## **PROJECT TITLE**

**A Project Report**

Submitted in partial fulfillment of the requirements for the award

of the degree of

**BACHELOR OF SCIENCE**

**(INFORMATON TECHNOLOGY)**

**By**

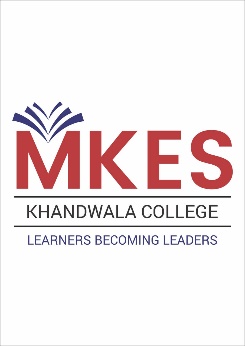
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Roll Number: 541

**Under the esteemed guidance of**

**Project Guide**

##### **Assistant Professor**

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**NAGINDAS KHANDWALA COLLEGE**

**(Empowered Autonomous College)**

***(Affiliated to University of Mumbai)***

**MUMBAI - 400 064**

**MAHARASHTRA**

**2023 – 24**

**NAGINDAS KHANDWALA COLLEGE**

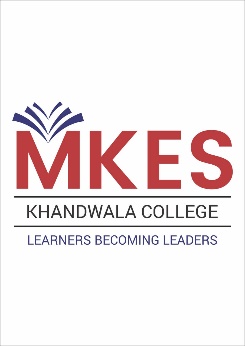
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**CERTIFICATE**

This is to certify that the project titled, **PROJECT TITLE**, is bonafied work of **MISTRY VAIBHAV DINESH** bearing Roll No: 541 is submitted in partial fulfillment of the requirements for the award of degree of BACHELOR OF SCIENCE in INFORMATION TECHNOLOGY from University of Mumbai.

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| **Date** | **College Seal** |

### **DECLARATION**

I hereby declare that the project entitled, **PROJECT TITLE** done at **Nagindas Khandwala College**, has not been in any case duplicated to submit to any other university for the award of any degree. To the best of my knowledge other than me, no one has submitted to any other university. The project is done in partial fulfillment of the requirements for the award of degree of **BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY**) to be submitted as final semester project as part of our curriculum.

**Signature**

**MISTRY VAIBHAV DINESH**

**Table of Contents**

|  |  |
| --- | --- |
| **Topic** | **Page No.** |
| Chapter 1: INTRODUCTION |  |
| 1.1 Background of the Project |  |
| 1.2 Scope of the Project |  |
| 1.3 Objectives of the Project |  |
| 1.4 Applicability |  |
| CHAPTER 2: GAP ANALYSIS/ DRAWBACK OF EXISTING SYSTEM |  |
| CHAPTER 3: REQUIREMENTS AND ANALYSIS |  |
| 3.1 Problem Definition |  |
| 3.2 Requirements Specification |  |
| 3.3 Planning and Scheduling |  |
| CHAPTER 4: SYSTEM DESIGN |  |
| 4.1 Schema Design |  |
| 4.2 UML Diagrams / Block Diagram/ Circuit Diagram/ Algorithms Design |  |
| 4.3 User interface design |  |
| CHAPTER 5: IMPLEMENTATION AND TESTING |  |
| 5.1 Code |  |
| 5.2 Testing Approach and Test Cases |  |
| CHAPTER 6: DISCUSSIONAND CONCLUSION |  |
| 6.1 Discussion |  |
| 6.2 Conclusion |  |
| **CHAPTER 7: LIMITATIONS** |  |
| **CHAPTER 8: FUTURE WORK** |  |

**Chapter 1: INTRODUCTION**

**1.1 Background of the Project**

The online image editor is a versatile tool designed to provide users with various features to edit and enhance their images. It offers a wide range of functionalities, including cropping, rotating, applying filters, adding stickers, colors, gradients, texts, and shapes on the canvas. Additionally, users can add multiple noise and textures to their images, making it an all-in-one image editing solution.

The application provides two options for loading images: users can either select sample images already available in the application or enter the URL of an image from the web. This flexibility allows users to work with their preferred images easily. Furthermore, the editor allows users to save their edited images in multiple formats such as JSON, JPEG, and PNG. The JPEG format even allows users to save the image according to its resolution, enhancing the convenience and customization options.

The primary goals of this project are to ensure user-friendliness, security, and easy accessibility. A clean and intuitive user interface allows even novice users to navigate the tool effortlessly. The implementation of security measures ensures that user data remains protected, and the online nature of the editor enables users to access it from any device with an internet connection.

The need for a user-friendly and powerful online web image editor has been growing in recent years. This is due to the increasing popularity of social media, where users often need to edit their images before posting them. Additionally, the rise of e-commerce has led to a demand for online image editors that can be used to create professional-looking product images

The existing online image editors are often complex and difficult to use. They may require users to have prior experience with image editing software, which can be a barrier for many people. Additionally, these editors often lack the features that users need to create high-quality images.

Your project aims to fill this gap by providing a simple and intuitive interface that anyone can use, even if they have no prior experience with image editing. It will also provide a wide range of features that allow users to edit images in a creative and efficient way.

* 1. **Scope of the Project**

**Image Editing Features:**

* Crop: Users can define a specific area to crop and remove unwanted parts of the image.
* Rotate: Users can rotate the image to any desired angle.
* Filters: A variety of filters can be applied to enhance or modify the image's appearance.
* Stickers: A collection of stickers is available for users to add fun and decorative elements to their images.
* Colors and Gradients: Users can customize the colors and gradients of the image to create unique visual effects.
* Texts and Shapes: Text and shapes can be added to the canvas, enabling users to add captions, watermarks, or annotations to the image.

**Texture and Noise:**

* Users can apply multiple textures and noise to give the image a specific look and feel.

**Image Input Options:**

* Users have the option to use sample images provided within the application.
* Users can also enter the URL of an image from the web, and the application will fetch and display it.

**Image Saving Options:**

* Users can save their edited images in JSON, JPEG, or PNG format.
* The JPEG format allows users to save the image according to its resolution, providing customization options.

**User-Friendly Interface:**

* The application features a user-friendly and intuitive interface that makes image editing straightforward for all users.

**Security Measures:**

* The application employs security measures to ensure user data privacy and protection.

**Easy Accessibility:**

* The online nature of the editor allows users to access it from any device with an internet connection.

**1.3 Objectives of the Project**

1. User-Friendly Interface: The primary objective of the project is to develop an intuitive and user-friendly interface that allows both novice and experienced users to easily navigate through the application and access its various features.
2. Comprehensive Editing Tools: The image editor seeks to offer a rich set of editing tools, including filters, effects, stickers, gradients, and more, to ensure users have all the necessary resources to create stunning visual content.
3. Versatility: The application aims to cater to a diverse audience with different needs, such as photographers, digital artists, social media influencers, and businesses requiring graphic design elements.
4. Real-Time Collaboration: An advanced objective is to implement real-time collaboration, enabling multiple users to work together on the same project simultaneously.
5. Efficient Export Options: The image editor will support multiple file formats, such as PNG, JPEG, and JSON, ensuring users can save and export their projects in the most suitable format for their specific use cases.
6. Secure and Cloud-Based Storage: Implementing secure cloud-based storage for user projects will enable users to access and edit their creations from anywhere, fostering flexibility and ease of use.

The objective of the project is to provide a user-friendly and powerful online web image editor that can be used to edit and create images for a variety of purposes. The specific objectives of your project include:

1. To make image editing accessible to a wider audience.
2. To provide a variety of tools and features that allow users to edit images in a creative and efficient way.
3. To create a user-friendly interface that is easy to learn and use.
4. To make the project scalable and extensible so that it can be easily expanded in the future.
5. The project will be developed using a variety of open-source technologies, such as HTML, CSS, JavaScript, PHP, and MySQL. This will make the project easy to maintain and update in the future.
   1. **Applicability**

The online image editor is designed to have broad applicability across various domains and industries. It will cater to:

1. Casual Users: Everyday users can enhance their photos, create personalized social media graphics, design memes, and produce creative content for personal use.
2. Artists and Digital Creators: Digital artists can leverage the drawing and shape creation features to produce original artwork and illustrations.
3. Graphic Designers: Professionals can use the editor to craft visually engaging banners, logos, flyers, and promotional materials for businesses and brands.
4. Marketing and Advertising: Marketing teams can utilize the application to create eye-catching advertisements, visual campaigns, and brand materials.
5. Educators and Students: The image editor can be a valuable tool in educational settings for various creative projects and assignments.
6. Online Content Creators: YouTubers, bloggers, and content creators can utilize the editor to design custom thumbnails, cover images, and other visuals for their online presence.
7. The project is applicable to a wide range of users, including individuals, businesses, and organizations. It can be used to edit images for personal use, such as creating social media posts or editing family photos. It can also be used for business purposes, such as creating marketing materials or editing product images. Additionally, it can be used by organizations to create educational materials or to communicate with their constituents.
8. The project has the potential to be a valuable resource for a wide range of users. It will make image editing more accessible and affordable, and it will provide a platform for users to be creative and express themselves.

**CHAPTER 2: GAP ANALYSIS/ DRAWBACK OF EXISTING SYSTEM**

1. **Complexity:**

Existing online image editors are often complex and require users to have prior experience with image editing software. This complexity can be a significant barrier for users who are not familiar with such tools.

1. **Limited Features:**

Many existing editors lack essential features needed to create high-quality images, such as advanced filters, noise and texture options, and shape manipulation tools.

1. **Usability Issues:**

User interfaces in some existing editors may not be intuitive, making it challenging for users to locate and use specific editing features.

1. **Slow Performance:**

Some online image editors suffer from slow loading times and laggy performance, especially when working with large image files or applying complex edits.

1. **Compatibility Problems:**

Compatibility issues may arise when trying to use existing editors on different devices or web browsers, limiting accessibility.

1. **Limited Input Options:**

Some editors only allow users to upload images from their local devices, limiting flexibility in accessing and importing images.

1. **Inadequate Export Options:**

The available export formats in existing editors may be limited, restricting users in saving images in their preferred file types.

1. **Lack of Customization:**

Existing editors may not offer enough customization options for users to tailor the editing environment to their preferences.

1. **Inadequate Tutorials and Support:**

Many users struggle to find adequate tutorials or user support for existing editors, making it difficult for them to make the most of the available features.

1. **Security Concerns:**

Some online image editors may not prioritize user data security, potentially putting sensitive information at risk.

1. **Limited Accessibility:**

Not all existing editors are accessible to users with disabilities, which is an essential consideration for ensuring inclusivity.

1. **Outdated Design:**

Some online image editors may have outdated user interfaces that do not align with modern design standards and user expectations.

1. **Performance Bottlenecks:**

Loading and processing images can be slow and resource-intensive in certain online editors, causing frustration for users who require quick edits.

1. **Inefficient Workflow:**

Users may find that the workflow in existing editors is not streamlined, leading to time-consuming processes when editing multiple images or applying repetitive edits.

1. **Limited Collaboration Features:**

Collaboration features, such as real-time editing with others or sharing and commenting on images, may be lacking in some existing editors.

1. **Platform Dependence:**

Some editors may be built for specific platforms or operating systems, limiting cross-platform compatibility.

1. **Cost Barriers:**

While some online image editors are free, others may require a subscription or payment, which can be a barrier for budget-conscious users.

1. **Inadequate Mobile Support:**

The mobile versions of existing editors may offer limited functionality compared to their desktop counterparts.

By addressing these gaps and drawbacks in the existing systems, your project can aim to provide a more user-friendly, feature-rich, and accessible online image editor that meets the needs of a wider range of users, including those without prior image editing experience.

**CHAPTER 3: REQUIREMENTS AND ANALYSIS**

**3.1 Problem Definition -**

**Key Problems and Challenges:**

1. **Complexity and Learning Curve:**

Many existing online image editors are complex and require users to have prior experience with image editing software. This complexity acts as a barrier for users who lack technical skills in image editing.

1. **Lack of Essential Features:**

Existing editors often lack essential features needed to create high-quality and creative images, such as advanced filters, noise and texture options, and comprehensive shape manipulation tools.

1. **Usability Issues:**

Some online image editors suffer from unintuitive user interfaces, making it challenging for users to locate and utilize specific editing features efficiently.

1. **Performance and Speed:**

Several editors have performance issues, particularly when dealing with large image files or applying complex edits, resulting in slow loading times and laggy user experiences.

1. **Compatibility and Accessibility:**

Compatibility problems may arise when using existing editors on various devices or web browsers, limiting accessibility and frustrating users.

1. **Limited Input Options:**

Many online editors restrict users to uploading images solely from their local devices, limiting flexibility and convenience in accessing and importing images.

1. **Inadequate Export Options:**

The available export formats in existing editors may be limited, constraining users from saving images in their preferred file types.

1. **Insufficient Customization:**

Existing editors may lack customization options, preventing users from tailoring the editing environment to their specific preferences and needs.

1. **Lack of Tutorials and Support:**

Users often struggle to find adequate tutorials or user support for existing editors, hindering their ability to effectively utilize available features.

1. **Security Concerns:**

Some online image editors may not prioritize user data security, potentially putting sensitive information at risk.

1. **Limited Accessibility:**

Accessibility for users with disabilities is often overlooked in existing editors, making it essential to ensure inclusivity in the design and functionality.

1. **Outdated Design:**

Outdated user interfaces in certain online image editors do not align with modern design standards and user expectations, affecting the overall user experience.

1. **Performance Bottlenecks:**

Loading and processing images can be slow and resource-intensive in certain online editors, causing frustration for users who require quick edits.

1. **Inefficient Workflow:**

Users may find that the workflow in existing editors is not streamlined, leading to time-consuming processes when editing multiple images or applying repetitive edits.

1. **Limited Collaboration Features:**

Collaboration features, such as real-time editing with others or sharing and commenting on images, may be lacking in some existing editors.

1. **Platform Dependence:**

Some editors may be built for specific platforms or operating systems, limiting cross-platform compatibility.

1. **Cost Barriers:**

While some online image editors are free, others may require a subscription or payment, which can be a barrier for budget-conscious users.

1. **Inadequate Mobile Support:**

The mobile versions of existing editors may offer limited functionality compared to their desktop counterparts, limiting users' ability to edit on the go.

**3.2 Requirements Specification**

**Requirements Specification for Developing an Online Image Editor:**

1. **User Interface (UI) and User Experience (UX):**

* **Intuitive Interface:** The editor should have a clean, user-friendly interface that allows users to easily navigate and find editing tools.
* **Responsive Design:** The editor must be responsive, adapting to various screen sizes and devices for a seamless user experience.
* **User Feedback:** Implement user feedback mechanisms to gather input on the usability and overall user experience.

**2. Core Image Editing Features:**

* **Image Import:** Users should be able to upload images from local storage, enter image URLs, and integrate with popular cloud storage platforms.
* **Basic Editing Tools:** Provide essential editing tools such as cropping, resizing, rotating, and flipping.
* **Filters and Effects:** Include a wide range of filters, effects, and adjustments to enhance images creatively.
* **Text and Typography:** Allow users to add text with customizable fonts, sizes, colors, and alignment options.
* **Stickers and Shapes:** Offer a library of stickers and shapes that users can add to their images, with options for customization.
* **Drawing and Brush Tools:** Include freehand drawing and brush tools with various brush sizes and colors.
* **Layer Management:** Support layers for more advanced editing, including the ability to reorder, merge, and apply blending modes.

**3. Advanced Editing Features:**

* **Noise and Texture:** Provide options to add noise, textures, gradients, and overlays to images for artistic effects.
* **Shape Manipulation:** Include tools for precise shape manipulation, such as scaling, skewing, and distortion.
* **Object Selection and Removal:** Enable users to select and remove objects or areas from images seamlessly.
* **Advanced Filters:** Offer advanced filter options, including selective adjustments and filter layering.

**4. Export and Save Options:**

* **Export Formats:** Support various image formats such as JPEG, PNG, GIF, TIFF, SVG, and BMP for saving edited images.
* **Customizable Resolution:** Allow users to specify the resolution and dimensions of the saved images.

**5. Performance and Accessibility:**

* **Fast Processing:** Ensure quick image loading and editing, even for large files and complex edits.
* **Web Accessibility:** Comply with WCAG guidelines to make the editor accessible to users with disabilities.

**6. Collaboration and Sharing:**

* **Real-time Collaboration:** Include collaboration features, such as real-time editing with multiple users, comments, and version history.
* **Sharing Options:** Allow users to share edited images directly to social media platforms and generate shareable links.

**7. Security and Privacy:**

* **Data Encryption:** Implement secure data transmission and storage using encryption protocols to protect user data.
* **User Data Handling:** Clearly define how user data is collected, used, and stored, and obtain user consent where necessary.

**8. Tutorials and Help Resources:**

* **Documentation:** Provide comprehensive documentation and tutorials to assist users in utilizing the editor's features effectively.
* **Customer Support:** Offer user support channels, including email, chat, or a helpdesk system.

**9. Cross-platform Compatibility:**

* **Browser Compatibility:** Ensure the editor works smoothly on major web browsers, including Chrome, Firefox, Safari, Edge, and Internet Explorer.
* **Mobile Responsiveness:** Optimize the user experience for mobile devices, both through responsive design and native mobile apps.

**10. Customization:**

* **User Preferences:** Allow users to customize the interface layout, toolbars, and keyboard shortcuts to suit their preferences.

**11. Performance Optimization:**

* **Efficient Algorithms:** Implement efficient image processing algorithms to minimize processing time and resource usage.

**12. Licensing and Pricing:**

* **Licensing Model:** Define the licensing model, whether the editor is free, freemium, or subscription-based, and communicate pricing details transparently.

**13. User Analytics:**

* **Usage Analytics:** Collect anonymized usage data to analyze user behavior and improve the editor based on insights.

**14. Legal Compliance:**

* **Copyright and Licensing:** Ensure that users are informed about copyright and licensing requirements for images they edit or use within the editor.

**15. Updates and Maintenance:**

* **Regular Updates:** Commit to regular updates and bug fixes to keep the editor current and secure.

By adhering to this comprehensive set of requirements, the online image editor will be designed and developed to meet the needs of a wide range of users, from beginners to professionals, while addressing the limitations of existing solutions.

**3.3 Planning and Scheduling**

The project's planning and scheduling involve several phases:

1. **Design and Prototyping:**

* Define the user interface and functionality through wireframes and prototypes, ensuring a clear vision of the editor's look and features.

1. **Development:**

* Implement the frontend using standard web technologies (HTML, CSS, JavaScript) for user interaction and aesthetics.
* Develop the backend using PHP and JSON for efficient data handling and storage.

1. **Testing:**

* Rigorously test the application to identify and fix bugs and issues, ensuring a smooth user experience.
* Verify cross-browser compatibility to reach a wider audience.
* Optimize performance to maintain fast loading times and responsiveness.

1. **Documentation:**

* Create comprehensive documentation, including user guides for end-users and developer documentation for those working on the project.
* Well-documented software facilitates ease of use and future enhancements.

1. **Deployment:**

* Host the application on a secure and reliable web server, ensuring it is accessible to users with appropriate security measures in place to protect user data.

1. **Maintenance:**

* Continuously update and maintain the project, addressing user feedback and bug reports promptly.
* Improve functionality based on user needs and industry trends.
* Regular maintenance helps keep the editor relevant and secure over time.

**CHAPTER 4: SYSTEM DESIGN**

**4.1 Schema Design**

**4.2 UML Diagrams / Block Diagram/ Circuit Diagram/ Algorithms Design**

**4.3 User interface design**

**CHAPTER 5: IMPLEMENTATION AND TESTING**

**5.1 Code**

**5.2 Testing Approach and Test Cases**

Testing is a critical phase of the project to ensure its reliability and robustness. The testing approach includes:

* **Unit Testing:** Test individual components, such as editing tools, effects, and filters, to ensure they function as expected.
* **Integration Testing:** Test the interaction between different components, such as layer management and effects application.
* **User Acceptance Testing (UAT):** Involve end-users to test the application's usability, identify any user experience issues, and gather feedback.
* **Performance Testing:** Assess the application's performance under various scenarios, including handling large images and complex operations.
* **Security Testing:** Verify that user data remains secure and private, with no unauthorized access or data leakage.

Test cases should cover a wide range of scenarios, including typical user interactions, edge cases, and error handling to ensure the application's stability and reliability.

**CHAPTER 6: DISCUSSIONAND CONCLUSION**

**6.1 Discussion**

**6.2 Conclusion**

**CHAPTER 7: LIMITATIONS**

**CHAPTER 8: FUTURE WORK**