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Designing a Model for Web Page Generation Using Repository of Templates

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Abstract: ***Software engineering is the art of Science containing software development life-cycle. It has different models which are used for devolving any type of software with each model having its own life-cycle. Similar to software Engineering, Web Engineering is a systematic and disciplined approach generally deals with the web development. According to this approach a successful software development process is carried out for high quality usable web based system. Basically it focuses on the methodologies, techniques and tools that are used for web application development which supports their development, evolution and validation. The development of web is carried out with the help of number of steps. In My research work three major steps are combined it into one single step. These steps are requirements engineering, web development and testing. The presented work is the automated system that will accept the core web requirements respective to a web page in a user friendly manner and design the webpage for both the server side as well as the client side generating a webpage according to user's requirement. This work also includes the testing phase dynamically where all the validations on the client side will be implemented. My research work also includes the concept of updating of template. If any of the Template does not exist in repository then new template get automatically save there.***

Keywords: ***Accessibility, modeling, role, web cycle, ontology***

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I. INTRODUCTION

The World Wide Web has become a major platform for carrying out software development process. Software Engineering is an engineering discipline which is concerned for developing any software. In this discipline, Software requirement specification is the basic step for generating any application. If all types of user requirements are clearly defined then correct results will be produced. There are two basic goals of Software Engineering, the first one is to improve the quality of software products and the second one is to increase the productivity and satisfaction of Software Engineers.

In this definition, there are two key phases. The primary goals of Software Engineering are to improve the quality of software products and to increase the productivity and job satisfaction of Software Engineers and these two goals are totally dependent on the Software Engineering as these goals can't be accomplished without the knowledge of Software Engineering. Software is nothing but the collection of instructions or the computer programs when executed by desired functions to obtain desired output or to meet the required performance. Web application development has certain characteristics that make it different from traditional software.

Web Engineering is multidisciplinary and contribution from different fields like : system analysis and design, software engineering, hypermedia/hypertext engineering, requirement engineering, human-computer interaction, user interface, information engineering, information indexing and retrieval, testing, modeling and simulation, project management and graphic design and presentation. Web engineering is neither a clone nor a subset of software engineering, although both involve programming and software development. Even if Web Engineering uses Software Engineering principles, it encompasses new approaches, methodologies, tools, techniques and guidelines to meet the unique requirements of Web-based applications. In particular, Web engineering focuses on the methodologies, techniques and tools that are the foundation of Web application. Software reliability is "the ability of a program to perform a required function under stated conditions within a stated period of time". So software quality depends on the software reliability. Successful software is very reliable. A structured set of activities is required to develop a software system. Software quality assurance (SQA) consists of a means of monitoring the software engineering processes and methods used to ensure quality of software. SQA encompasses the entire software development process which includes processes such as

- *Requirement Specification*: A Software Requirements Specification (SRS) is a complete description of the behavior of the system to be developed
- *Software Design:* Software design is a process of problem-solving and planning for a software solution. Software design is actually a multi-step process that focuses on four distinct attributes of a program: data structure, software architecture, interface representations and procedures.
- *Coding:* After designing, it is divided into many components called modules. Modules are shared

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among appropriate developers and then they start coding. After coding completes, it will be integrated.

- *Code reviews:* Code review is systematic examination of computer source code intended to find and fix mistakes overlooked in the initial development phase improving both the overall quality of software and the developers' skills.

II RELATED TERMS

A Model-driven engineering (MDE)

MDE is a software development methodology which focuses on creating models or abstraction of something more real that describe the elements of a system. It is meant to increase productivity by maximizing compatibility between systems, simplifying the process of design and promoting communication between individuals of teams working on the system. The first tool to support MDE was the Computer-Aided Software Engineering (CASE) tools developed in the 1980, but CASE had the same problem that current MDA/MDE tools today have: the model gets out of synchronized.

B Requirement Engineering

Requirement Engineering is concerned with identifying, modeling, communicating and documenting the requirements of a system and the context in which the system will be used. Requirements describe what is to be done but not how they are implemented. There are many techniques available for use during the RE process to ensure that the requirements are complete, consistent and relevant. This goal is based on two major assumptions:

- The later mistakes are discovered much expensive to correct them.
- It is possible to determine a stable set of requirements before system design and implementation starts.

C Agile Development Methods

- In comparison to traditional software processes, agile development is less document-centric and more code-oriented. However, this is not the key point but rather a symptom of two deeper differences between them
- Agile methods are adaptive rather than predictive.
- Agile methods were developed to adapt and thrive on frequent changes.
- Agile methods are people-oriented rather than process oriented. They rely on people's expertise, competency and direct collaboration rather than on rigorous, document-centric processes to produce high-quality software.

The most common agile methods

1) Extreme Programming (XP)

Extreme Programming (XP) is based on values of simplicity, communication, feedback and courage. It works by bringing the whole team together in the presence of simple practices with

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enough feedback to enable the team to see where they stand. XP combines old, tried and tested techniques in such a way that they reinforce each other. XP uses story cards for elicitation. A user story is a description of a feature which provides business value to the customer. Before story cards can be written, customers have to think about what they expect the system to do. This process seems brainstorming.

2) Agile Modeling (AM)

The basic idea of AM is to give developers a guideline of how to build models that resolve design problems but not over-build these models. Like XP, AM points out that changes are usual in software development. AM highlights the difference between informal models whose sole purpose is to support face-to-face communication and models that are preserved and maintained as part of the system documentation. The latter is what is often found in RE approaches.

3) Scrum

It is a method for managing the system development process by applying ideas on flexibility, adaptability and productivity from industrial process control theory. Scrum focuses on how a team should work together to produce quality work in a changing environment concept of updation of the template definition. If any of the existing template model does not satisfy the user requirement, a new template model will be included to satisfy the user requirement. We are developing a tool to combine all required phase in a single unit called Navigational Development Approach. According to this approach, during the development user just need to select the field it will itself design fully tested web pages.

III PROPOSED WORK

A website basically represents a business or the organization for a user. Because of this a web application owner wants his website such user-friendly that it will fulfill the need of his all stakeholders. The web application owner may desire the regular change requirement in his web application. These requirements are based on the appearance of the website. These requirements include some updation respective to the information that owner want to provide to the stakeholder. It also includes the requirements of the stakeholder that they want in that web application. The inclusion of new attribute in any form filling application is also the major requirement of web application owner. It means in a web application the web requirements are very clear at the initial phase but even then these requirements change very frequently.

The feasibility is check related to user requirement and user needs. But generally this process is done for one time. Once the feasibility specified, generally it will not be changed after each change in web requirement.

In case of web application the user requirements respective to webpage components and the design is clearly defined but along with this it is most changing requirement by the user. In such case each user change will rollback the whole process. We are providing the solution for the above defined problem by using the web requirement process. In this proposed work we are

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using the concept to automate the concept of web requirement, design and development as a single unit. We are presenting the concept of extreme programming methodology to capture the knowledge requirement of the user and then this knowledge acquisition will be automatically design and develop the web page. We are developing a tool to combine all required phase in a single unit called navigational development approach. According to the approach during the development all the components must be fully tested and verified.

This is my proposed model for web page generation using repository of templates

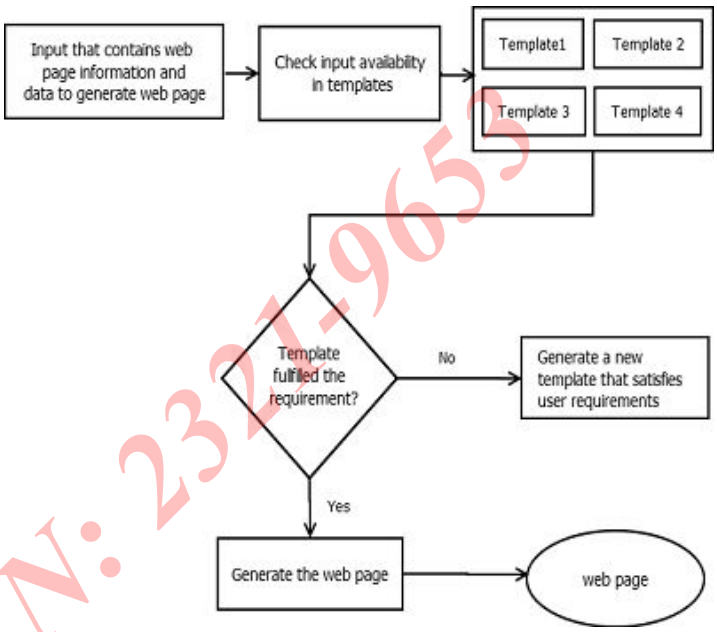


Fig 1 Proposed Model

Figure 1 shows that the process starts by defining objectives. Using the procedure described below, requirements are captured and defined. Requirements are classified according to their nature: information storage requirements, actor's requirements, functional requirements, interaction requirements or nonfunctional requirements. These requirements are described in navigational tool using some especially defined patterns. A pattern is a template with specific fields which must be completed by the developer. It is an approach for the specification and analysis of web information systems. The complete development process can be defined as a bottom-up process. The development process is focuse on a very detailed requirements definition. And the presented work only covers the first phase in the life cycle i.e. requirement engineering. With the process of collecting user requirement, the system is able to perform the website design, code implementation and the testing.

The presented work is divided into three parts

- Designing user interface
- Construct Template Wizard
- Generate Webpage

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In case of designing user interface the collection of user requirements process is used. For collection of user requirement there is a template wizard that is totally based on graphical user interface and this wizard contains different types of fields according to the user requirements. After filling all the fields according to the user requirement the web page will be generated

IV EXPERIMENTAL WORK

The proposed model works on generating web pages according to the user requirement .and in which user requirements is the main objective. Figure 2 shows the template wizard. It is the main page in which two options the first one is choose template and another one is create template.

Choose template contains the repository of templates through which we select the appropriate template according to the user requirement and if the given template is not according to user requirement then we will select 2nd option i.e. create template.

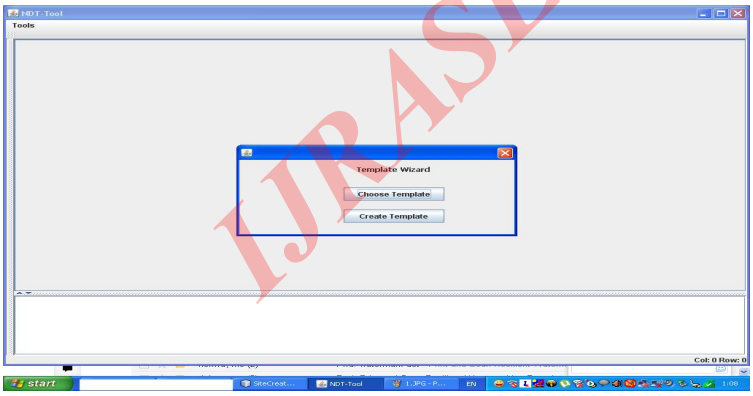


Fig 2. Template Wizard

Figure 3 shows the selection of require template from the repository of templates.

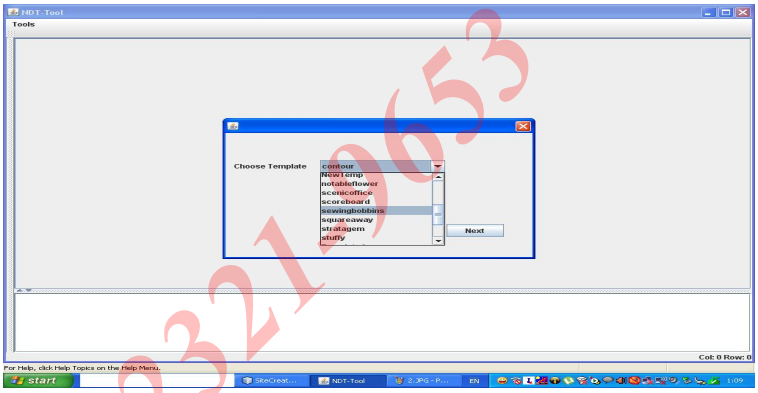


Fig. 3 Selection of templates from repository

Figure 4 shows the further processing related to generation of templates. In which after selection we give the project name and path where we save our project.

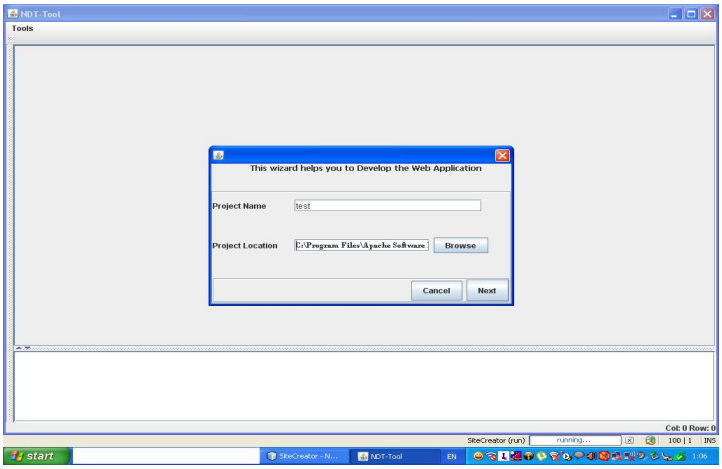


Fig. 4 Generation of wepage

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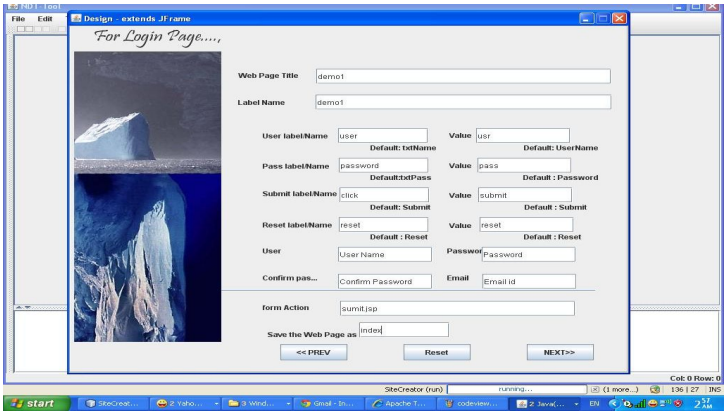


Fig. 5 Designing For Login Page

Figure 5 shows the login page. Here no. of fields related to a login page. User select the required fields and then press next button.

Figure 6 is the processing page . here we press the the generate project. after that figure 7 shows the coding page. In which related to user requirement code shown.

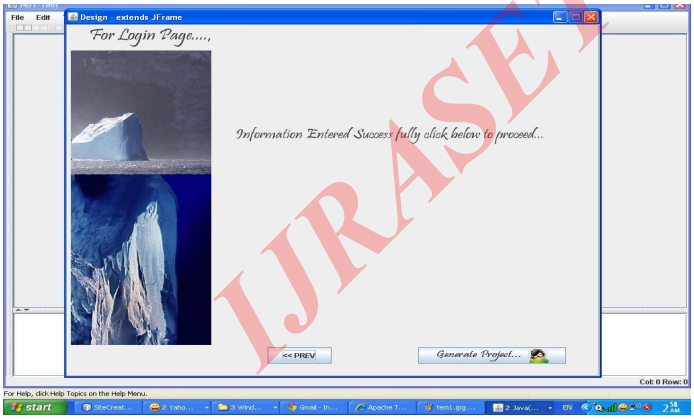


Fig. 6 processing page

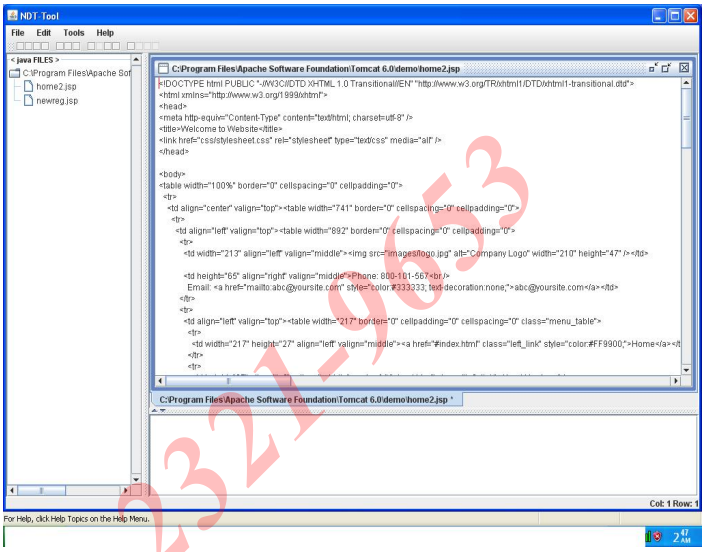


Fig. 7 code view related to the selected template.

And lastly figure 8 shows the login web page according to the user requirement.

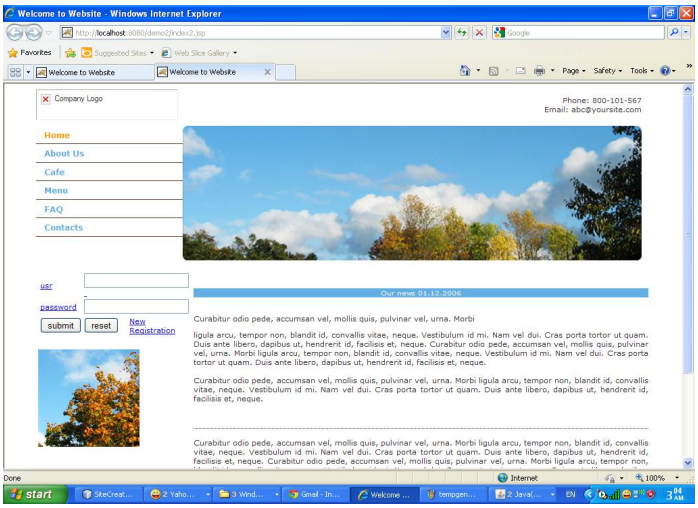


Fig. 8 Webpage according to user requirements

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IV CONCLUSIONS

The proposed approach provides a user friendly environment in wizard form where user can pass the input step by step and finally get a ready webpage or the website out of it.

The present work will give the benefit to both the end user and the developer as the user can pass his basic requirements such as appearance of website number of attributes that he want on the web page etc. and the developer get the client side and the server side page from the system. It means after input the basic requirement to the system, developer need not to take care about the code. The generated code is connected to the database system also that can produce the database interactive server side code.

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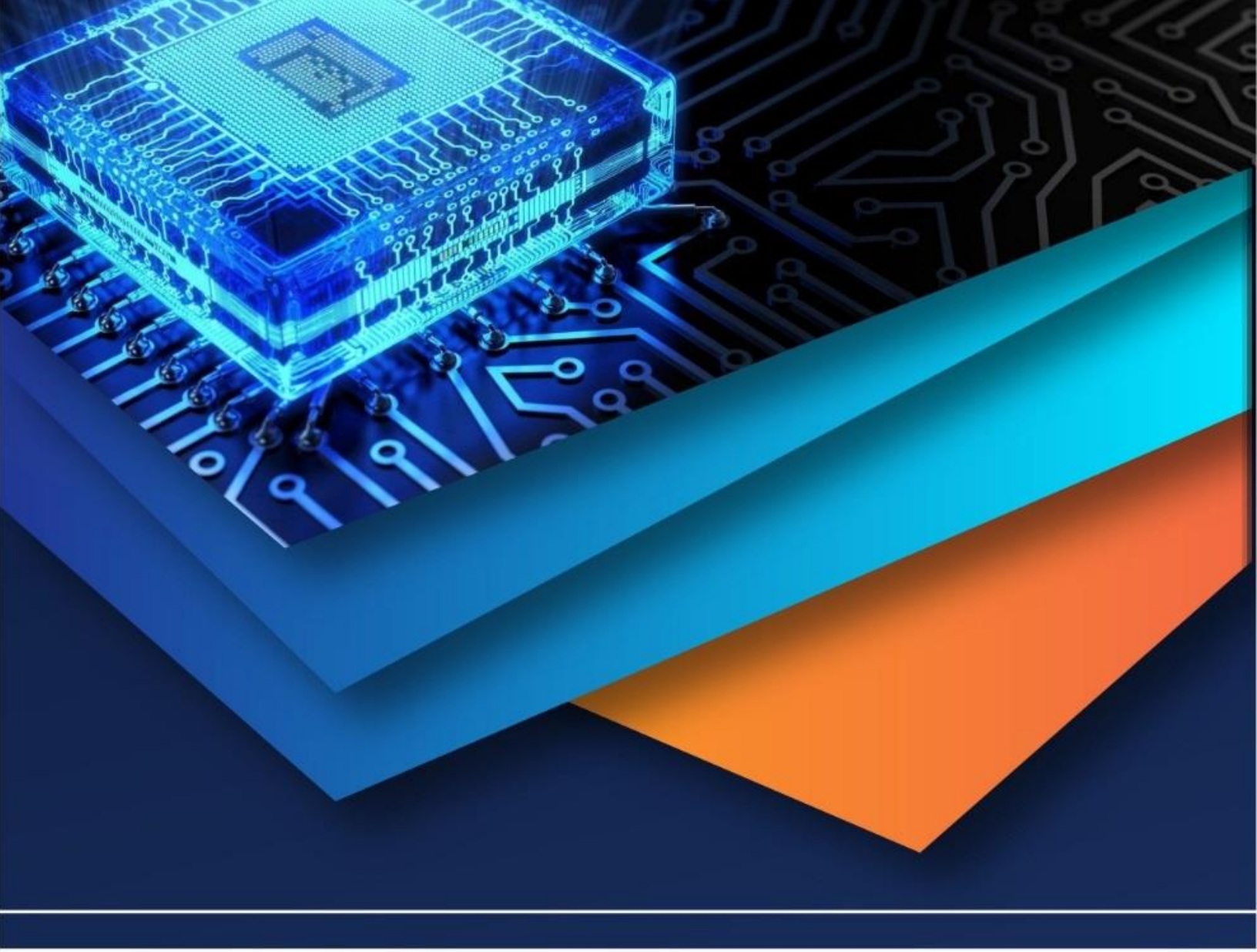
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