

**PANIMALAR ENGINEERING COLLEGE, CHENNAI  
(AN AUTONOMOUS INSTITUTION)**

**JAISAKTHI EDUCATIONAL TRUST  
ACCREDITED BY NATIONAL BOARD OF ACCREDITATION  
AN ISO 9001:2000 CERTIFIED INSTITUTION**

**Bangalore Trunk Road,  
Varadharajapuram, Nasarathpettai,  
Poonamallee, Chennai – 600123**

**DEPARTMENT OF**

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**I YEAR – II SEMESTER**

**LAB RECORD**

**23ES1114 - INNOVATIVE THINKING AND PROTOTYPE  
DEVELOPMENT LAB**

**Name:**\_\_\_\_\_

**Roll No :**\_\_\_\_\_

**Reg. No.:**\_\_\_\_\_ **Section:**\_\_\_\_\_

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**DEPARTMENT OF**

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**BONAFIDE CERTIFICATE**

This is a Certified Bonafide Record Book of

**Mr. /Ms. ....**

**University Register Number**

**Batch:**2024-2028, submitted for Anna University Practical Examination held on

**Date :**  in **23ES1114 - INNOVATIVE THINKING AND PROTOTYPE**

**DEVELOPMENT LAB** during Feb 2025 -May 2025.

**STAFF-IN-CHARGE**

**INTERNAL EXAMINER**

**EXTERNAL EXAMINER**

# **VISION AND MISSION OF THE INSTITUTION**

## **VISION**

To transform the budding Engineers into academically excellent, highly intellectual, and self-disciplined engineering graduates to mould them as good citizens with the spirit of integrity and morality that would cater to the needs of our Nation.

## **MISSION**

- To impart quality education with high standards of excellence in engineering and technology.
- To provide an excellent infrastructure in a serene and conducive atmosphere that would motivate the students in their pursuit of knowledge in the field of engineering and technology.

## **VISION AND MISSION OF THE DEPARTMENT**

### **VISION**

To provide an academically conducive environment for individuals to develop as technologically superior, socially conscious and nationally responsible citizens.

### **MISSION**

**M1:** To develop our department as a Centre of excellence, imparting quality education, generating competent and skilled manpower.

**M2:** To prepare our students with high degree of credibility, integrity, ethical standards and social concern.

**M3:** To train our students to devise and implement novel systems based on Education and Research.

### **PROGRAM SPECIFIC OUTCOMES (PSOs)**

**PSO 1 (Professional Skills):** To inculcate technical skills to analyze, design and implement software's related to algorithms, networking, web services, multimedia, big data analytics and recent topics of varying complexity.

**PSO 2 (Problem-Solving Skills):** To develop the capability to comprehend and solve the interdisciplinary problems through appropriate technology with the understanding of contemporary business environment

**PSO 3 (Successful Career and Entrepreneurship):** To develop an ability to utilize the latest technology and platforms to become a triumphant professional, successful entrepreneur and an urge for pursuing higher studies.

## **KNOWLEDGE AND ATTITUDE PROFILE (WK)**

**WK1:** A systematic, theory-based understanding of the natural sciences applicable to the discipline and awareness of relevant social sciences.

**WK2:** Conceptually-based mathematics, numerical analysis, data analysis, statistics and formal aspects of computer and information science to support detailed analysis and modelling applicable to the discipline.

**WK3:** A systematic, theory-based formulation of engineering fundamentals required in the engineering discipline.

**WK4:** Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline.

**WK5:** Knowledge, including efficient resource use, environmental impacts, whole-life cost, re- use of resources, net zero carbon, and similar concepts, that supports engineering design and operations in a practice area.

**WK6:** Knowledge of engineering practice (technology) in the practice areas in the engineering discipline.

**WK7:** Knowledge of the role of engineering in society and identified issues in engineering practice in the discipline, such as the professional responsibility of an engineer to public safety and sustainable development.

**WK8:** Engagement with selected knowledge in the current research literature of the discipline, awareness of the power of critical thinking and creative approaches to evaluate emerging issues.

**WK9:** Ethics, inclusive behavior and conduct. Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes.

## PROGRAM OUTCOMES (POs)

**PO1: Engineering Knowledge:** Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.

**PO2: Problem Analysis:** Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)

**PO3: Design/Development of Solutions:** Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)

**PO4: Conduct Investigations of Complex Problems:** Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).

**PO5: Engineering Tool Usage:** Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)

**PO6: The Engineer and The World:** Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).

**PO7: Ethics:** Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)

**PO8: Individual and Collaborative Team work:** Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.

**PO9: Communication:** Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences

**PO10: Project Management and Finance:** Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.

**PO11: Life-Long Learning:** Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)

# SYLLABUS

## COURSE OBJECTIVES

- To demonstrate the essence of agile development methods and create a GitHub repository.
- To acquire practical knowledge for Designing using Adobe Photoshop, COREL Draw.
- To Gain Knowledge, in CANVA Tools.
- Apply the basic knowledge of design thinking in project work.
- Apply iterative design methodologies to refine and improve solutions based on feedback, user testing, and evaluation of functional, aesthetic, and usability aspects.

## LIST OF EXPERIMENTS

1. Introduction to GIT Setting a GIT repository. Create a repository in a GitHub for a team.
2. Design your college Logo using COREL Draw tools.
3. Design a visiting card using COREL Draw tools.
4. Adobe Photo Shop Tools – Magnetic Lasso Tool –image, Patch Tool –Smudge Tool, Blur-Filter Tool.
  - a. Make Selections with the Magnetic Lasso Tool
  - b. Replace unwanted content with the patch tool and Apply filter to it
  - c. Work with the smudge tool to smooth and blend colors.
  - d. Blur areas in an image with Blur tool.
5. Timeline & Trimming adding, arranging, and trimming video clips, images, and audio tracks.
6. Learn basic CHAT GPT tools and perform Provide the text to ChatGPT and tell it what you're looking for/what you want it to find.
7. **Prompt Engineering:** Experiment with different types of prompts to see how the model responds. Try asking questions, starting conversations, or even providing incomplete sentences to see how the model completes them.  
Ex: Prompt: "You are a knowledgeable AI. Please answer the following question: What is the capital of England?"
8. **Creative Writing:** Use the model as a writing assistant. Provide the beginning of a story or a description of a scene, and let the model generate the rest of the content. This can be a fun way to brainstorm creative ideas.  
Ex: Prompt: "In a world where gravity suddenly stopped working, people start.
9. Design of 3D printing using Fusion 360 and product development.
10. Write CNC programming for CNC Lathe and Milling.
11. Create design for CNC router for ART cam software.
12. Create a PCB design for product Development
13. Develop a Mini Project Using Idea Lab.

**COURSE OUTCOME(S):**

Upon successful completion of the course, students will be able to:

**CO1** : Apply agile development methods in software development practices

**CO2** : Develop and Edit Videos using CANVA tools.

**CO3**: Apply the Knowledge for Designing using Photo Shop ,COREL draw

**CO4** :Implement the usage of ChatGPT and its tools.

**CO5**: Apply Design thinking using 3D Printer

**CO6**: Develop a simple PCB boards using etching and milling Process

**TEXT BOOKS**

1. Roger S. Pressman, —Software Engineering: A Practitioner\_s Approachll, McGraw Hill International Edition, Ninth Edition, 2020.

2. Ulrich and Eppinger, Product Design and Development, 3rd Edition, McGraw Hill, 2004

3. The Big Book of Maker Skills: Tools & Techniques for Building Great Tech Projects. Chris Hackett. Weldon Owen; 2018.

4. The Total Inventors Manual (Popular Science): Transform Your Idea into a TopSelling Product. Sean Michael Ragan, Weldon Owen; 2017

**CO - PO MAPPING**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	2	2	-	-	2	-	3	2
CO2	3	3	3	2	2	2	-	-	2	-	3	2
CO3	3	3	3	2	3	2	-	-	2	-	3	2
CO4	3	3	3	2	3	2	-	-	2	-	3	2
CO5	3	3	3	2	3	2	-	-	2	-	3	2
CO6	3	3	3	2	3	2	-	-	2	-	3	2



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**EX.NO.:01****GIT AND GITHUB****DATE:****AIM:**

To implement GIT repository and create a repository in a GitHub for a team.

**INTRODUCTION**

GIT is a version control system. It helps us to keep track of code changes and used to collaborate on code. **GitHub repository** (often called a repo) is a storage space on GitHub where your project files and their revision history are stored. It uses Git, a version control system, to manage changes to your code and collaborate with others.

**Key Features of a GitHub Repository**

1. **Version Control:** Keeps track of changes made to files, allowing you to revert to previous versions if needed.
2. **Collaboration:** Enables multiple developers to work on the same project simultaneously. Contributors can fork the repo, make changes, and propose those changes via pull requests.
3. **Branches:** Allows you to create separate lines of development for features, fixes, or experiments, which can later be merged into the main branch.
4. **Issues:** Provides a way to track bugs, feature requests, and tasks related to the project.
5. **Pull Requests:** Facilitates code review and discussion about changes before merging them into the main branch.
6. **GitHub Actions:** Automates workflows, such as running tests or deploying code, directly from the repository.

**ALGORITHM****Step 1: Set Up Git on Your Local Machine**

1. **Install Git:**
  - For Windows: Git for Windows.
  -
2. **Configure Git:** Open your terminal or command prompt and set your Git user name and email:

```
git config --global user.name "Your Name"
git config --global user.email "your-email@example.com"
```

**Step 2: Create a GitHub Repository**

1. **Sign in to GitHub:** Go to GitHub and log in to your account. If you don't have an account, create one.
2. **Create a New Repository:**
  - Click on the "+" icon in the upper right corner and select "New repository".

- Fill in the repository name, description (optional), and choose to make it public or private.
- Initialize the repository with a README (optional).
- Click "Create repository".

### Step 3: Set Up the Repository Locally

1. **Clone the Repository:** In your terminal, navigate to the directory where you want to clone your repository and run:

```
git clone https://github.com/your-username/your-repository.git
```

Replace your-username and your-repository with your GitHub username and the repository name.

2. **Navigate to the Repository**

**Directory:** `cd your-repository`

### Step 4: Add Team Members to the Repository

1. **Go to Your Repository on GitHub:** Navigate to the repository you created on GitHub.
2. **Manage Access:**
  - Click on "Settings" in the repository.
  - Select "Collaborators & teams" from the sidebar.
  - Click on "Invite a collaborator" and enter the GitHub usernames or email addresses of your team members.
  - Send the invitations.

### Step 5: Collaborate Using Git

- **Make Changes:** Create or edit files in your local repository.
  - Add the changes to the staging area: `git add .`
  - Commit the changes:  
`git commit -m "Your commit message"`
2. **Push Changes to GitHub:** `git push origin main`  
Replace main with the name of your default branch if it's different.
  3. **Pull Changes from GitHub:** If other team members have made changes, pull the latest changes:  
`git pull origin main`

#### Additional Tips

- **Branching:** Create branches for new features or bug fixes to keep the main branch stable:  
`git checkout -b new-feature-branch`
- **Merging:** After making changes in a branch, merge them back into the main

- branch: git checkout main
- git merge new-feature-branch
- **Handling Conflicts:** If there are conflicts during a merge, Git will notify you to resolve them manually.

## OUTPUT


signup in github.com and create a new repository

### Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository.](#)


*Required fields are marked with an asterisk (\*).*


Owner \*
Repository name \*

 23ES1114 /

Great repository names are short and memorable. Need inspiration? How about **fuzzy-doodle** ?

Description (optional)

☒  **Public**  
Anyone on the internet can see this repository. You choose who can commit.


☐  **Private**  
You choose who can see and commit to this repository.


Initialize this repository with:

☐ Add a README file  
This is where you can write a long description for your project. [Learn more about READMEs.](#)

## //create a remote repository in github

Issues Pull requests Actions Projects Wiki Security Insights Settings


 remote Public
Pin Unwatch 1 Fork 0 Star 0



#### Set up GitHub Copilot

Use GitHub's AI pair programmer to autocomplete suggestions as you code.

[Get started with GitHub Copilot](#)




#### Add collaborators to this repository

Search for people using their GitHub username or email address.

[Invite collaborators](#)

### Quick setup — if you've done this kind of thing before

 Set up in Desktop or
HTTPS SSH
https://github.com/23ES1114/remote.git

Get started by [creating a new file](#) or [uploading an existing file](#). We recommend every repository include a [README](#), [LICENSE](#), and [.gitignore](#).

### ...or create a new repository on the command line

```

echo "# remote" >> README.md
git init
git add README.md
git commit -m "first commit"

```

**//create a file called “hello”**

The screenshot shows the GitHub web interface for a repository named 'remote' by user '23ES1114'. The 'Code' tab is selected. A new file named 'HELLO' is being created in the 'main' branch. The file content is 'HELLO WELCOME TO PANIMALAR ENGINEERING COLLEGE'. The interface includes a search bar, navigation links (Code, Issues, Pull requests, Actions, Projects, Wiki, Security, Insights, Settings), and buttons for 'Cancel changes' and 'Commit changes...'. The file editor shows the content 'HELLO WELCOME TO PANIMALAR ENGINEERING COLLEGE' on line 1.

**//commit changes**

The screenshot shows the GitHub web interface for the 'remote' repository. The 'main' branch is selected. The commit history is displayed, showing a single commit by user '23ES1114' with the message 'Create HELLO'. The commit hash is '8366b19' and it is dated 'now'. The interface includes a search bar, navigation links (Code, Issues, Pull requests, Actions, Projects, Wiki, Security, Insights, Settings), and buttons for 'Go to file', 'Add file', and 'History'.

Name	Last commit message	Last commit date
HELLO	Create HELLO	now

## SETUP GIT REPOSITORY IN YOUR LOCAL SYSTEM

// DOWNLOAD git in your local system

### Download for Windows

**Click here to download** the latest (2.47.1) 64-bit version of Git for Windows. This is the most recent maintained build. It was released 7 days ago, on 2024-11-25.

#### Other Git for Windows downloads

**Standalone Installer**

**32-bit Git for Windows Setup.**

**64-bit Git for Windows Setup.**

**Portable ("thumbdrive edition")**

**32-bit Git for Windows Portable.**

**64-bit Git for Windows Portable.**

#### Using winget tool

Install [winget tool](#) if you don't already have it, then type this command in command prompt or Powershell.

```
winget install --id Git.Git -e --source winget
```

The current source code release is version 2.47.1. If you want the newer version, you can build it from [the source code](#).

#### Now What?

Now that you have downloaded Git, it's time to start using it.

```
$ git init
```

//Initialize empty Git repository in C:/Users/abcd/.git/

```
$ git version
```

//git version 2.47.1.windows.1

```
$ git config --global user.name "23ES1114"
```

```
$ git config --global user.mail "innovativepractice966@gmail.com"
```

//open C drive, where git directory already created

```
$ cd git
```

```
$ git clone https://github.com/23ES1114/remoted.git
```

Cloning into 'remote'...

remote: Enumerating objects: 3, done.

remote: Counting objects: 100% (3/3), done.

remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)

Receiving objects: 100% (3/3), done.

```
$ dir
remote
```

```
$ cd remote
```

```
$ dir      //Notice a file "HELLO.txt" in remote repository is copied in local repository
HELLO.txt
```

```
$ dir      //Create a file WELCOME.txt to be copied in remote repository
HELLO WELCOME.txt
```

```
$ git fetch //git fetch command downloads commits, files, and refs from a remote repository into your
            //local repository
```

```
$ git status //this command provides a summary of the current state of your Git repository.
On branch main
Your branch is up to date with 'origin/main'.
Untracked files:
  (use "git add <file>..." to include in what will be committed)
    WELCOME.txt
nothing added to commit but untracked files present (use "git add" to track)
```

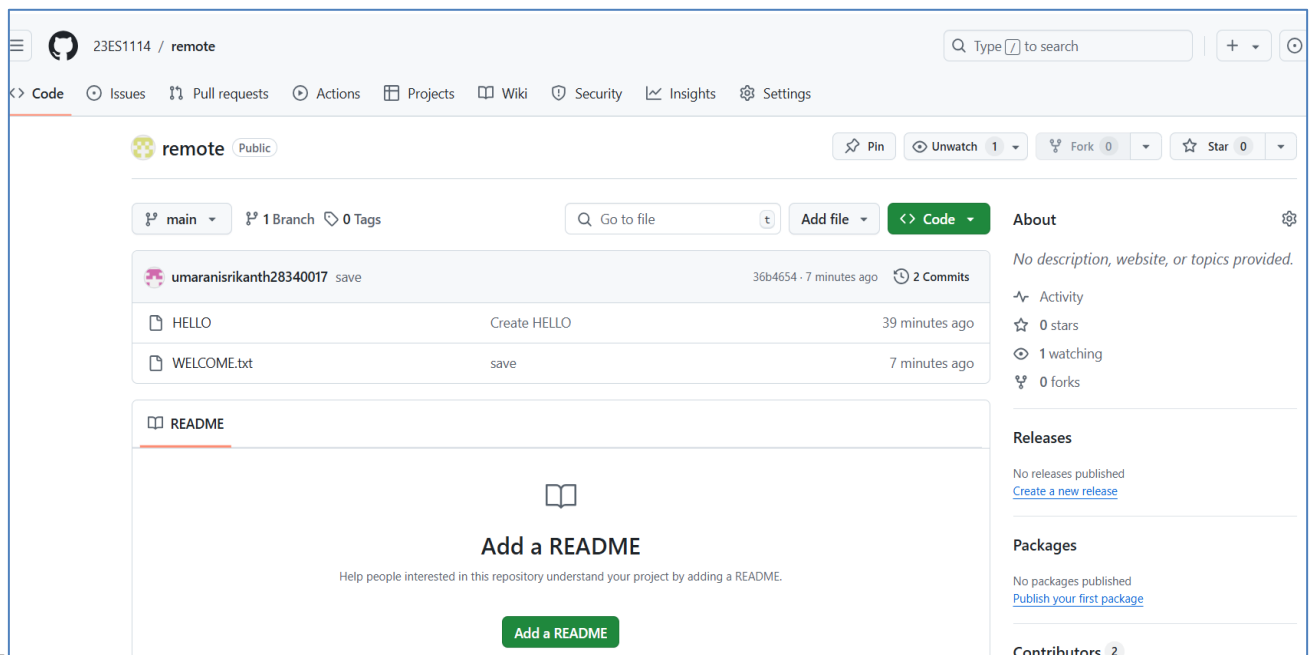
```
//git add command adds new or changed files in your working directory to the Git staging area.
$ git add WELCOME.txt
```

```
$ git commit -m "save"
[main 36b4654] save
1 file changed, 1 insertion(+)
create mode 100644 WELCOME.txt
```

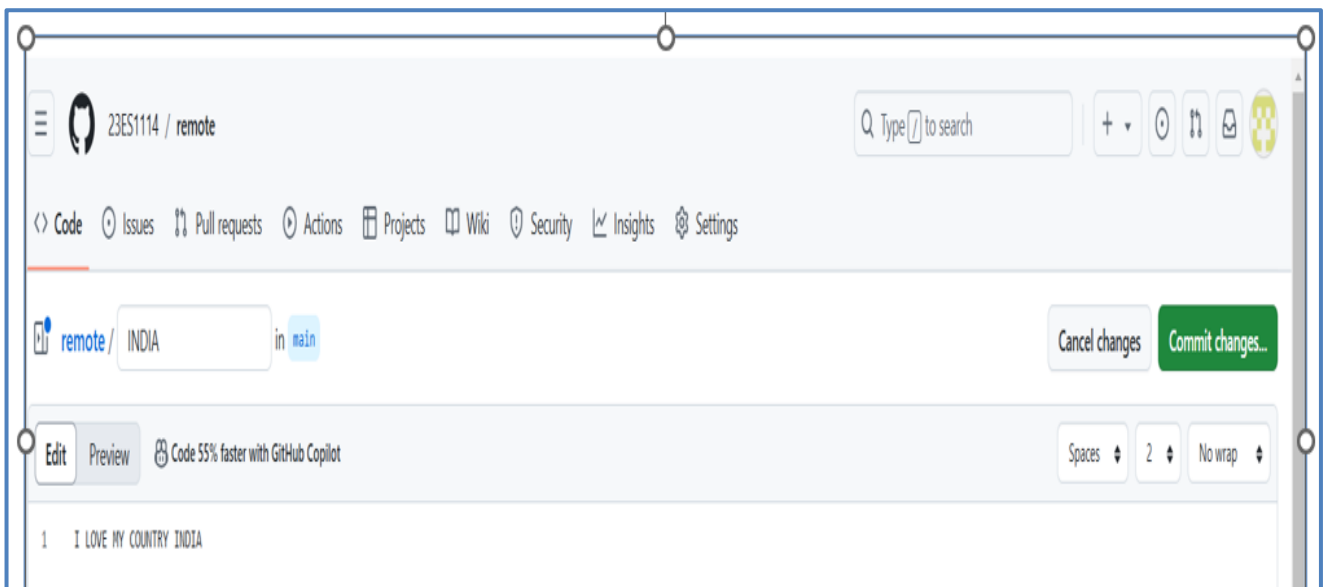
//git push command is used to **upload your local repository content to a remote repository**. It transfers commits from your local branch to a corresponding branch on the remote (e.g., GitHub, GitLab).

```
$ git push origin main
```

Now we can notice the WELCOME.txt is uploaded in remote repository



//create a new text file named “INDIA” in github





//commit the file named INDIA

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

main remote /

23ES1114 Create INDIA d1553f1 · now History

Name	Last commit message	Last commit date
HELLO	Create HELLO	43 minutes ago
INDIA	Create INDIA	now
WELCOME.txt	save	11 minutes ago

// git pull command downloads new code from the branch named master on the remote named origin and integrates them into your local HEAD branch

**\$ git pull origin main**

remote: Enumerating objects: 4, done.

remote: Counting objects: 100% (4/4), done.

remote: Compressing objects: 100% (2/2), done.

remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)

Unpacking objects: 100% (3/3), 971 bytes | 69.00 KiB/s, done.

From https://github.com/23ES1114/remote

\* branch main -> FETCH\_HEAD

36b4654..d1553f1 main -> origin/main

Updating 36b4654..d1553f1

Fast-forward

INDIA | 1 +-

1 file changed, 1 insertion(+)

create mode 100644 INDIA

\$ dir

HELLO INDIA WELCOME.txt

Now we could find the file INDIA found in local repository.

## **RESULT**

Thus, GIT repository and repository in a GitHub for a team have been implemented and executed successfully.

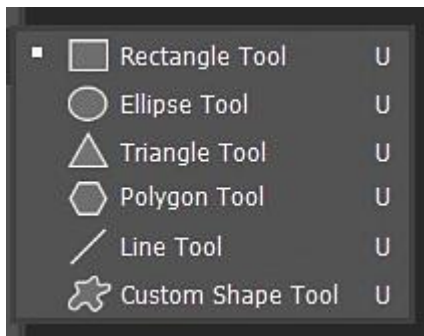
## EX.NO. 02      DRAW BASIC GEOMETRIC SHAPES AND SHADE THEM

DATE:

### AIM

To draw basic geometric figures and color them using shape tool in photoshop.

### ALGORITHM:



#### Step 1: Open Photoshop

1. Launch Photoshop and create a new canvas or open an existing one.

#### Step 2: Select Shape Tool

1. Choose the **Shape Tool** from the toolbar.
  - For basic shapes, select **Rectangle**, **Ellipse**, **Polygon**, or **Line Tool**.

#### Step 3: Draw the Shape

1. Click and drag on the canvas to draw the desired shape.
2. Hold **Shift** while dragging to maintain proportions (e.g., perfect squares or circles).

#### Step 4: Customize Shape

1. Adjust dimensions, position, or proportions using the **Move Tool** or **Transform Controls**.

#### Step 5: Apply Fill Color

1. In the **Options Bar**, click on the **Fill Color** box.
2. Choose a color from the color picker or swatches.

#### Step 6: Apply Stroke (Optional)

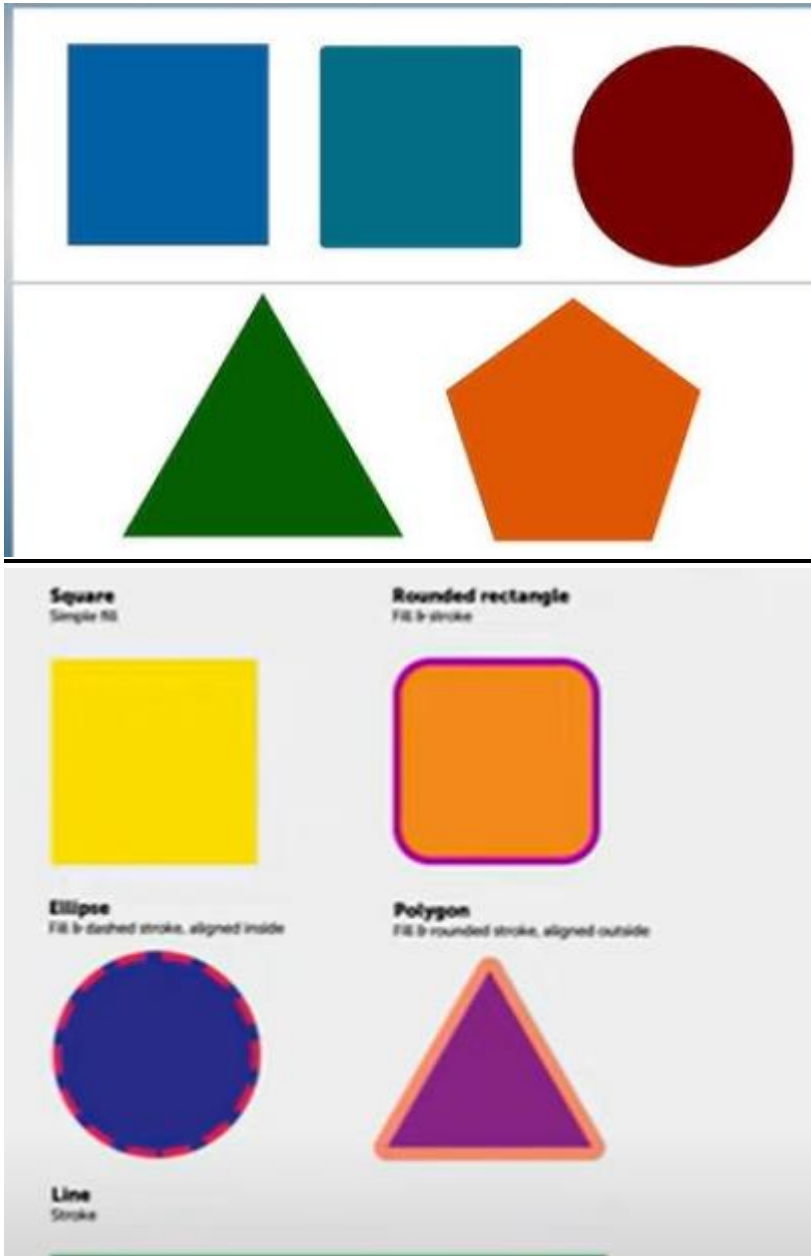
1. Click on the **Stroke Color** box in the **Options Bar**.
2. Choose a color, adjust the stroke size, and set the style (solid, dashed, etc.).

#### Step 7: Add More Shapes

1. Repeat steps 2–6 to add more geometric figures.
2. Use **Layers Panel** to manage individual shapes for easier editing.

**Step 8: Save or Export**

1. Save the project as a Photoshop file (\*.psd) for future editing.
2. Export the image in the desired format (e.g., JPEG, PNG).

**OUTPUT****RESULT:**

Thus basic geometric figures were drawn and colored using shape tool in photoshop.

**EX.NO.3****LEARNING TOOLS OF PHOTOSHOP****DATE:****AIM:**

Learn the basic tools of photoshop

**1.MAGNETIC LASSO TOOL : Make Selections with the Magnetic Lasso Tool**

**Scenario:** Removing a Sky from a Landscape Photo



1. **Open Your Image:**
  - Open Adobe Photoshop.
  - Go to File > Open and select the image you want to work with.
2. **Select the Magnetic Lasso Tool:**
  - In the toolbar, right-click on the Lasso Tool icon and select the Magnetic Lasso Tool.
3. **Make a Selection:**
  - Click on the edge of the object you want to select to set the starting point.
  - Move your cursor along the edge of the object. The Magnetic Lasso Tool will automatically snap to the edges based on color and contrast.
  - Click to add anchor points manually if needed.
  - Close the selection by clicking on the starting point or pressing Enter.

## **2.PATCH TOOL : Replace Unwanted Content with the Patch Tool and Apply Filter to It**

**Scenario :** remove footsteps from seashore



a.

### **Select the Patch Tool:**

- i. In the toolbar, right-click on the Spot Healing Brush Tool and select the Patch Tool.
- ii. Alternatively, press J on your keyboard and cycle through the tools until you get to the Patch Tool.

### **b. Make a Selection with the Patch Tool:**

- i. Draw a selection around the unwanted content you want to replace.
- ii. Click inside the selection and drag it to the area you want to use as the source for the patch. Release the mouse button to apply the patch.

### **c. Apply a Filter:**

- i. With the patched area still selected, go to Filter > Blur > Gaussian Blur (or any other filter you want to apply).
  - o Adjust the settings as needed and click OK.

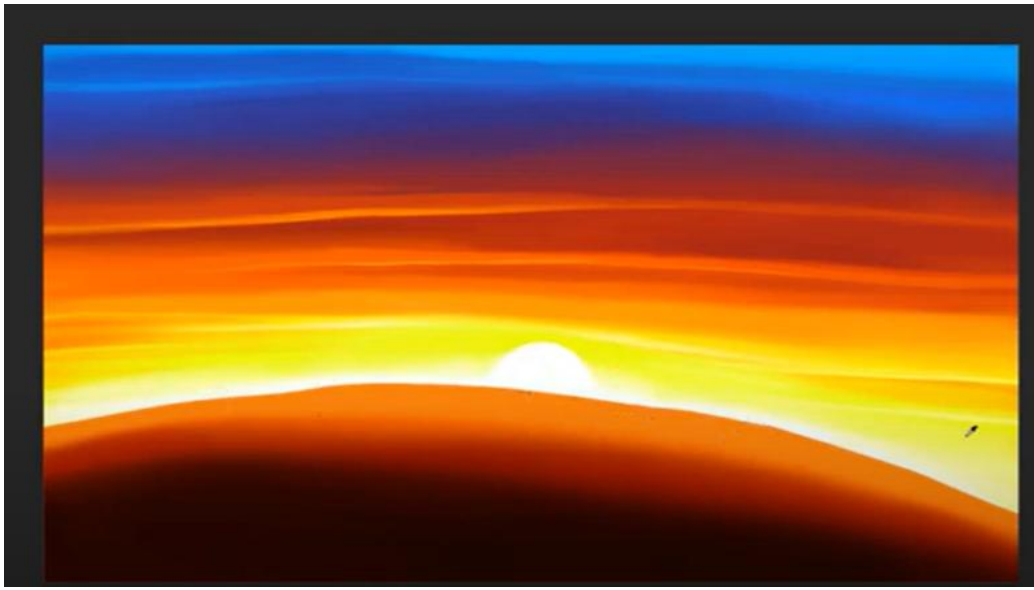
## **3.SMUDGE TOOL :** allows you to mix or blend the content in an area of your image.

**Scenario :** create a digital painting of a sunset, and you want to blend the orange and purple hues smoothly where the colours meet.

### **Steps:**

1. Select the **Smudge Tool** from the toolbar.
2. Adjust the brush size and strength to suit your blending needs.
3. Click and drag the tool over the area where the orange and purple colors intersect, gently smudging them together to create a seamless gradient.

This technique mimics traditional painting methods, making your artwork appear more natural and cohesive.



#### **4.BLUR TOOL : blur Areas in an Image with the Blur Tool**

**Scenario :** Blur the images of wings of a bird



#### **STEPS:**

##### **1. Open the Image**

- Open the image of the bird in Photoshop.

##### **2. Select the Wings**

- Use the **Lasso Tool** or **Quick Selection Tool** to select the wings of the bird.
- Refine the selection using **Select and Mask** (found in the options bar) for a smoother edge, if needed.

##### **3. Create a New Layer**

- After selecting the wings, press **Ctrl + J** (Windows) or **Cmd + J** (Mac) to duplicate the selected area to a new layer.

##### **4. Apply Blur**

- With the new layer selected, go to **Filter > Blur > Gaussian Blur** (for a smooth,

even blur).

- Adjust the **Radius** slider to control the intensity of the blur. A higher radius will create a more pronounced blur.

### 5. Adjust the Effect (Optional)

- If you want a more focused blur on certain parts of the wings, use a **Layer Mask** to paint over the areas where you want to reduce the blur using a **soft brush** with low opacity.

### 6. Fine-Tune the Selection

- If needed, use the **Eraser Tool** to erase any unwanted blur areas from the wings.

### 7. Final Adjustments

- Zoom in and adjust the edges if the blur needs refining.
- Once satisfied, **save the image** in your preferred format.

**5.EYEDROPPER TOOL:** This tool can sample colors from anywhere in an image and add them to your Swatches panel



**Scenario:** Matching a Colour from an Image for a Design Project

### **STEPS:**

To match a color from an image for a design project using the **Eyedropper Tool** in Photoshop, follow these steps:

#### **1. Open Your Image in Photoshop**

- Open the image that contains the color you want to match in Photoshop.

#### **2. Select the Eyedropper Tool**

- From the **Tools panel**, select the **Eyedropper Tool**. Alternatively, you can press the **I** key as a shortcut.

#### **3. Pick the Color from the Image**

- Click anywhere on the image where the color you want to match is located. The **Eyedropper Tool** will sample that color and make it your **foreground color** in the Tools panel.



#### 4. Check the Color Values

- To view the exact color values, double-click the **Foreground color** swatch in the Tools panel. The **Color Picker** window will appear.
- Here, you can see the **RGB, Hex, HSL**, and other color values of the selected color. These values can be used for your design project to maintain color consistency.

#### 5. Use the Color in Your Design

- Now that you have the matched color, you can use it in your design elements such as shapes, text, backgrounds, or brushes.

#### 6. Save the Color for Future Use (Optional)

- If you'd like to save the color for future use, click on the **Swatches panel** (Window > Swatches), and drag the color from the **Foreground color** box into the Swatches panel.

**6.PEN TOOL AND PATH SELECTION TOOL :** The Pen Tool is used to create precise and customizable paths, while the Path Selection Tool allows you to select and move entire paths or path segments without altering their individual anchor points.

**Scenario:** Using the Pen Tool to Create a Butterfly Outline



#### **Steps:**

1. Open an Image
  - Import a reference image of a butterfly into Photoshop.
2. Select the Pen Tool
  - Choose the Pen Tool from the toolbar or press P.
3. Trace the Outline
  - Start clicking along the edge of the butterfly to create anchor points.
  - Click and drag to create smooth curves for rounded edges (e.g., on the wings).



4. Adjust Paths
  - Use the **Direct Selection Tool (A)** to modify anchor points or handles for precision.
5. Create a Closed Path
  - Complete the shape by connecting the last point to the starting point.
6. Fill or Stroke the Path (Optional)
  - Right-click on the path and select Fill Path or Stroke Path to add color or an outline.

This technique is useful for creating clean, scalable vector shapes for logos, illustrations, or digital art.

**7.BRUSH TOOL** : allows the user to paint on a picture or photograph with the selected color



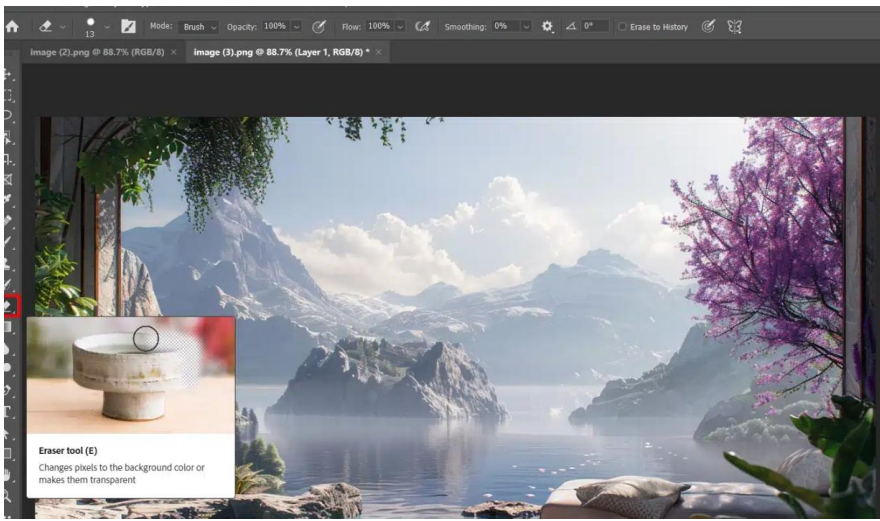
**Step 1:** Open a document or image in Photoshop.

**Step 2:** Select the Brush tool from the toolbar. It can be located on the left side of the application as you can see in the image above.

**Step 3:** After selecting the tool just hold the left click on your mouse and drag over the image or document. It will simply start painting and that's all you have to do to use it.

**8.ERASER TOOL** : The Eraser Tool can make pixels transparent or match them to the image background color.

**Scenario:** remove backgrounds easily in the image



### Step 1: Open Your Image

First, open your image in Photoshop. Click 'File' on the menu bar, then select 'Open.' Choose your image.

### Step 2: Select the Background Eraser Tool

Photoshop interface showing the Eraser Tool highlighted in the toolbar with a background image of a serene lake and mountains. The tool's information box describes its function. Go to the toolbar on the left. Click the eraser tool and hold down the mouse button.

- A new menu appears.
- Select the background eraser.

### Step 3: Set Up the Options Bar

- Check the settings in the options bar. Pick a brush size that fits your image.
- Adjust the tolerance value.
- Higher values erase similar pixels;
- lower values keep more details.

### Step 4: Begin Erasing

- Click on parts of the background you want to erase.
- Move the tool around the object you want to keep.

### Step 5: Protect Foreground Color

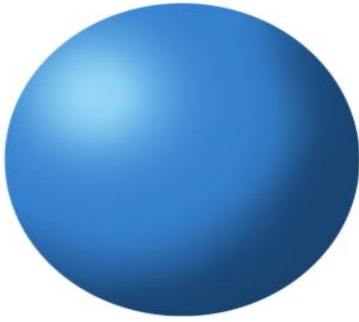
- If the background and foreground colors are similar, protect the foreground color.
- Click the checkbox in the options bar.

### Step 6: Refine the Edges with Brush Tool

For softer edges, adjust the hardness setting of the brush tools.

**9. PAINT BUCKET TOOL:** allows users to fill selections with a solid color or a pattern seamlessly

**Scenario:** You want to fill a drawn circle with a solid color for a design project.



**Steps in Photoshop:**

1. **Create or Open a File**
  - Open a new file or an existing image where you want to use the Paint Bucket Tool.
2. **Draw a Shape (Optional)**
  - Use the **Ellipse Tool** or any shape tool to draw a circle or another shape on a new layer.
3. **Select the Paint Bucket Tool**
  - Choose the **Paint Bucket Tool** from the toolbar or press **G**. If you don't see it, click and hold the **Gradient Tool** icon to access it.
4. **Set the Foreground Color**
  - Click on the **Foreground Color** swatch in the toolbar to open the **Color Picker**.
  - Choose the color you want and click **OK**.
5. **Adjust Tool Settings (Optional)**
  - In the **Options Bar**, set the **Tolerance** (e.g., 30 for moderate coverage).
  - Enable **Anti-alias** for smooth edges and ensure **Contiguous** is checked if you only want adjacent areas filled.
6. **Fill the Shape or Area**
  - Click inside the shape or on the canvas to fill it with the selected foreground color.
7. **Fine-Tune the Fill (Optional)**
  - If the edges aren't smooth, undo the fill (**Ctrl + Z**) and adjust the tolerance or use a higher-quality shape.
8. **Save Your Work**
  - Save your project once the desired areas are filled.

## **10.SHARPEN TOOL** : sharpens up any image that is blurry or unclear

It helps to improve the contrast of your image by darkening the dark pixels and brightening up lighter ones. As a result, edges are better defined, making the object in the photo pop more and giving it more contrast.

### **1.Select the Sharpen tool** .Set options in the options bar:

**Mode** : Determines how the paint that you apply blends with the existing pixels in the image.

**Brush** : Sets the brush tip. Click the arrow next to the brush sample, choose a brush category from the Brushes menu, and then select a brush thumbnail.

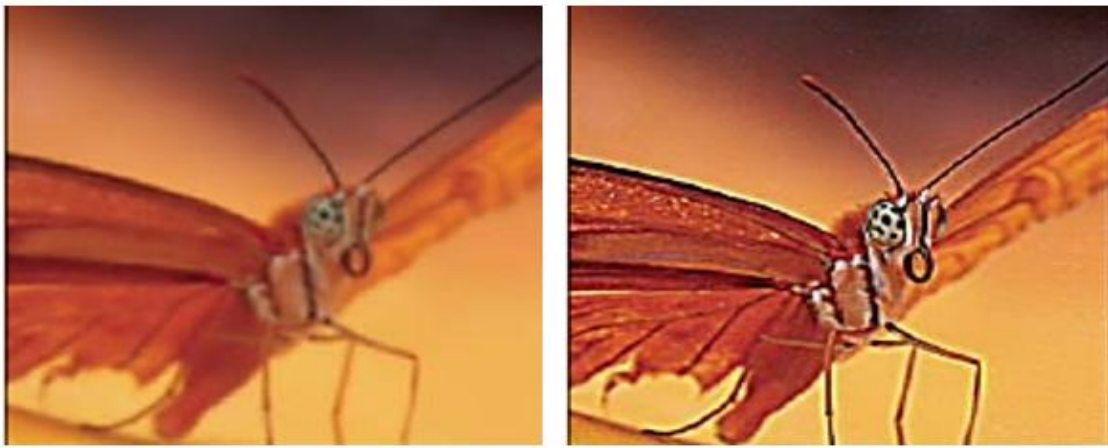
**Size** :Sets the size of the brush, in pixels. Drag the Size pop-up slider or enter a size in the text box.

**Strength**: Specifies the amount of sharpening that occurs with each stroke.

**2.Sample All Layers**: Sharpens all visible layers. If this is deselected, the tool sharpens only the active layer.

**Protect Detail**: Select Protect Detail to enhance details and minimize pixelated artifacts. Deselect this option if you want to produce more exaggerated sharpening effects.

3.Drag over the part of the image you want to sharpen.



## **TRY FOLLOWING SCENARIOS USING ABOVEMENTIONED TOOLS**

**MAGNETIC LASSO TOOL** : Select the edges of a complex object, such as isolating a person from a busy background in a photo, allowing you to place the person onto a new background for a design or promotional material.

**PATCH TOOL** : You have a close-up portrait, and you want to remove a visible blemish or scar on the subject's face to enhance the image.

**SMUDEGE TOOL**: You are working on a digital painting of a flower, and you want to blend the colors in the petals to create a smooth, watercolor-like effect.

**BLUR TOOL**: You have an image of a car in motion, and you want to simulate the effect of speed by blurring the background while keeping the car in focus.

**PEN TOOL** : design a logo and need to create a precise, smooth curve for part of the logo's outline, such as a wave or a swoosh.

**EYEDROPPER TOOL :** Design a website and want to create a button that matches a color used in the company's branding, which is present in an image on the site.

**PEN TOOL AND PATH SELECTION TOOL:** Use the **Pen Tool** to trace the outline of a product in a photo for an advertisement, and then use the **Path Selection Tool** to move and adjust the traced path to fit the product perfectly within the ad layout.

**ERASER TOOL:** Clean up a product image by erasing the background around the product, helping to isolate it for an e-commerce website, where the product needs to stand out on a white or transparent background.

**PAINT BUCKET TOOL:** Fill a blank shape with color, such as adding a solid color to a rectangle in a poster design to make it stand out.

**SHARPEN TOOL :** Enhance the clarity of details in a photo, such as sharpening the eyes of a portrait to make them stand out more vividly in the image.

**RESULT :** The various tools for adobe photoshop were studied and was executed successfully.

**EX.NO.:4****DESIGN COLLEGE LOGO USING PHOTOSHOP****DATE:****AIM :** Design college logo using photoshop tools.**ALGORITHM****Step 1: Open a New Document**

1. Open Photoshop.
2. Create a new document with the desired dimensions. For example:
  - Width: 1000px
  - Height: 1000px
  - Resolution: 300dpi for high-quality output.

**Step 2: Plan the Logo Elements**

1. Sketch the basic layout of the logo (for example, whether it has text, shapes, or symbols).
2. Determine the colors, shapes, fonts, and design elements that represent the college's brand identity.
3. Prepare any symbols, icons, or text needed for the logo (e.g., an emblem, shield, or crest).

**Step 3: Draw the Base Shape of the Logo**

1. Select the Shape Tool (U) from the toolbox.
2. Choose the appropriate shape for your logo base (e.g., circle, square, or shield).
3. Hold the Shift key (for a perfect circle or square) and draw the shape on the canvas.
4. Set the fill color and stroke to match the primary color of the logo.

**Step 4: Create Symbols or Emblems (if applicable)**

1. If the logo includes symbols (e.g., a book, torch, or emblem), use the Shape Tool (U) to draw simple shapes, or use the Pen Tool (P) for custom designs.
2. For a torch symbol, for example, you could combine circles and lines. For a book, you can use rectangles.
3. Position these elements within the logo's base shape (circle, square, etc.).

**Step 5: Add Text (College Name or Initials)**

1. Select the Text Tool (T).
2. Choose a font that represents the college's identity (serif, sans-serif, or decorative fonts).
  - For academic institutions, use a strong, professional font.
3. Type the full college name or initials (depending on the logo design).
4. Adjust the font size, style, and color to match the overall design. Typically, college logos have prominent text, so ensure the text is bold or easily readable.
5. Position the text within the logo shape, either at the top, center, or bottom, based on your design.

**Step 6: Apply Gradients or Effects (Optional)**

1. If your logo includes gradients, select the shape layer, then:
  - Right-click on the layer and select Blending Options.
  - Choose Gradient Overlay and adjust the colors, style, and angle.

2. For 3D effects or shadows, use the Drop Shadow or Inner Glow under Blending Options to give the logo depth.
3. Experiment with effects to give the logo a unique look (such as embossing, bevel, or outer glow).

#### **Step 7: Refine the Logo Layout**

1. Use the Move Tool (V) to adjust the position of shapes and text.
2. Use the Align options to ensure all elements are properly centered or aligned in relation to each other (use the Align toolbar at the top of the workspace).
3. Ensure the logo has a balanced and symmetrical design.

#### **Step 8: Add Additional Elements (Optional)**

1. If the logo includes a motto or slogan, use the Text Tool (T) to add it in a smaller font size.
2. Place the motto or slogan in a suitable location beneath the main logo.
3. If needed, add decorative elements like lines, borders, or icons to complete the logo.

#### **Step 9: Finalize the Logo**

1. Zoom in to inspect details and ensure that all elements are sharp and aligned properly.
2. Remove any unwanted layers or extra elements that do not belong in the final design.
3. If you need the logo to be scalable, ensure that it is created using vector shapes and text (instead of pixel-based images).

#### **Step 10: Save and Export the Logo**

1. Save the project in PSD format to preserve layers for future edits.
2. For final output, export the logo in a suitable format:
  - PNG (for transparency).
  - JPEG (for web use).
  - SVG (for vector graphics, if needed).
3. Use the Save As option in Photoshop and choose the format you need for print, web, or branding use.

### **OUTPUT**



### **RESULT**

Thus, college logo is designed using photoshop tools.



**EX.NO:5****DESIGN VISITING CARD USING PHOTOSHOP****DATE:****AIM:** Desing visiting card using photoshop**ALGORITHM****1. Start Photoshop**

- Open Adobe Photoshop and create a new project.

**2. Set Document Dimensions**

- Go to File → New.
- Set dimensions typically used for visiting cards:
  - Width: 3.5 inches
  - Height: 2 inches
  - Resolution: 300 DPI (for high-quality print)
  - Color Mode: CMYK (for print).

**3. Create Background Layer**

- Create a new layer named "Background."
- Use the Paint Bucket Tool or Gradient Tool to fill the background with a desired color or gradient.

**4. Add a Logo**

- Go to File → Place Embedded and insert the company logo.
- Position and resize the logo using the Move Tool.

**5. Insert Company Name**

- Select the Text Tool (T).
- Click on the canvas and type the company name.
- Choose an appropriate font, size, and color in the text properties panel.
- Position the text prominently.

**6. Add Contact Information**

- Use the Text Tool (T) again to add the following details:
  - Name of the individual
  - Job title
  - Phone number
  - Email address
  - Website URL and Address
- Align and format the text neatly.

**7. Add Design Elements**

- Use the Shape Tool to add lines, borders, or icons for better visual appeal.
- Apply shadows or effects using the Blending Options to enhance the design.

**8. Align and Adjust Layout**

- Use the Move Tool to adjust the alignment and spacing of all elements.
- Utilize the Guides and Grids for precise alignment.

**9. Review and Finalize Design**

- Check for any spelling errors or misalignment.
- Ensure that all layers are correctly named and organized.

**10. Export the Visiting Card**



- Go to File → Export → Export As.
- Choose JPEG or PDF for printing or sharing.
- Save the file with appropriate settings for high-quality output.

#### 11. End

### OUTPUT



### RESULT

Thus, a visiting card is designed using photoshop Draw tools.

## **EX.NO.6 TIMELINE & TRIMMING ADDING, ARRANGING, AND TRIMMING VIDEO CLIPS, IMAGES, AND AUDIO TRACKS USING CANVA TOOLS**

**DATE:**

### **AIM**

To perform various operation using CANVA tool.

### **ALGORITHM**

#### **Step 1: Create a New Video Project**

1. **Open Canva:**
  - Go to [Canva](https://www.canva.com) and log in to your account.
2. **Create a New Design:**
  - Click on the Create a design button on the top right corner.
  - Select Video from the dropdown menu to start a new video project.

#### **Step 2: Add Video Clips, Images, and Audio Tracks**

1. **Upload Media:**
  - Click on the Upload tab on the left sidebar.
  - Click on Upload media and select the video clips, images, and audio tracks you want to use from your device.
2. **Add Media to Timeline:**
  - Drag and drop the uploaded video clips, images, and audio tracks onto the timeline at the bottom of the screen.

#### **Step 3: Arranging Video Clips and Images**

1. **Arrange Clips and Images:**
  - Drag the video clips and images along the timeline to arrange them in the order you want them to appear.
2. **Adjust Duration:**
  - Click on an image or video clip on the timeline.
  - Drag the edges of the clip to adjust its duration on the timeline.

#### **Step 4: Trimming Video Clips**

1. **Select the Clip:**
  - Click on the video clip on the timeline that you want to trim.
2. **Trim the Clip:**
  - Click on the scissors icon (Trim) that appears on the toolbar above the timeline.
  - Drag the handles on either side of the video clip to trim the start or end of the clip.
  - Click Done when you are satisfied with the trim.

#### **Step 5: Adding and Arranging Audio Tracks**

1. **Add Audio:**
  - Go to the Music tab on the left sidebar to access Canva's music library, or

- upload your own audio under the Uploadstab.
- Drag and drop the audio track onto the timeline.
- 2. **Arrange Audio:**
  - Drag the audio track along the timeline to sync it with the video clips and images.
- 3. **Adjust Audio Length:**
  - Click on the audio track on the timeline.
  - Drag the edges of the audio track to adjust its duration.
  - Trim the audio using the same method as trimming video clips.

### Step 6: Preview and Fine-Tune

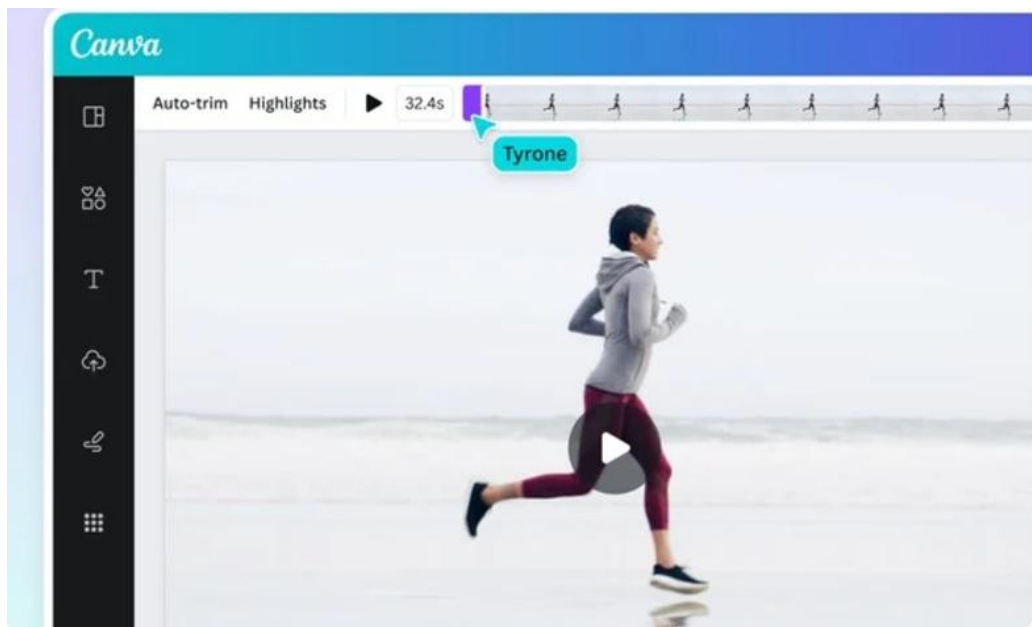
1. **Preview Your Video:**
  - Click the play button above the timeline to preview your video.
  - Make sure the transitions between clips are smooth and the audio is synced correctly.
2. **Fine-Tune:**
  - Adjust the positions of clips, images, and audio as needed.
  - Use additional tools like transitions, text, and effects to enhance your video.

### Step 7: Export Your Video

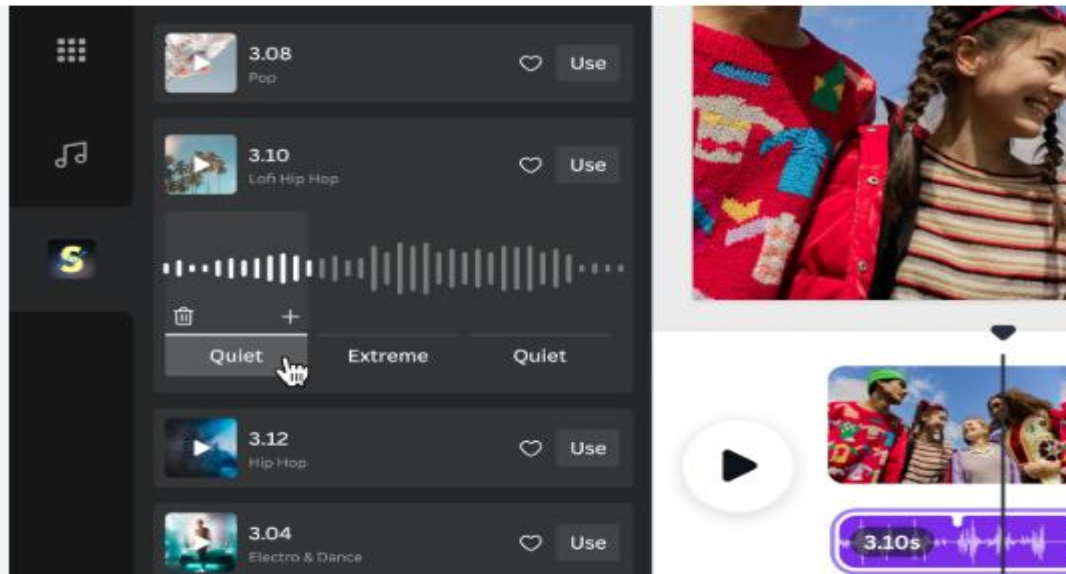
1. **Export:**
  - Once you are satisfied with your video, click on the Downloadbutton in the top right corner.
  - Select the desired video quality and click Downloadto export your video.

### OUTPUT :

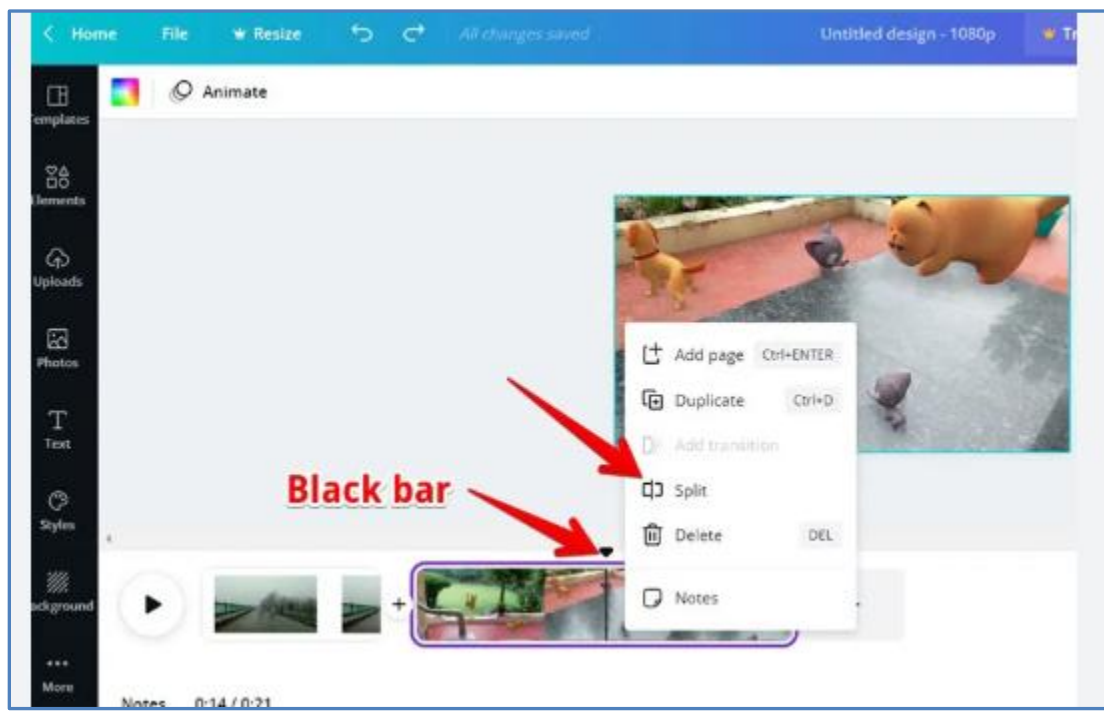
**Trim videos online to its right length**



## Add Music To Video: Add Audio, Songs & More | Canva



## Split and splice your videos



## RESULT:

Thus, various operations using CANVA tool are executed and results are verified.

## **EX.NO.7      DESIGN A BANNER AND EVENT POSTER FOR TECHNICAL EVENTS**

**DATE:**

**AIM :** Design a banner and event poster for technical events (symposium/ conference/ ideathon) using canva

### **ALGORITHM**

- Step 1: Go to Canva's website or open the Canva app.  
Log in or sign up for a free account if not already done.
- Step 2: Choose Template  
Search for "Event Poster" or "Banner" in the template search bar.  
Select a template that matches your theme or event style.
- Step 3: Set Dimensions  
Click Custom Size if a specific size is needed (e.g., 1080x1920 px for posters).  
Open the template editor.
- Step 4: Add Event Details  
Use Text Tool to add:  
Event Name (e.g., Symposium on AI Innovations).  
Date, Time, and Venue.  
Call to Action (e.g., "Register Now" or "Join Us").
- Step 5: Customize Design  
Change Background:  
Use a solid color, gradient, or image that complements the event theme.  
Add Elements:  
Use shapes, lines, or frames to highlight sections.  
Upload Images/Logos:  
Add the event logo, sponsor logos, or relevant graphics.
- Step 6: Enhance Visual Appeal  
Use Canva's library to add icons or illustrations (e.g., tech symbols for a symposium).  
Adjust fonts, colors, and alignments for readability and aesthetics.
- Step 7: Finalize the Design  
Preview the poster or banner to check for alignment, spelling, and visual balance.  
Make adjustments if necessary.
- Step 8: Save and Export  
Save the design on Canva.  
Download the file in the desired format (e.g., PNG for digital use, PDF for printing).
- Step 9: Share or Print  
Share the design directly from Canva via email or social media.  
Print the design if needed for offline use.

### **Example:**

A visually appealing poster or banner with event details like:

Title: "AI IN HEALTHCARE - Ideathon 2025"

Date: March 10, 2025

Venue: Conference Hall

### OUTPUT: BANNER



### OUTPUT – HACKATHON POSTER



### RESULT:

Thus the banner and poster for technical events are designed.

**EX.NO.8****CREATE LINKEDIN PROFILE AND UPLOAD CERTIFICATES****DATE :****AIM**

Create your LinkedIn profile and upload relevant certifications to showcase your professional achievements.

**Note : Everyone is informed to complete one certification course and upload in your LinkedIn.**

**ALGORITHM****Step 1: Visit LinkedIn**

Open LinkedIn or download the LinkedIn app.

Sign up or log in if you already have an account.

**Step 2: Complete Basic Profile Details**

Enter your Name, Email, and Password to create an account.

Add your location, job role, or select Student.

Confirm your email to verify the account.

**Step 3: Build Your Profile**

Upload a professional profile photo.

Write a headline summarizing your expertise (e.g., "Software Engineer | Certified AWS Developer").

Add an About Section to introduce yourself, highlighting skills and career objectives.

**Step 4: Add Certifications**

Go to the Licenses & Certifications section in your profile.

Click Add Certification and enter:

Certification Name (e.g., "AWS Certified Solutions Architect").

Issuing Organization (e.g., "Amazon Web Services").

Issue and Expiry Dates (if applicable).

Credential ID and URL (optional but recommended).

Repeat for all relevant certifications.

**Step 5: Add Other Sections**

Fill in Work Experience with job roles, responsibilities, and achievements.

Add Education with details of institutions, degrees, and years.

Include Skills related to your field and get endorsements from connections.

**Step 6: Customize Profile**

Edit your LinkedIn URL for a professional touch (e.g., linkedin.com/in/yourname).

Add a banner image related to your profession or achievements.

**Step 7: Connect with Professionals**

Search for colleagues, mentors, or peers and send connection requests.

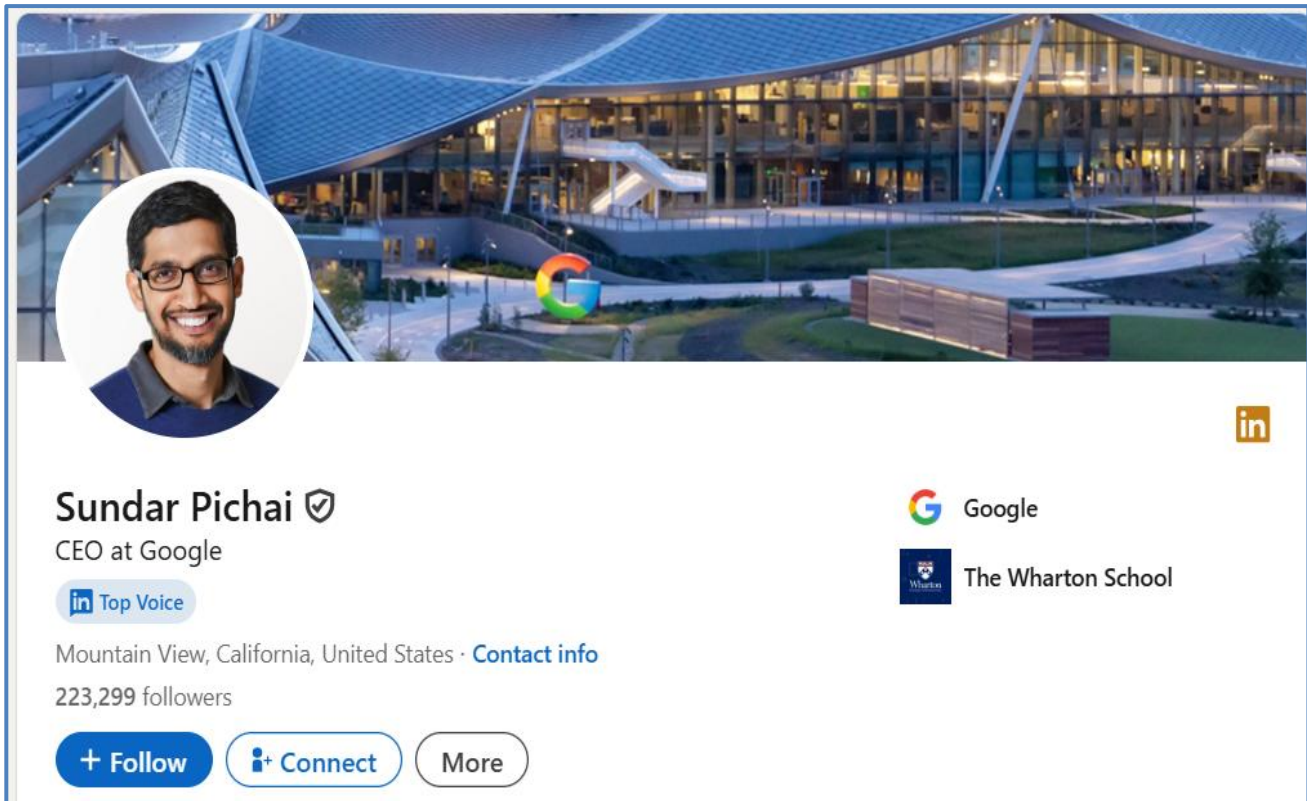


Join relevant LinkedIn groups to expand your network.

### Step 8: Share and Engage

Share updates about your certifications and achievements.  
Comment on and engage with posts in your domain.

### OUTPUT



### OUTPUT

Thus, LinkedIn profile is created and relevant certifications are uploaded to showcase professional achievements.

### RESULT:

Thus, my LinkedIn profile is created and certifications for professional courses undergone are uploaded.



**EX.NO.9****PREPARE RESUME USING CANVA****DATE:****AIM:**

Prepare resume using Canva.

**ALGORITHM****Step 1: Open Canva**

1. Visit [Canva](#) or launch the Canva app.
2. Log in or create an account if you don't have one.

**Step 2: Search for Resume Templates**

1. Type "Resume" in the search bar.
2. Browse through various templates and select one that matches your style and professional field.

**Step 3: Set Up the Template**

1. Click on the chosen template to open it in the editor.
2. Adjust the layout dimensions if required (e.g., A4 size for standard resumes).

**Step 4: Add Personal Details**

1. Replace placeholder text with your:
  - Full Name.
  - Contact Information (email, phone number, LinkedIn profile, etc.).
  - Professional Photo (optional but preferred in certain industries).

**Step 5: Add Career Objective**

1. Write a concise career objective or professional summary highlighting your goals and skills.

**Step 6: Fill in Education Details**

1. Add your educational qualifications in reverse chronological order:
  - Degree, Institution, Year of Graduation, and Key Achievements.

**Step 7: Add Work Experience**

1. List your work experience in reverse chronological order:
  - Job Title, Company Name, Duration, and Key Responsibilities.
2. Use bullet points to describe achievements clearly.

**Step 8: Highlight Skills**

1. Use icons or sections to list both technical and soft skills relevant to your field.
2. Include proficiency levels (e.g., Beginner, Intermediate, Expert).

**Step 9: Add Certifications and Achievements**

1. Create a separate section for certifications (e.g., "AWS Certified Solutions Architect").
2. Mention relevant awards or achievements.

**Step 10: Customize Design**

1. Adjust colors, fonts, and alignments for consistency and readability.
2. Replace icons or visuals to align with your profession (e.g., tech symbols for IT).

**Step 11: Proofread and Finalize**

1. Check for grammatical errors, formatting issues, and typos.
2. Preview the resume to ensure all information is accurate and visually appealing.

**Step 12: Download the Resume**

1. Save your design on Canva.
2. Download the resume in a professional format like PDF.

**Step 13: Share or Print**

1. Share the resume digitally or print it for physical applications.

**OUTPUT**

A polished, visually appealing resume that includes:

- Header: Name and Contact Information.
- Sections: Career Objective, Work Experience, Education, Skills, Certifications, and Achievements.
- Design: Modern layout with professional fonts and a clean color scheme.

**RESULT**

Thus resume created using canva

EX.NO.10

## CREATING WEBSITES USING GOOGLE SITE

DATE:

**AIM**

Create a website for an online marketing services using google site.

**ALGORITHM****Step 1: Access Google Sites**

1. Open a web browser and visit [Google Sites](https://www.google.com/sites).
2. Log in to your Google account.
3. Click on the "+" or "**Create**" button to start a new website.

**Step 2: Choose a Template**

1. Browse the available templates or select a **Blank Template** for a custom design.
2. Choose a template that best suits online marketing services (e.g., business, marketing, or portfolio templates).

**Step 3: Set Up the Website Name and URL**

1. Click on "**Untitled Site**" at the top-left corner and enter a **website name** (e.g., "XYZ Marketing Solutions").
2. Click on the **Publish** button to set up a custom URL (e.g., **xyzmarketing.google.com**).

**Step 4: Customize the Header**

1. Click on the **Header Section** to add a **logo** of your marketing service and a **catchy tagline** (e.g., "Boost Your Business with Proven Marketing Strategies").
2. Choose a **background image** that represents your brand (e.g., digital marketing visuals, online ads).
3. Customize the header layout and size for better visual appeal.

**Step 5: Create Essential Pages**

1. Go to the **Pages** tab on the right panel and click the "+" button to add new pages. Suggested pages for the online marketing website:
  - **Home** (Introduction to the services).
  - **About Us** (Mission, vision, and company story).
  - **Services** (List of marketing services offered).
  - **Case Studies/Portfolio** (Examples of past marketing projects and results).
  - **Testimonials** (Feedback from clients).
  - **Contact Us** (Contact details, form, and social media links).

**Step 6: Add Content to Each Page**

1. Select a page and click on the **Insert** tab to add various content elements:
  - **Text Box**: Write descriptions of services, client stories, etc.
  - **Images**: Add pictures, logos, and graphics relevant to marketing services.
  - **Google Forms**: Create a form for potential clients to request a consultation or quote.
  - **Embedded Videos**: Embed promotional or explanatory videos about your services or successful campaigns (e.g., YouTube videos).
  - **Google Calendar**: Embed a calendar to showcase your availability for meetings or webinars.
  - **Google Drive**: Add links to marketing resources, such as case studies, white papers, or brochures.

**Step 7: Design and Customize the Layout**

1. Go to the **Themes** tab and select a suitable theme for your marketing services website.
2. Customize the fonts, colors, and overall design to align with your brand identity (e.g., bold fonts, modern color palette).
3. Use the drag-and-drop feature to arrange the layout of each page, ensuring a user-friendly experience.

**Step 8: Add Navigation**

1. Google Sites automatically creates a navigation menu based on the pages you create.
2. Ensure that all the important pages (Home, Services, Contact Us, etc.) are easily accessible in the menu for better navigation.

**Step 9: Preview the Website**

1. Click the **Preview** button (eye icon) in the top-right corner to check how the website will appear on different devices (desktop, tablet, mobile).
2. Test links, forms, and embedded content to ensure everything works properly.

**Step 10: Publish the Website**

1. Once you're satisfied with the website, click the **Publish** button.
2. Set a custom URL for the website (e.g., **xyzmarketing.com**) or use the default Google Sites URL.
3. Click **Publish** again to make the site live and accessible to visitors.

**Step 11: Promote the Website**

1. Share the website link on social media platforms, email campaigns, and digital ads to attract potential clients.
2. Include the website link on your business cards, email signatures, and other promotional materials.

**Step 12: Update and Maintain the Website**

1. Regularly update the content, such as adding new client testimonials, case studies, and services.
2. Monitor the website's performance and improve the SEO (Search Engine Optimization) by adding relevant keywords.

**OUTPUT**

- **Website Title:** "XYZ Digital Marketing Solutions"
- **Pages:** Home, About Us, Services (with sections like SEO, Social Media Marketing, Paid Ads), Case Studies, Testimonials, Contact Us.
- **Features:** Embedded Google Form for inquiries, calendar for appointments, and media gallery showcasing previous work.

**RESULT**

Thus a website is created for an online marketing services using google site.

EX.NO.11

## CREATE A DIGITAL GREETING CARD WITH ANIMATION

DATE:

## AIM

Create a graduation digital greeting card with animation.

**Algorithm to Create a Graduation Digital Greeting Card with Animation**

1. **Open Canva:**
  - Go to [Canva](https://www.canva.com) and log in to your account. If you don't have one, sign up for free.
2. **Create a New Design:**
  - Click on the **"Create a Design"** button at the top-right corner.
  - Choose **Custom Size** (e.g., 1080x1080 px for a square format) or use a **Pre-designed Template** by searching for "Graduation Card" in the template library.
3. **Select a Background:**
  - Choose a background that fits the graduation theme, such as a celebratory color or an image of a graduation ceremony.
  - You can use a solid color, a gradient, or upload a custom background image from your device.
4. **Add the Graduation Message:**
  - Click on the **"Text"** tool from the left sidebar and choose a text style (e.g., "Heading" or "Subheading").
  - Type a congratulatory message, such as "Congratulations Graduate!" or "You Did It!"
  - Customize the font style, size, and color to fit the card's theme.
5. **Add Graduation Graphics:**
  - Go to the **"Elements"** tab and search for graduation-related items such as caps, diplomas, or confetti.
  - Drag and drop any relevant graphic onto your card, resizing and positioning it as needed.
6. **Animate the Elements:**
  - Select each element you want to animate (e.g., text, image, or graphic).
  - Click on the **"Animate"** button in the top toolbar.
  - Choose an animation effect, such as **Fade**, **Pop**, **Rise**, or **Bounce** to make the element appear or move with an animation.
  - Adjust animation speed and timing to ensure smooth transitions between elements.
7. **Add Multiple Pages (Optional):**
  - If you want a multi-page card (for example, one with a message on the front and additional celebration text on the back), click the **"+"** button to add more pages.
  - Customize each page with text and graphics, and animate them accordingly.
8. **Preview the Animation:**
  - Click on the **"Play"** button in the top-right corner to preview how the animation looks.
  - Check the timing, transitions, and ensure the overall flow looks good.
9. **Download the Animated Graduation Card:**
  - When satisfied with the design, click on the **"Download"** button in the top-right corner.
  - Select **GIF** or **Video** format (GIF is recommended for animation).
  - If multiple pages are used, choose **All pages** to download the entire animation.
10. **Save and Share:**
  - Save the downloaded animated greeting card to your device.
  - Share the digital card via email, social media, or messaging platforms.

## OUTPUT



## **RESULT**

Thus a graduation digital greeting card with animation is created using canva.

**EX.NO. 12****INTERACTIVE PROJECT PRESENTATION USING GOOGLE SLIDES****DATE:****AIM**

Create an interactive and visually appealing presentation on a chosen topic - Brief overview of AI in healthcare using google slides.

**ALGORITHM**

1. **Log In to Google Account:**
  - Open [Google Slides](#) in your browser and log in to your Google account.
2. **Create a New Presentation:**
  - Click on **Blank** or + to create a new presentation.
3. **Choose a Template:**
  - To make the presentation visually appealing, choose a **pre-designed theme** from the options available in Google Slides.
  - Alternatively, customize the background by selecting **Background > Choose Image** for a healthcare-related background (such as a medical image or AI-related graphic).
4. **Slide 1: Title Slide**
  - Add a title such as "**The Impact of Artificial Intelligence in Healthcare**".
  - Include a subtitle with your name and date.
  - Insert a relevant image or icon (e.g., AI symbol, healthcare icon) to make it visually engaging.
5. **Slide 2: Introduction to AI in Healthcare**
  - Title: "**What is AI in Healthcare?**"
  - Brief explanation of AI (e.g., "Artificial Intelligence refers to the simulation of human intelligence in machines designed to perform tasks like problem-solving, learning, and decision-making").
  - Include a bullet point list of AI applications (e.g., diagnostics, virtual assistants).
  - Add images or icons related to AI and healthcare (e.g., brain with circuits, healthcare data icons).
6. **Slide 3: Applications of AI in Healthcare**
  - Title: "**Applications of AI in Healthcare**"
  - List the major applications of AI in healthcare (e.g., diagnostic tools, robotic surgeries, predictive analytics).
  - Add interactive elements like **links** to videos or external websites (e.g., an AI diagnostic tool demo on YouTube).
  - Use images and icons to represent each application (e.g., stethoscope, robot surgery).
7. **Slide 4: Benefits of AI in Healthcare**
  - Title: "**Benefits of AI in Healthcare**"
  - List benefits, such as improved accuracy, cost reduction, and personalized treatment.
  - Add a graph or chart (e.g., **Google Sheets Chart** embedded) showing data on AI's impact in healthcare (e.g., faster diagnosis time, reduced human error).
8. **Slide 5: Challenges and Ethical Considerations**
  - Title: "**Challenges and Ethics in AI Healthcare**"
  - Bullet points on challenges like privacy, data security, and potential biases in AI.

- Embed a **poll** or **quiz** using **Google Forms** (linked in the slide) to ask the audience about their concerns regarding AI in healthcare (e.g., "What do you think is the biggest ethical challenge of AI in healthcare?").

#### 9. Slide 6: The Future of AI in Healthcare

- Title: "**The Future of AI in Healthcare**"
- Discuss the future potential of AI in predicting diseases, developing vaccines, or integrating wearable devices for continuous health monitoring.
- Add an embedded video showcasing upcoming AI innovations in healthcare.
- Add text transitions or animations to highlight key points dynamically.

#### 10. Slide 7: Interactive Quiz or Poll

- Title: "**Your Thoughts on AI in Healthcare**"
- Insert a **Google Forms** link or **Poll Everywhere** to get audience feedback on AI applications in healthcare.
- Use a multiple-choice question: "Which area of healthcare do you think AI will improve the most? A) Diagnostics, B) Surgery, C) Treatment Personalization".

#### 11. Slide 8: Conclusion

- Title: "**Summary and Key Takeaways**"
- Summarize key points on how AI is revolutionizing healthcare.
- Add call-to-action: "**Let's embrace AI for a better future in healthcare!**"
- Include a relevant image or icon, such as a handshake between AI and healthcare professionals.

#### 12. Add Transitions and Animations:

- Apply **Slide Transitions** (click on "Slide" > "Transition") to make the presentation smoother.
- Add **Element Animations** to make key points (text, images) appear dynamically.

#### 13. Preview the Presentation:

- Click on the **Present** button to see how the presentation looks and interacts.
- Make necessary adjustments to timings, transitions, and animations for better flow.

#### 14. Download or Share the Presentation:

- Once satisfied, download the presentation as **PDF**, **PowerPoint**, or keep it in **Google Slides**.
- You can also click **Share** to get a link to share with others.

#### 15. Engage with the Audience:

- During the presentation, engage the audience with interactive elements like polls, questions, and live feedback.
- Use the Google Slides **Q&A feature** (available in the presentation settings) to let the audience submit questions during or after the presentation.

## OUTPUT



**RESULT** Thus an interactive and visually appealing presentation on a chosen topic —  
Brief overview of AI in healthcare using google slides is prepared and presented.



**EX. NO:13****LEARN BASIC CHATGPT TOOLS****DATE:****AIM**

Learn basic CHATGPT tools. Provide the text to ChatGPT and tell it what you're looking for/what you want it to find.

**ALGORITHM:****Step 1: Understanding ChatGPT****1. What is ChatGPT?:**

- ChatGPT is a language model developed by OpenAI designed to generate human-like text based on the input it receives.
- It can perform various tasks such as answering questions, providing explanations, generating text, translating languages, summarizing content, and more.

**Step 2: Accessing ChatGPT****1. Platform Access:**

- You can access ChatGPT through various platforms such as OpenAI's website, integrated services like chatbots, or APIs if you're a developer.
- Ensure you have an account on the platform you're using if required.

**Step 3: Providing Text to ChatGPT****1. Starting a Conversation:**

- Open the ChatGPT interface on your chosen platform.
- You'll typically see a text input box where you can type your message or query.

**2. Entering Your Text:**

- Type your text or query into the input box. Be clear and specific about what you are asking or the task you want ChatGPT to perform.
- Example: "What are the benefits of regular exercise?"

**Step 4: Telling ChatGPT What You're Looking For****1. Specify Your Request:**

- Clearly state what you want ChatGPT to find or generate.
- Example: "Please provide a summary of the benefits of regular exercise."

## 2. **Providing Context:**

- If your request is complex or requires context, provide additional information.
- Example: "I need a summary of the benefits of regular exercise for a presentation. Please keep it concise and informative."

## **Step 5: Refining and Interacting**

### 1. **Review the Response:**

- Read the response provided by ChatGPT carefully. If it meets your requirements, you can use it as needed.
- Example: ChatGPT might respond with, "Regular exercise has numerous benefits including improved cardiovascular health, enhanced mood, increased energy levels, and better weight management."

### 2. **Ask Follow-up Questions:**

- If you need more details or a different angle, ask follow-up questions or refine your request.
- Example: "Can you list the mental health benefits of regular exercise specifically?"

## **Step 6: Performing Specific Tasks with ChatGPT**

### 1. **Generating Text:**

- Ask ChatGPT to generate text such as an article, story, email, or any other form of content.
- Example: "Write a motivational speech about the importance of perseverance."

### 2. **Summarizing Content:**

- Provide a piece of text and ask ChatGPT to summarize it.
- Example: "Summarize the following article about climate change in 100 words."

### 3. **Answering Questions:**

- Pose specific questions to ChatGPT and get direct answers.
- Example: "What is the capital of France?"

### 4. **Providing Explanations:**

- Ask for explanations on various topics.
- Example: "Explain the theory of relativity in simple terms."

## **Step 7: Using Advanced Features**

### 1. **Customizing Responses:**

- In some platforms, you can customize the tone, length, and style of responses.
- Example: "Explain the benefits of regular exercise in a professional tone."

### 2. **Integrating with Other Tools:**

- If you're a developer, you can integrate ChatGPT into your applications using the OpenAI API.
- Refer to OpenAI's API documentation for detailed instructions.

## **Step 8: Practice and Experiment**

### 1. **Practice Regularly:**

- The more you interact with ChatGPT, the better you'll understand how to frame your queries and requests for optimal results.
2. **Experiment with Different Prompts:**
- Try different types of prompts and requests to see how ChatGPT responds. This will help you learn its capabilities and limitations.

## **OUTPUT**

Regular exercise offers a wide range of physical, mental, and emotional benefits, including:

1. **Improved Physical Health:** Exercise helps maintain a healthy weight, strengthens muscles and bones, boosts cardiovascular health, and improves flexibility and balance.
2. **Increased Energy:** Regular physical activity increases stamina and reduces fatigue, leading to more energy throughout the day.
3. **Mental Well-being:** Exercise reduces stress, anxiety, and depression by releasing endorphins (feel-good hormones). It also enhances mood and cognitive function.
4. **Better Sleep:** Regular exercise can improve the quality of sleep, helping you fall asleep faster and experience deeper sleep.
5. **Boosted Immune System:** Consistent physical activity strengthens the immune system, making it easier to fight off illnesses.
6. **Chronic Disease Prevention:** Regular exercise reduces the risk of chronic diseases like heart disease, diabetes, and high blood pressure.
7. **Improved Longevity:** Engaging in regular exercise has been linked to a longer life expectancy and reduced risk of early death.

## **RESULT:**

Thus, the basics of ChatGpt is learnt and executed successfully.

**EX.NO. : 14**

**PROMPT ENGINEERING**

**DATE:**

**AIM:**

To implement different type of prompts.

### **1. Direct Questions**

- **Factual Questions:**
  - "What is the capital of Japan?"
  - "Who wrote 'Pride and Prejudice'?"
- **Conceptual Questions:**
  - "Can you explain the theory of evolution?"
  - "What are the main causes of climate change?"

### **2. Conversational Starters**

- **Casual Conversations:**
  - "Hi there! How's your day going?"
  - "What do you think about the latest technology trends?"
- **Debates:**
  - "Do you think technology has improved our lives or made them more complicated?"
  - "Is it better to work from home or in an office? Why?"

### **3. Incomplete Sentences**

- **Completion Tasks:**
  - "The most important quality in a leader is..."
  - "If I could travel anywhere in the world, I would go to..."

### **4. Creative Writing Prompts**

- **Story Starters:**
  - "Once upon a time, in a land far away..."
  - "The spaceship landed on a planet that no human had ever seen before. The first thing they noticed was..."
- **Poetry Prompts:**
  - "Write a poem about the changing seasons."
  - "Compose a haiku about the ocean."

### **5. Instruction and How-To Prompts**

- **Step-by-Step Guides:**
  - "How do I bake a chocolate cake from scratch?"
  - "What are the steps to set up a home wireless network?"

### **6. Opinion-Based Prompts**

- **Personal Preferences:**

- "What is your favorite book and why?"
- "Do you prefer cats or dogs? Explain your choice."
- **Hypothetical Scenarios:**
  - "If you could have any superpower, what would it be and why?"
  - "Imagine you are the president for a day. What is the first thing you would do?"

## 7. Summarization and Paraphrasing

- **Summarization:**
  - "Summarize the plot of 'To Kill a Mockingbird'."
  - "Can you summarize the key points of the article on climate change?"
- **Paraphrasing:**
  - "Paraphrase the following sentence: 'The quick brown fox jumps over the lazy dog.'"
  - "Rephrase this paragraph to make it simpler."

## 8. Translation

- **Language Translation:**
  - "Translate the following sentence to French: 'Good morning, how are you?'"
  - "How do you say 'thank you' in Japanese?"

## 9. Technical and Academic Prompts

- **Technical Explanations:**
  - "Explain the difference between HTTP and HTTPS."
  - "What is blockchain technology and how does it work?"
- **Academic Questions:**
  - "What are the main themes in Shakespeare's 'Hamlet'?"
  - "Discuss the impact of the Industrial Revolution on modern society."

## Experimenting with Prompts

Try experimenting with these types of prompts to see how ChatGPT responds. Adjust the complexity and specificity of your prompts to get different types of responses. Here are a few experiments you can try:

1. **Varying Detail:**
  - Simple: "Tell me about photosynthesis."
  - Detailed: "Explain the process of photosynthesis in plants, including the roles of chlorophyll, sunlight, carbon dioxide, and water."
2. **Creative vs. Informative:**
  - Creative: "Write a short story about a magical forest."
  - Informative: "List the main components of a healthy ecosystem."
3. **Open-Ended vs. Specific:**
  - Open-Ended: "What are your thoughts on artificial intelligence?"
  - Specific: "What are the ethical considerations of using artificial intelligence in healthcare?"

## Tips for Effective Prompt Engineering

- **Clarity:** Ensure your prompt is clear and unambiguous.
- **Specificity:** The more specific your prompt, the more focused the response.
- **Context:** Provide enough context if your query is complex.
- **Iterate:** Refine your prompts based on the responses to get closer to what you need.

## RESULT:

Thus the different types of questions given and checked how the model has responded.

**EX. NO.:15****CREATIVE WRITING USING CHATGPT****DATE:****AIM**

To demonstrate creative Writing: Use the model as a writing assistant. Provide the beginning of a story or a description of a scene, and let the model generate the rest of the content. This can be a fun way to brainstorm creative ideas

**ALGORITHM****Step 1: Choose Your Writing Goal**

1. **Decide on the Genre:**
  - Determine the genre you want to write in (e.g., fantasy, sci-fi, romance, thriller, etc.).
2. **Define Your Purpose:**
  - Are you looking to generate ideas, write a short story, develop characters, or brainstorm plot twists?

**Step 2: Generate Ideas and Outlines**

1. **Idea Generation:**
  - Use prompts to generate ideas for your story.
  - Example: "Give me five unique story ideas for a fantasy novel."
2. **Outline Creation:**
  - Ask ChatGPT to help outline your story.
  - Example: "Create an outline for a mystery story set in a small town."

**Step 3: Develop Characters**

1. **Character Profiles:**
  - Create detailed character profiles with the help of ChatGPT.
  - Example: "Describe a protagonist for a dystopian novel, including their background, personality, and motivations."
2. **Character Interactions:**
  - Generate dialogues between characters to explore their relationships.
  - Example: "Write a conversation between a hero and their mentor in a fantasy world."

**Step 4: Write Scenes and Chapters**

1. **Scene Writing:**
  - Use ChatGPT to write specific scenes based on your outline.
  - Example: "Write a scene where the main character discovers a hidden door in their house."
2. **Chapter Development:**
  - Ask ChatGPT to draft chapters or parts of chapters.
  - Example: "Write the first chapter of a romance novel where the protagonists

meet for the first time."

### **Step 5: Add Details and Descriptions**

1. **Descriptive Writing:**
  - Enhance your scenes with vivid descriptions.
  - Example: "Describe a haunted house in detail."
2. **Atmosphere and Setting:**
  - Create a specific atmosphere for your scenes.
  - Example: "Describe a bustling marketplace in a medieval town."

### **Step 6: Brainstorm Plot Twists and Developments**

1. **Plot Twists:**
  - Generate unexpected plot twists to keep the story engaging.
  - Example: "Suggest three plot twists for a detective novel."
2. **Conflict and Resolution:**
  - Develop conflicts and resolutions within your story.
  - Example: "Describe a major conflict between the protagonist and antagonist in a sci-fi novel and how it is resolved."

### **Step 7: Review and Edit**

1. **Self-Review:**
  - Read through the generated content and make any necessary adjustments to align with your vision.
2. **Seek Feedback:**
  - Ask for specific feedback or improvements.
  - Example: "Can you improve the dialogue between the hero and villain in this scene?"

### **Examples of Prompts for Creative Writing**

- **Story Ideas:** "Give me a unique story idea for a thriller involving time travel."
- **Character Development:** "Describe a villain for a superhero story, including their motivations and powers."
- **Scene Setting:** "Write a scene set in a futuristic city where robots and humans coexist."
- **Dialogue Writing:** "Write a dialogue between two friends who have just discovered a treasure map."
- **Plot Development:** "What happens next in a story where the main character finds out they have superpowers?"

### **RESULT:**

Thus, creative content writing is done using ChatGpt .

## EX. NO.16 CNC PROGRAMMING FOR CNC LATHE AND MILLING

DATE:

### AIM

To demonstrate CNC programming for CNC lathe and Milling machines.

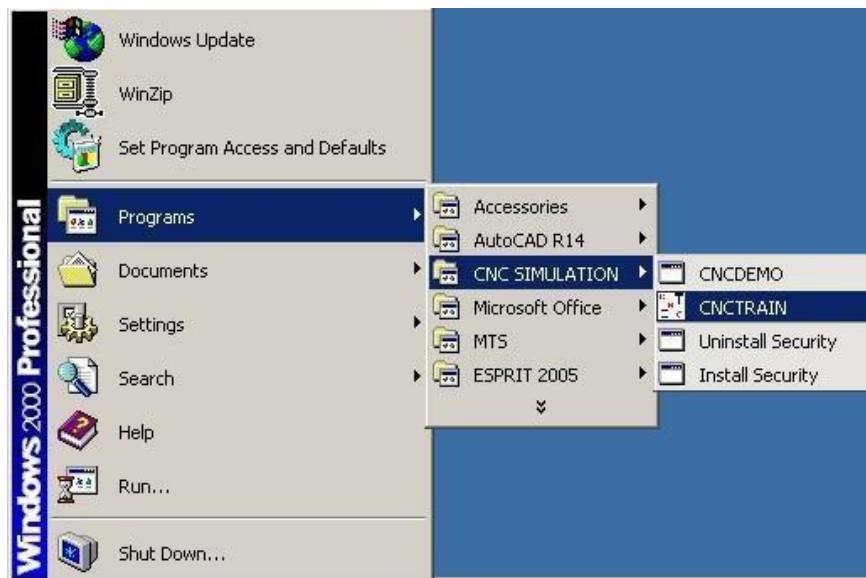
**Equipment's Required:** CNC TRAIN software and CNC machines

### ALGORITHM

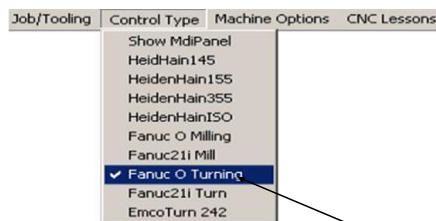
The different steps involved in using the CNC TRAIN software are as follows:

#### Step 1: Click Start menu -

Programs - CNC simulation - CNCTRAIN (or) Double click icon on the desktop



#### Step 2: Selection of controller type

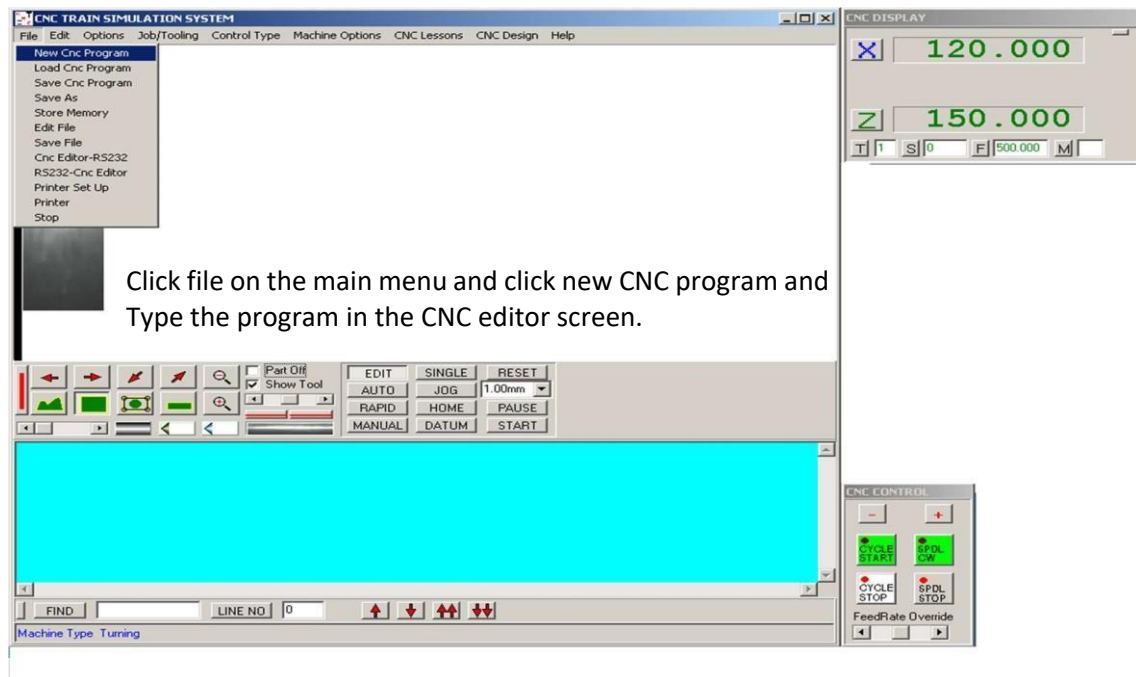


Click Control Type

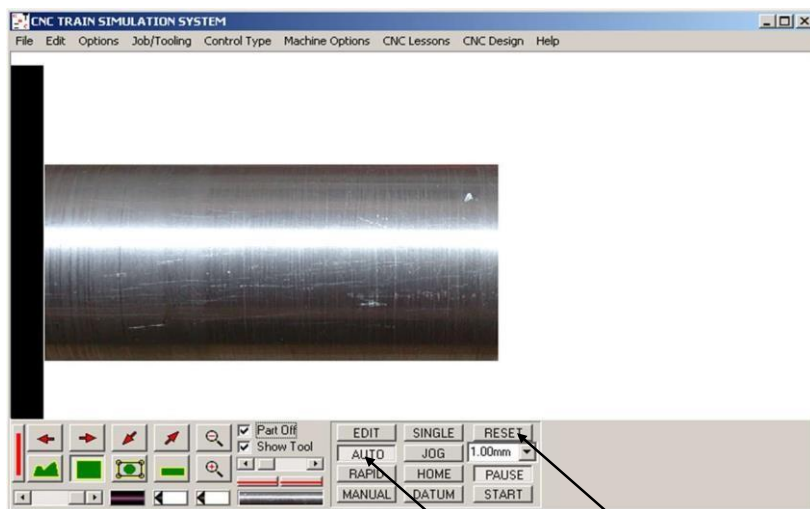


### Step 3: Write a new program.

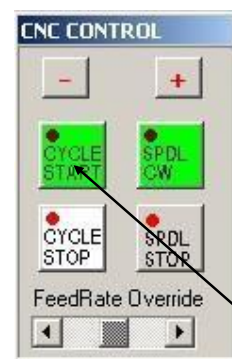
Click file on the main menu and click new CNC program and type the program in the CNC editor screen.



### Step 4: Simulation

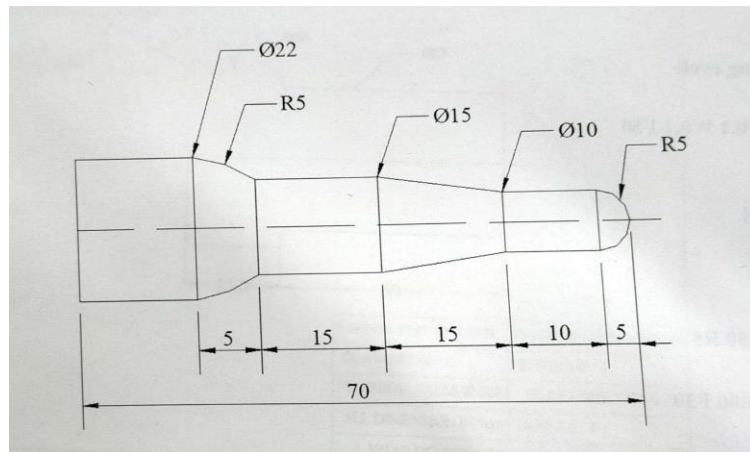


Step 1 Click Auto Step 2: RESET

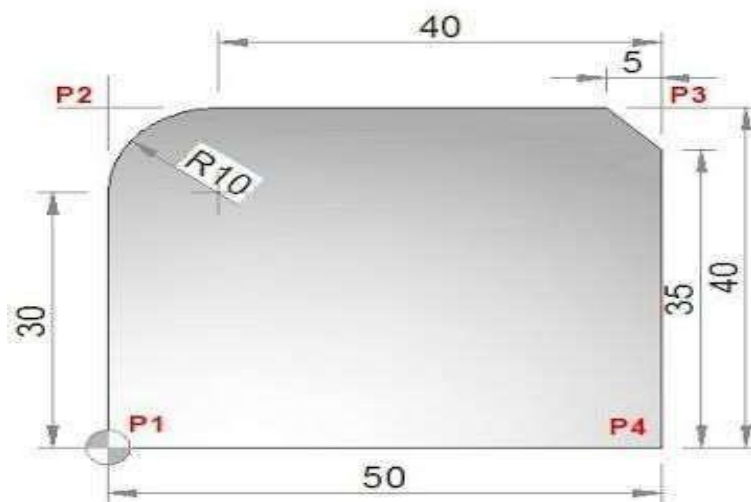


Step 3 Click Cycle start

**Observations:** Carry out the simulations of the following parts in CNC TRAIN software.



### Turning Exercise



### Milling Exercise

## **RESULT**

Thus, CNC programming for CNC Lathe and Milling is demonstrated.

**EX.NO. :17      DESIGN OF 3D PRINTING USING FUSION 360 AND PRODUCT DEVELOPMENT**

**DATE:**

### **AIM**

Design of 3D printing using Fusion 360 and product development.

### **ALGORITHM**

#### **Step 1: Design Conceptualization**

1. **Sketching:** Begin by sketching out your design idea. Fusion 360 provides a robust sketching environment where you can create 2D profiles that will later be extruded or revolved into 3D shapes.
2. **Constraints and Dimensions:** Use dimensions and constraints to define the size and relationships between different parts of your design. This ensures accuracy and helps in making modifications later.

#### **Step 2: 3D Modeling**

1. **Extrusion and Revolve:** Use extrusion to give thickness to your 2D sketches, or use revolve to create solid bodies by rotating a sketch profile around an axis.
2. **Boolean Operations:** Combine multiple bodies using boolean operations (union, subtract, intersect) to create complex shapes.
3. **Fillets and Chamfers:** Add fillets (rounded edges) or chamfers (beveled edges) to your model to improve aesthetics and functionality.
4. **Holes and Threads:** Include holes and threads as needed for assembly or functional requirements.

#### **Step 3: Prepare for 3D Printing**

1. **Check Geometry:** Ensure there are no gaps or intersecting geometry that could cause issues during printing.
2. **Mesh Preparation:** Fusion 360 has tools to convert your solid model into a mesh suitable for 3D printing. Use the "Mesh" workspace to refine the mesh if needed.
3. **Orientation and Supports:** Decide on the orientation of your model for printing. Consider where supports might be needed and how they will be generated.
4. **Export:** Export your model as an STL file, which is the standard file format for 3D printing.

#### **Step 4: Printing**

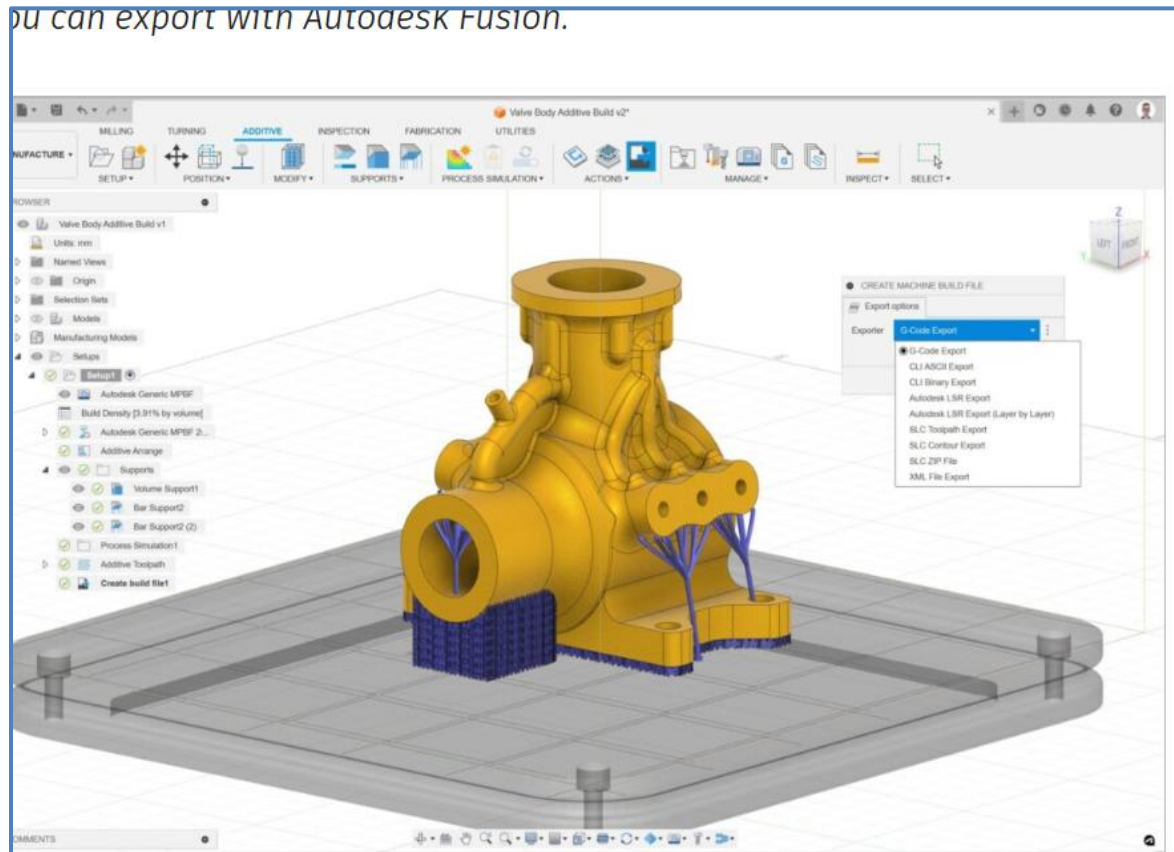
1. **Slicing:** Use slicing software (e.g., Cura, PrusaSlicer) to convert the STL file into G-code, which the 3D printer understands.
2. **Printer Settings:** Configure settings such as layer height, infill density, and print speed based on your design requirements and the capabilities of your printer.
3. **Print:** Start the printing process and monitor the progress to ensure everything is

going smoothly.

### Step 5: Post-Processing

1. **Support Removal:** After printing, carefully remove any support structures.
2. **Surface Finishing:** Depending on your design, you may need to sand, polish, or paint the printed object to achieve the desired finish.
3. **Assembly (if applicable):** If your design consists of multiple parts, assemble them according to your design specifications.

## OUTPUT



## RESULT

Thus, design of 3D printing is implemented using Fusion 360 for product development.

**EX.NO: 18 CREATE THE DESIGN FOR CNC ROUTER FOR ARTCAM SOFTWARE****DATE:****AIM**

Create the design for CNC router using ArtCAM software.

**Step 1: Design Conceptualization**

1. **Sketch or Import Design:** Begin by sketching out your design idea or importing a vector-based design into ArtCAM. ArtCAM supports importing various file formats such as DXF, DWG, AI, EPS, etc.
2. **Define Toolpaths:** Decide on the toolpaths you'll use for machining. This includes roughing, finishing, and any additional operations like drilling or pocketing.

**Step 2: Setting Up the Project**

1. **Material and Dimensions:** Specify the material type and dimensions in ArtCAM. This affects how the toolpaths are generated and the overall machining process.
2. **Layer Management:** Organize your design into layers within ArtCAM. This helps in managing different components of the design and assigning toolpaths accordingly.

**Step 3: Design Tools in ArtCAM**

1. **Vector Creation:** Use ArtCAM's drawing tools to create or modify vectors as needed. Vectors define the toolpath for the CNC router.
2. **Relief Creation:** ArtCAM allows you to create 3D reliefs from 2D vectors. This is useful for adding depth and detail to your design.
3. **Texture and Inlays:** Explore ArtCAM's texture and inlay features if you want to add surface textures or combine different materials in your design.

**Step 4: Toolpath Creation**

1. **Roughing Toolpath:** Set up roughing toolpaths to remove excess material efficiently. Adjust parameters such as stepover and cutting depths based on your material and desired finish.
2. **Finishing Toolpath:** Create finishing toolpaths to achieve the final surface quality. Fine-tune parameters like stepover and tool diameter for precision.
3. **Drilling and Pocketing:** If your design requires holes or pockets, set up drilling and pocketing toolpaths accordingly.

## Step 5: Simulation and Verification

1. **Simulation:** Use ArtCAM's simulation tools to preview how the CNC router will machine your design. This helps in detecting any issues such as collisions or inefficient toolpaths.
2. **Verification:** Verify toolpaths and ensure they are correctly set up to achieve the desired result. Check feeds, speeds, and tool clearances to avoid errors during machining.

## Step 6: Exporting Toolpaths

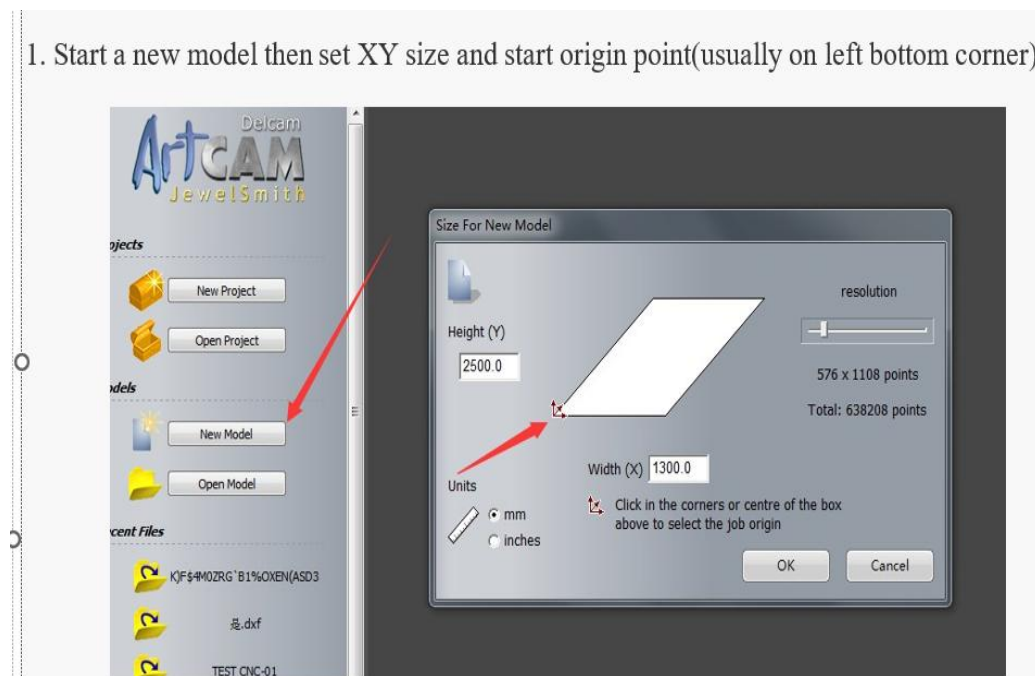
1. **Toolpath Export:** Once satisfied with the toolpaths, export them in a compatible format (e.g., G-code) that your CNC router can understand.

## Step 7: Machining

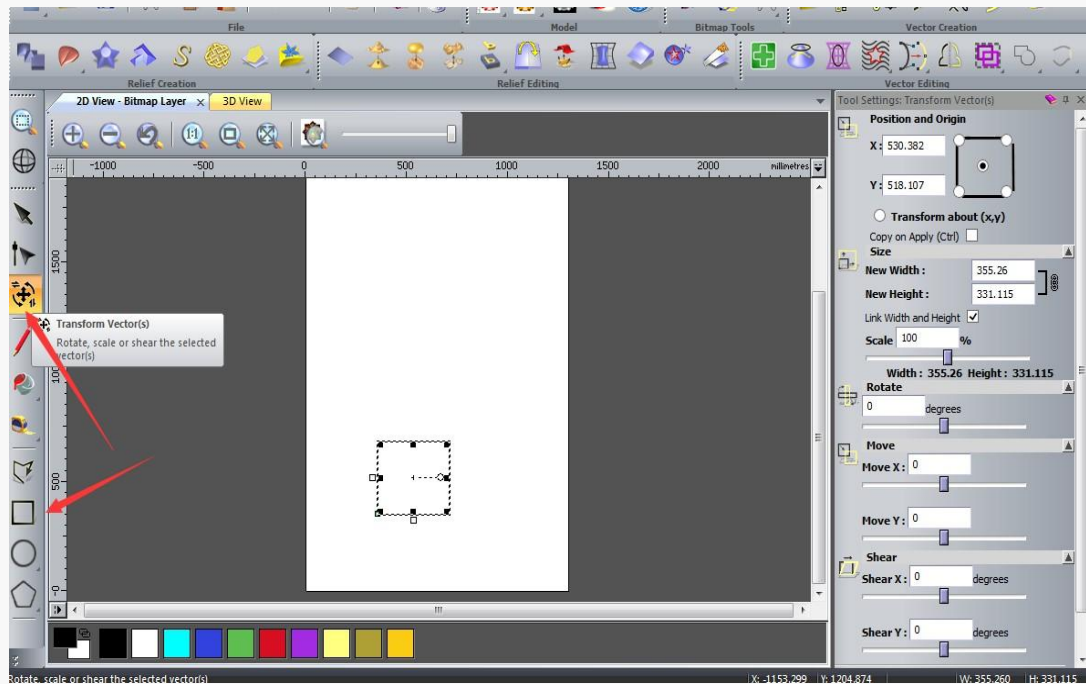
1. **Set Up CNC Router:** Load the exported toolpaths into your CNC router's control software. Follow manufacturer guidelines for tool and material setup.
2. **Machining Process:** Start the machining process, ensuring proper tool alignment and feed rates. Monitor the machining to ensure it progresses as expected.

### a) ArtCAM fast start and running

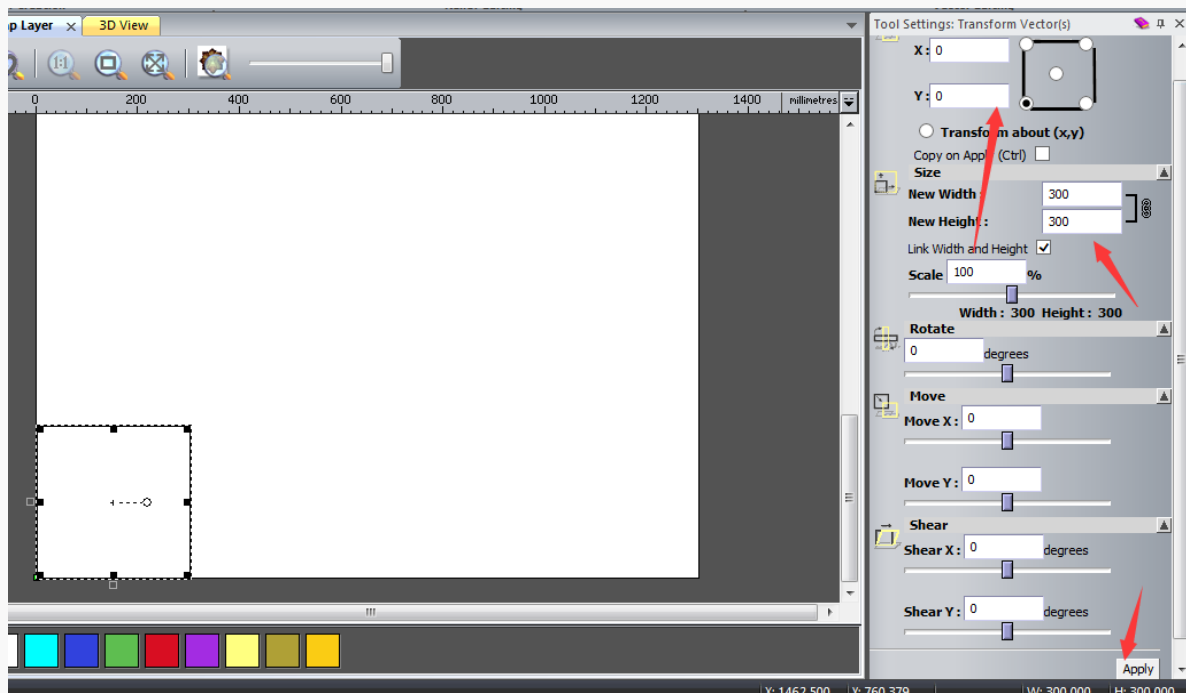
1. Start a new model then set XY size and start origin point(usually on left bottom corner)



2. Draw any shape and edit the size and position by click transform vector

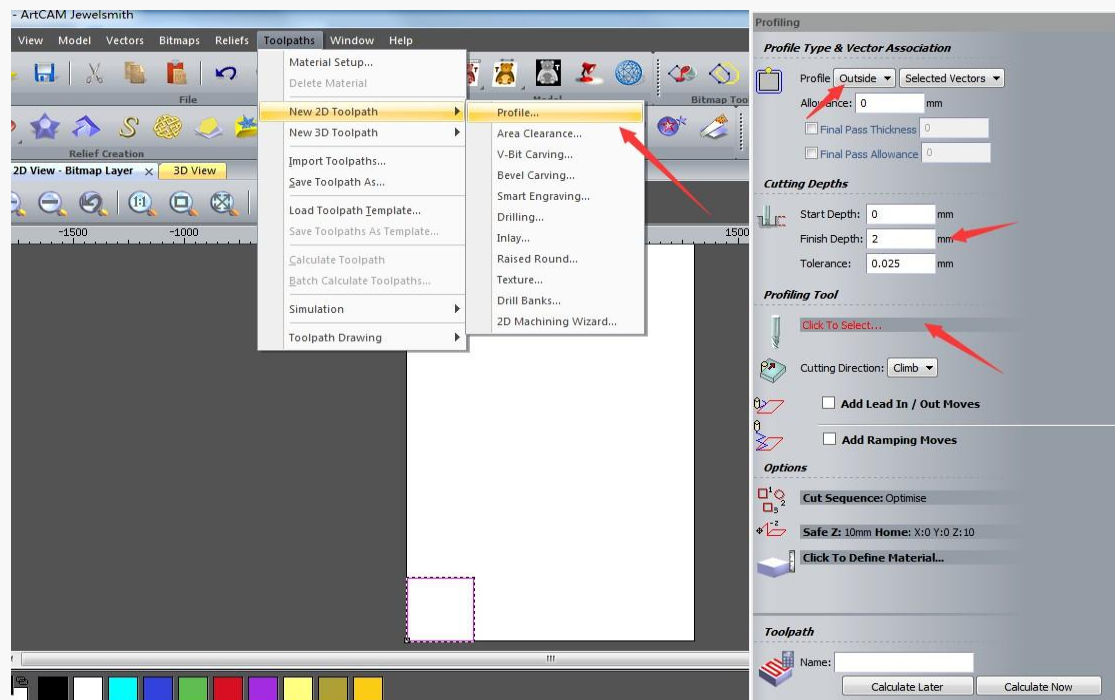


3. Edit the position to start point by picture shows below and the size as well.

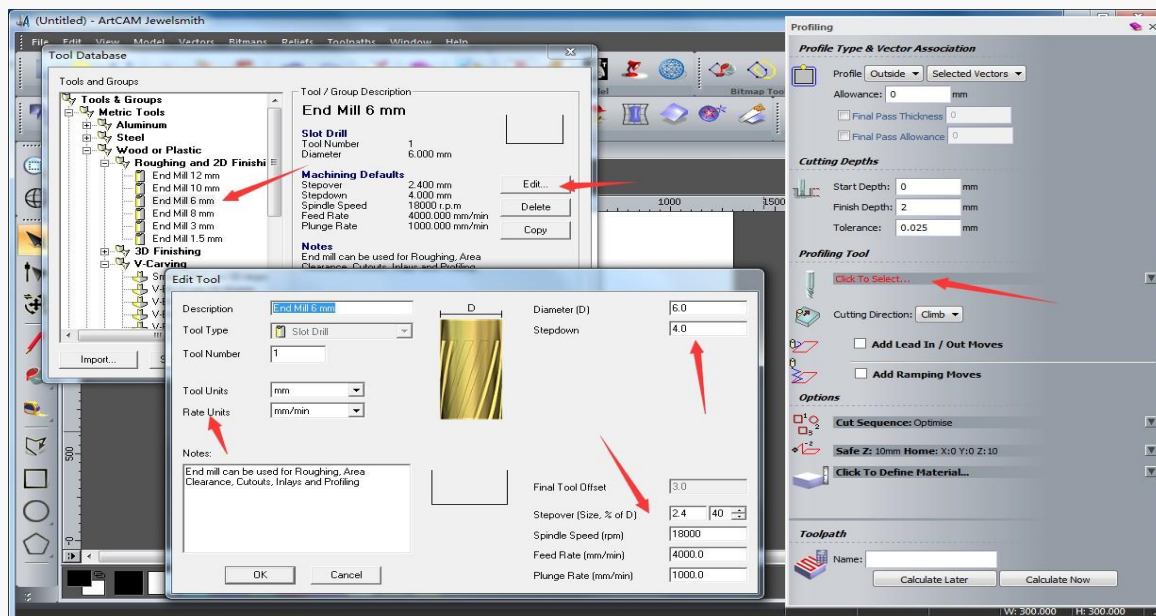




4. Choose the vector and click toolpaths - 2D toolpath - profile and edit the parameters.

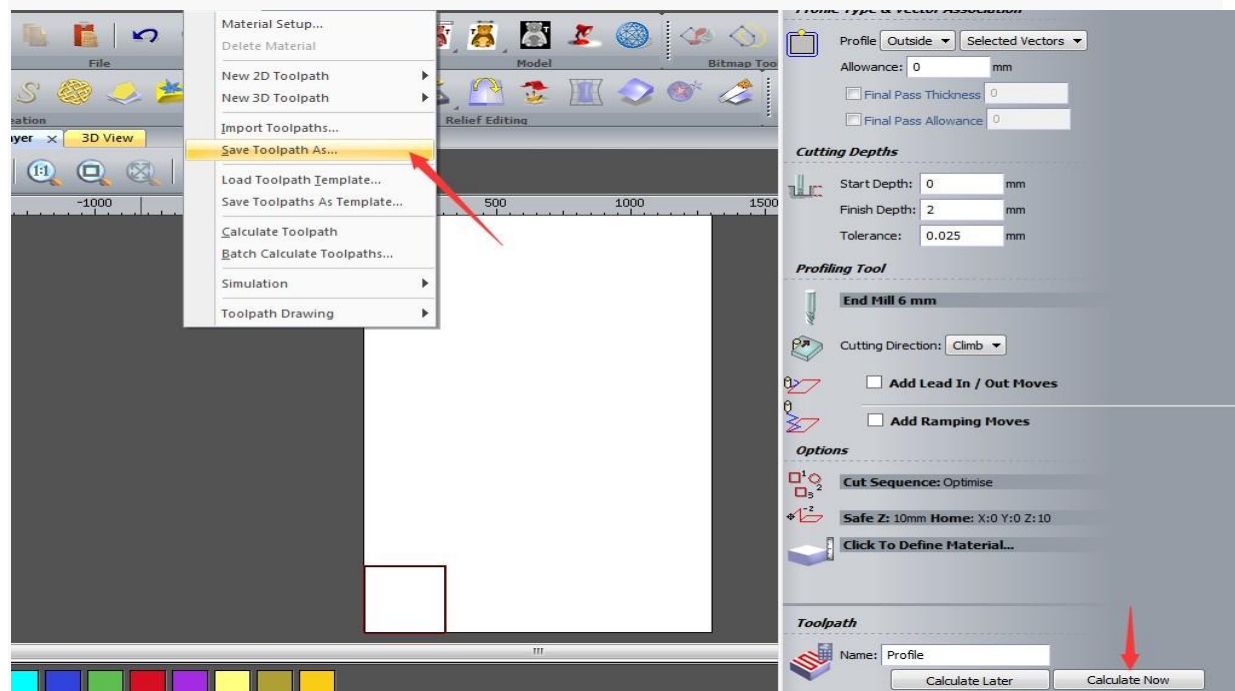


5. Choose the tool you will need to use then edit the speed and step down. During test run on [CNC router](#), suggest choose spindle speed 18000 and feedrate 4000mm/min, plunge rate 1000.

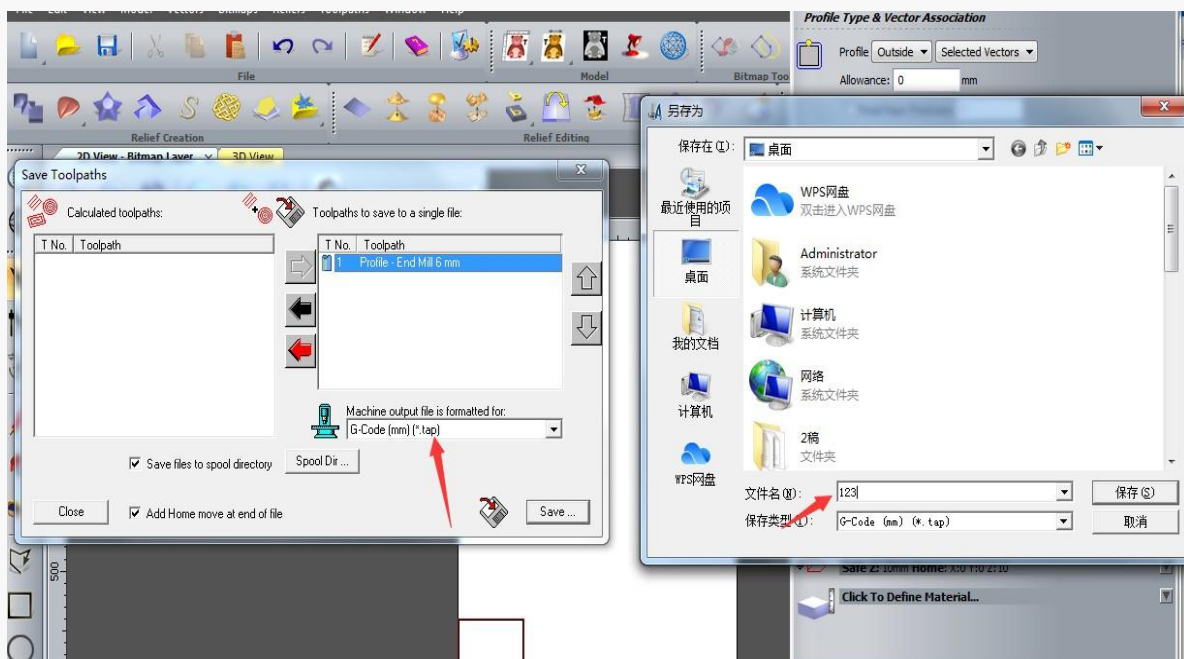




## 6. Calculate the toolpath and save.



## 7. Choose a post processor and save the gcode, usually choose tap.mmg.nc.cnc



8. After save the gcode you can open it in text and check.

As we see below g code, Z cut 2mm down and working speed is 4000, spindle speed is 18000. Put this file into controller and set proper start point then you can test run the CNC router.

```

T1M6
G0Z10.000
G0X0.000Y0.000S18000M3
G0X0.000Y-3.000Z10.000
G1Z-2.000F1000.0
G1X-0.484Y-2.961F4000.0
X-0.981Y-2.835
X-1.467Y-2.617
X-1.917Y-2.308
X-2.307Y-1.918
X-2.617Y-1.467
X-2.835Y-0.981
X-2.961Y-0.484
X-3.000Y-0.000
X-3.000Y299.999
X-2.961Y300.483
X-2.835Y300.980
X-2.617Y301.466
X-2.307Y301.917
X-1.917Y302.307
X-1.467Y302.616
X-0.981Y302.834
X-0.484Y302.960

```

#### **Additional Tips:**

- **Material Considerations:** Choose appropriate materials based on your design requirements and CNC router capabilities.
- **Safety Precautions:** Follow safety protocols when operating CNC machinery to prevent accidents and ensure a safe working environment.
- **Post-Processing:** After machining, perform any necessary finishing operations such as sanding or painting to enhance the final appearance of your design.

#### **Benefits of Using ArtCAM for CNC Router Design:**

- **Precision and Detail:** ArtCAM's vector and relief creation tools allow for precise control over design elements, ensuring high-quality outputs.
- **Efficiency:** The ability to simulate and optimize toolpaths helps in minimizing material waste and reducing machining time.
- **Versatility:** ArtCAM supports a wide range of materials and CNC machine types, making it suitable for various applications from woodworking to engraving and signage.

#### **Application Examples:**

- **Woodworking:** Creating intricate patterns, furniture components, or decorative elements.
- **Sign Making:** Designing and cutting out letters, logos, and graphics from materials like wood, acrylic, or aluminum.
- **Artistic Sculptures:** Carving detailed sculptures and reliefs based on artistic designs.

#### **RESULT**

Thus design for CNC router is created using ARTcam software.

EX.NO.: 19

**CREATE A PCB DESIGN FOR PRODUCT DEVELOPMENT**

DATE:

**AIM**

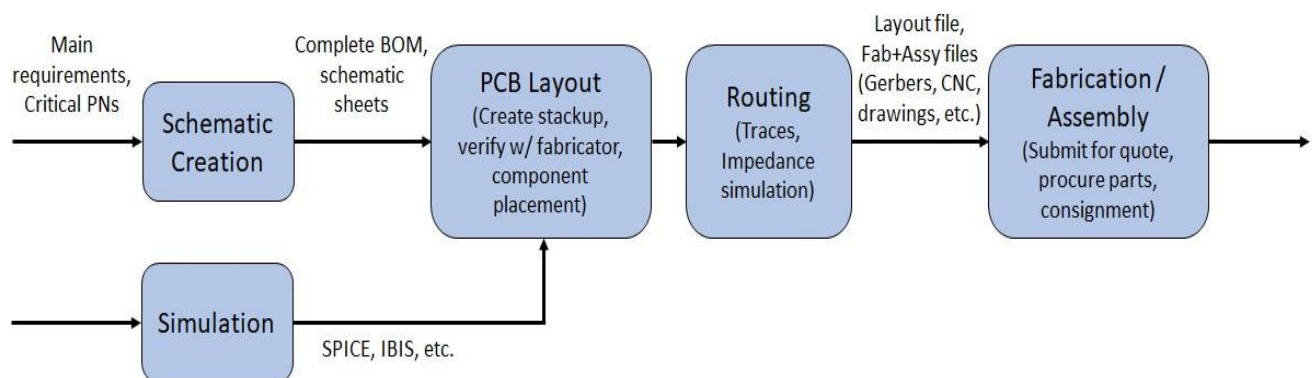
Create a PCB design for product Development

**Step-by-Step Guide to PCB Design for Product Development:****1. Requirements Gathering and Specification:**

- **Functional Requirements:** Define what the PCB needs to do—what components it will support, interfaces it needs to have, and the overall functionality it must provide.
- **Constraints:** Consider physical constraints such as size limitations, environmental factors (temperature, humidity), and electrical specifications (voltage, current).

**2. Schematic Design:**

- **Capture Schematic:** Use EDA (Electronic Design Automation) software like Altium Designer, Eagle, or KiCad to create a schematic diagram. Place components and connect them logically according to your requirements.
- **Component Selection:** Choose components based on their electrical characteristics, availability, cost, and suitability for your application. Ensure components are from reliable suppliers.

**3. PCB Layout Design:**

- **PCB Footprint Creation:** Create or verify footprints (physical dimensions and pad layouts) for each component used in the schematic.
- **Placement:** Arrange components on the PCB layout to optimize signal integrity, minimize noise, and facilitate ease of manufacturing (considering component height and orientation).
- **Routing:** Route traces to connect components while adhering to design rules (spacing, clearance, impedance control). Pay attention to signal integrity and power distribution to avoid noise and interference.
- **Ground and Power Planes:** Include solid ground and power planes to provide low impedance paths and improve signal integrity.

#### 4. Design Verification:

- **Design Rule Check (DRC):** Run a DRC to ensure your layout meets PCB fabrication capabilities and design constraints (e.g., minimum trace width, spacing, clearance).
- **Signal Integrity Analysis:** Perform simulations or use built-in tools to check signal integrity, ensuring signal quality is maintained across the board.

#### 5. Documentation and Preparation for Manufacturing:

- **Generate Gerber Files:** Export Gerber files, which are the standard format used by PCB manufacturers to fabricate the board.
- **Bill of Materials (BOM):** Create a BOM listing all components, their manufacturers, part numbers, and quantities required for assembly.
- **Assembly Drawings:** Prepare assembly drawings that indicate component placements, orientation, and any special instructions for assembly.

#### 6. Prototyping and Testing:

- **Prototype Fabrication:** Order a prototype batch from a PCB manufacturer. Verify that the fabricated boards match your design specifications.
- **Functional Testing:** Test the PCB prototype to ensure it meets all functional requirements. Verify electrical performance, connectivity, and reliability under expected operating conditions.

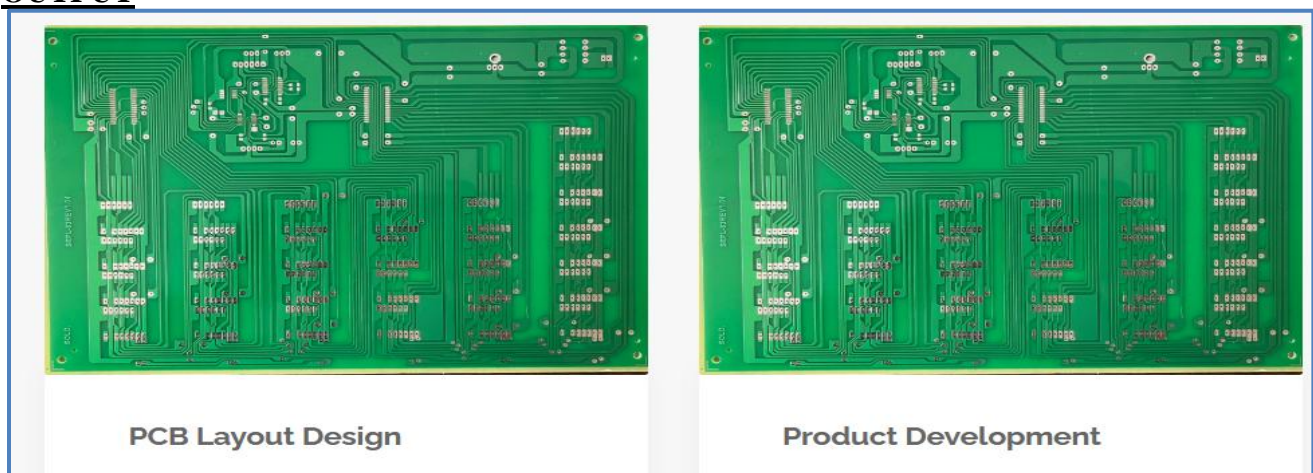
#### 7. Iterative Refinement:

- **Feedback Incorporation:** Based on testing results and feedback, refine the PCB design if necessary. Address any issues identified during testing to improve the design's reliability and performance.

#### 8. Finalization and Production:

- **Documentation:** Update all documentation including schematics, PCB layouts, BOM, and assembly instructions based on the final design.
- **Mass Production:** Once the design is finalized and tested, proceed with mass production by ordering the required quantity of PCBs from your chosen manufacturer.

### OUTPUT



### RESULT

Thus, Printed Circuit Board design completed successfully.

**EX. NO. : 20**

## **DEVELOPING A MINI PROJECT USING IDEA LAB**

**DATE:**

### **AIM**

Create mini project design for product development.

### **Steps for Developing a Mini Project**

- 1. Identify a Problem or Need**
  - Look for everyday problems or areas where a small technological solution could make a difference.
  - Consider the interests and skill levels of the participants in the idea lab.
- 2. Brainstorm Solutions**
  - Hold a brainstorming session to come up with various ideas.
  - Evaluate each idea for feasibility, complexity, and potential impact.
- 3. Select a Project**
  - Choose a project that balances innovation with practicality.
  - Ensure it is something that can be completed within the given timeframe and resources.
- 4. Define the Project Scope**
  - Clearly outline the goals, requirements, and constraints of the project.
  - Break down the project into smaller, manageable tasks.
- 5. Plan and Gather Materials**
  - Create a project plan with milestones and deadlines.
  - List all necessary materials and components, ensuring they are readily available or easily sourced.
- 6. Design and Prototype**
  - Use design software to create schematics and layouts if the project involves hardware.
  - Develop a prototype to test and refine the concept.
- 7. Build and Test**
  - Assemble the project according to the design.
  - Test the project to ensure it meets the defined requirements and functions as intended.
- 8. Document and Present**
  - Document the design process, including any challenges and how they were overcome.
  - Prepare a presentation or demonstration to showcase the project.

### **Example Projects**

#### **1. Smart Plant Watering System**

**Objective:** Create a system that automatically waters plants based on soil moisture levels.



**Components:**

- Soil moisture sensor
- Arduino or Raspberry Pi
- Water pump
- Relay module
- Power supply
- Tubing and containers for water

**Steps:**

1. Connect the soil moisture sensor to the microcontroller.
2. Program the microcontroller to read moisture levels and activate the water pump when necessary.
3. Set up the water delivery system using the pump and tubing.
4. Test the system with different soil conditions and refine the code as needed.

**2. Home Security Alarm**

**Objective:** Develop a basic home security system that detects motion and sounds an alarm.

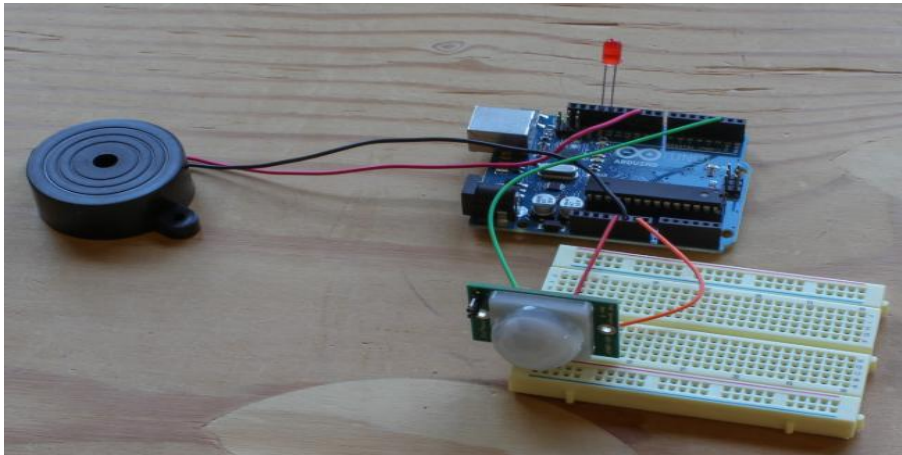
**Components:**

- PIR motion sensor
- Arduino or ESP8266/ESP32
- Buzzer or alarm
- LED indicator
- Power supply

**Steps:**

1. Connect the PIR motion sensor to the microcontroller.
2. Program the microcontroller to activate the buzzer and LED when motion is detected.

3. Test the system in various scenarios to ensure it reliably detects motion and triggers the alarm.



### 3. Temperature and Humidity Monitor

**Objective:** Build a device that monitors and displays temperature and humidity levels.

**Components:**

- DHT11 or DHT22 sensor
- Arduino or ESP8266/ESP32
- LCD display or OLED screen
- Power supply

**Steps:**

1. Connect the DHT sensor and display to the microcontroller.
2. Program the microcontroller to read data from the sensor and display it on the screen.
3. Test the system to ensure accurate readings and display functionality.



### RESULT

Thus, the mini projects completed successfully.