. **Recycle:** Discards used or unwanted electronic equipment in a convenient and environmentally responsible manner. Computers have toxin metals and pollutants that can emit harmful emissions into the environment.
2. **Develop a sustainable green computing plan:** Discuss with your business leaders the element that should be factored into such a plan, including.

PRACTICAL 6: WRITING BLOGS



Link to blog

<https://www.blogger.com/blog/posts/835257513294719931?hl=en-GB&tab=jj&q=status%3Apublished>

PRACTICAL 7: Implementing coding practices in Python using PEP8.

- **What is PEP-8?**

Indeed coding and applying logic is the foundation of any programming language but there's also another factor that every coder must keep in mind while coding and that is the coding style. Keeping this in mind, Python maintains a strict way of order and format of scripting. Following this sometimes mandatory and is a great help on the user's end, to understand. Making it easy for others to read code is always a good idea, and adopting a nice coding style helps tremendously for that.

For Python, PEP 8 has emerged as the style guide that most projects adhere to; it promotes a very readable and eye-pleasing coding style. Every Python developer should read it at some point; here are the most important points extracted for you:

1. **Use 4-space indentation and no tabs.**

The 4 space rule is not always mandatory and can be overruled for continuation line.

2. **Use docstrings:** There are both single and multi-line docstrings that can be used in Python. However, the single line comment fits in one line; triple quotes are used in both cases. These are used to define a particular program or define a particular function.

3. **Wrap lines so that they don't exceed 79 characters:** The Python standard library is conservative and requires limiting lines to 79 characters. The lines can be wrapped using parenthesis, brackets, and braces. They should be used in preference to backslashes.

4. **Uses of regular and updated comments are valuable to both the coders and users:** There are also various types and conditions that if followed can be of great help from programs and users point of view. Comments should form complete sentences. If a comment is a full sentence, its first word should be capitalized, unless it is an identifier that begins with a lower case letter. In short comments, the period at the end can be omitted. In block comments, there are more than one paragraphs and each sentence must end with a period. Block comments and inline comments can be written followed by a single '#'.

5. **Use of trailing commas:** This is not mandatory except while making a tuple.

6. Use Python's default UTF-8 or ASCII encodings and not any fancy encodings, if it is meant for international environment.

7. Use spaces around operators and after commas, but not directly inside bracketing.

8. **Naming Conventions:** There are few naming conventions that should be followed in order to make the program less complex and more readable. At the same time, the naming conventions in Python are a bit of mess, but here are few conventions that can be followed easily. There is an overriding principle that follows that the names that are visible to the user as public parts of API should follow conventions that reflect usage rather than implementation.

In addition to these few leading or trailing underscores are also considered.

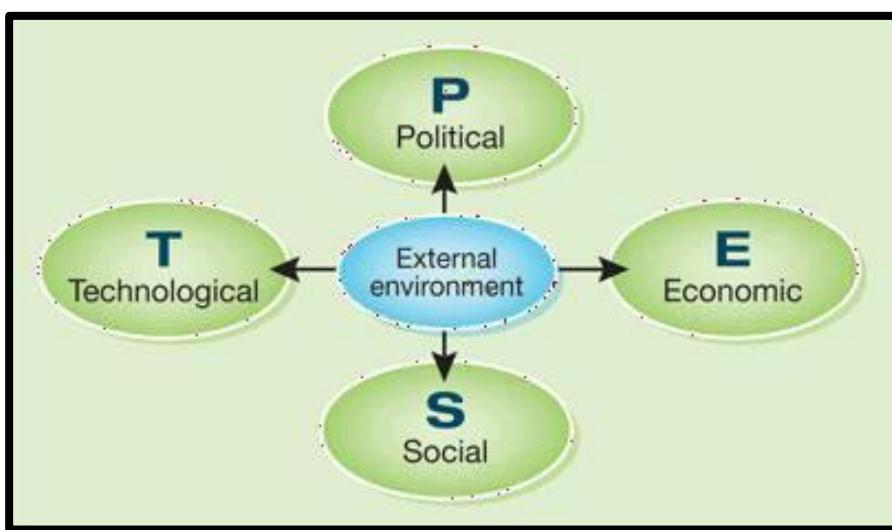
`single_trailing_underscore_`: used to avoid conflicts with Python keyword.

`__double_leading_underscore`: when naming a class attribute, invokes name mangling.

9. **Characters that should not be used for identifiers:** ‘l’ (lowercase letter el), ‘O’ (uppercase letter oh), or ‘I’ (uppercase letter eye) as single character variable names as these are similar to the numerals one and zero.
10. Don’t use non-ASCII characters in identifiers if there is only the slightest chance people speaking a different language will read or maintain the code.
11. **Name your classes and functions consistently:** The convention is to use Camel Case for classes and lower_case_with_underscores for functions and methods. Always use self as the name for the first method argument.
12. While naming of function or methods always use self for the first argument to instance methods and cls for the first argument to class methods. If a functions argument name matches with reserved words then it can be written with a trailing comma.

PRACTICAL 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, insects 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 acquaint 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.

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PRACTICAL 9: 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, 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.



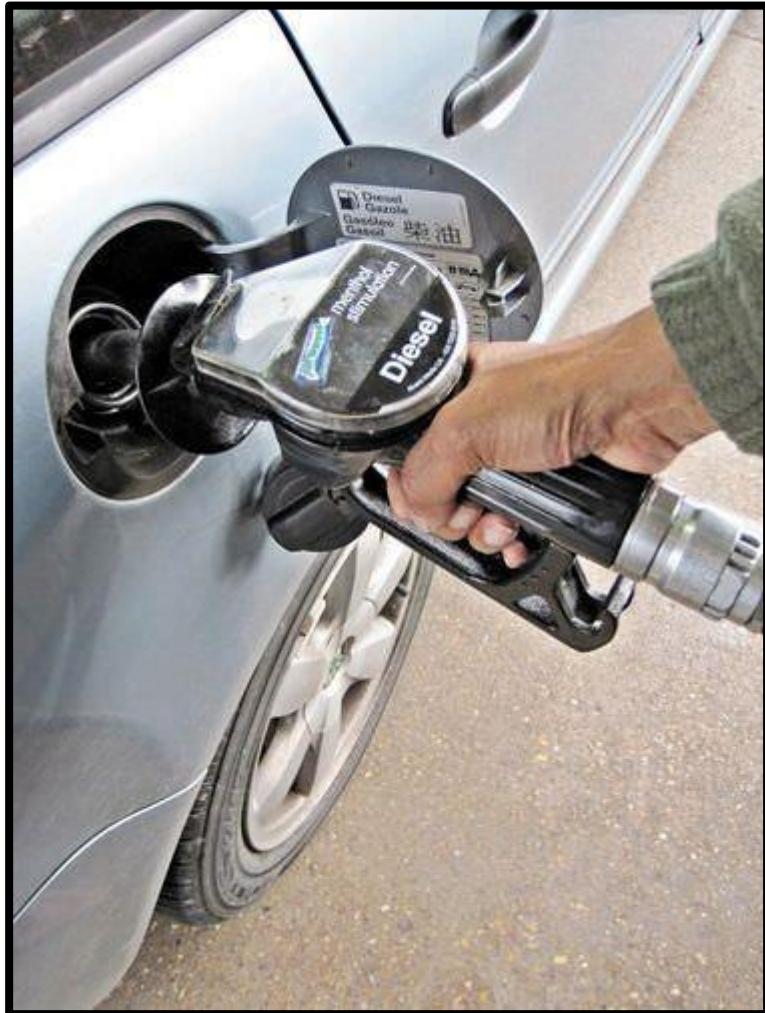
Wind is a renewable resource. Wind turbines like this one harness just a tiny fraction of wind energy.

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 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.