

**A Thesis / Project / Dissertation Report**

On

**INTRUSION DETECTION AND PREVENTION USING  
HONEYPOT NETWORKS FOR CLOUD SECURITY**

*Submitted in partial fulfilment of the  
requirement for the award of the degree of*

**B. Tech in Computer Science & Engineering**



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**INDIA**

**MAY. 2023**



**SCHOOL OF COMPUTING SCIENCE AND  
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**CANDIDATE'S DECLARATION**

I/We hereby certify that the work which is being presented in the thesis/project/dissertation, entitled “**INTRUSION DETECTION AND PREVENTION USING HONEYPOT NETWORKS FOR CLOUD SECURITY**” in partial fulfillment of the requirements for the award of the B. Tech in Computer Science & Engineering submitted in the School of Computing Science and Engineering of Galgotias University, Greater Noida, is an original work carried out during the period of February 2023 to May 2023, under the supervision of Mr.Soumaly Ghosh, Assistant Professor of Department of Computer Science and Engineering/Computer Application and Information and Science, of School of Computing Science and Engineering , Galgotias University, Greater Noida

The matter presented in the thesis/project/dissertation has not been submitted by me/us for the award of any other degree of this or any other places.

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This is to certify that the above statement made by the candidates is correct to the best of my knowledge.

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**CERTIFICATE**

The Final Thesis/Project/ Dissertation Viva-Voce examination of Abdul Naseer Meyakhel: 19SCSE1140047 & Manish Kumar Das: 19SCSE1010906 has been held on 15th May 2023 and his/her work is recommended for the award of B.Tech in Computer Science & Engineering specialization in Computer Networking and Cyber Security.

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**Signature of Program Chair**

**Signature of Dean**

Date: May, 2023

Place: Greater Noida

## **ABSTRACT**

Data loss is being caused directly or indirectly by challenges with hardware failure, web hosting, data space allocation, and memory allocation due to the rapid growth in users. We use cloud computing techniques to deliver services that are dependable, quick, and affordable. The likelihood of malevolent individuals compromising this technology's security is rising as a result of its enormous development. Using a honeypot is one approach to direct harmful traffic away from systems. It is a massive method that has improved system security in some ways. The idea of Honeypot is applied in a file-sharing programme that is installed on cloud servers, taking into consideration the many legal difficulties one may encounter while putting Honeypot on third-party cloud vendor servers. This article covers how to identify assaults in a cloud-based environment and how to secure it using honeypots, while also suggesting a novel method for doing so.

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## **ACRONYMS**

NFR	Non-Functional Requirement
LAN	Local Area Network
WAN	Wide Area Network
DFD	Data Flow Diagram
QoS	Quality of Service
DES	Data Encryption Standard
RSA	Rivest Shamir Adelman Encryption
PoD	Ping of Death
DoS	Disk Operating System
WIDS	Wireless Intrusion Detection System
IDS	Intrusion Detection System
AES	Advanced Encryption Standard
3DES	Triple Data Encryption Standard
RC2	Rivet Cipher 2
RC6	Rivet Cipher 6

# CHAPTER 1

## INTRODUCTION

### **1.1. PURPOSE**

A strategy for putting away, sharing, and getting to information from any gadget associated with an organization -in a perfect world the web-is cloud computing. The expression "distributed computing" alludes to an extending extra room that doesn't have an actual area and can be gotten to from any area overall by interfacing any gadget to the web. It is comprised of a ton of PC units that share a common information extra room and are associated continuously (by means of the web). Since a cloud-like building was first used to describe network telephone graphs, and later computer network as a discussion of the secret groundwork it addresses, the verbalization "the cloud" is appropriated as a likeness for computer network. Honeypots are trusted expected an persuasive procedure for following program engineer conduct and create safety tools work better. Honeypots are projected definitely to take back and deceive programmers intentionally, in addition to to identify dangerous Web campaign and maybe believed as a irresistible method for following computer hacker conduct. Frameworks or resources known as honeypots are utilized to recognize as well as catch and screen inaccurate organization demands. They furnish the assailants with differing levels of connection, from insignificant to direct to high; each style enjoys benefits and disadvantages. To build frameworks that are secure as well as equipped for taking care of such traffic, their goal is to appreciate, dissect, notice, and screen the ways of behaving of aggressors. This computational advantage responsibility not be hack, checked, or go after. All the more definitely, it is a dossier foundation advantage whose value is cought from allure illegal or permitted use."

### **1.2. SCOPE**

An expert can handle cloud-located honeypots to understand the IP addresses and malware resorted to in assaults against standard customers into safety dossier that can guarantee a common cloud atmosphere [14, 20]. To find a defect in the foundation's plan or set up that maybe used. aforementioned IP feeds to will start a noise enlargement and incompetent result [12]. It's genuine, still obvious; Awful things frequently mark most breakable focuses [9]. There are benefits to utilizing a cloud makeup. A

honeypot taking everything in mind a cloud foundation features standard  
Honeypots on account of it bear have the choice in the end either a cloud  
building has happened ruined or tries have happened created commotion  
for that reason.

## **CHAPTER 2**

### **LITERATURE SURVEY**

#### **2.1 Design of Privacy-Preserving Cloud Storage Framework**

**AUTHORS:** RuWei Huang, Si Yu, Wei Zhuang and XiaoLinGui.

**ABSTRACT:** Cloud storage security is a fundamental concern. The paper proposes a protection saving cloud storage system that considers member collaboration, dynamic information tasks. client access freedoms changes, key age and the board, and information association structure plan. A care conditional and financially savvy order for delivered depository is likely by our instinctive tradition, extermination- located key age policy, postponed disavowal, multi-sampling form, and symmetrical encryption. A foundation is created including bureaucracy as bureaucratic rules. The being of the extermination-located key age procedure, foundation above, and guardianship safety of bureaucracy are certainly resolved in this place review. At long last, we discuss our plans for future test and summarize our findings.

#### **2.2 Scientific Cloud Computing: Early Definition and Experience**

**AUHORS:** Lizhe Wang, Jie Tao, Kunze M., Castellanos A.C., Kramer

**ABSTRACT:** Determined to present end customers reliable, distinguished, and QoS-guaranteed treat active scenes, delivered estimating is another calculation viewpoint. This study sees current Cloud estimating forward jumps, imitates the standards and traits of brainy Fogs, and subsequently gives a likeness of legal Cloud for attendant ranches.

#### **2.3 Ensuring Data Storage Security in Cloud Computing**

**AUTHORS:** Cong Wang, Qian Wang, KuiRen and Wenjing Lou.

**ABSTRACT:** It has happened urged that cloud calculating will be the allied IT manufacturing illustrating belongings at hand. Cloud estimating sends use compute and dossier argue colossal attendant farms, place facts and presidency the board concede possibility not be completely reliable, alternatively common foundations, place IT administrations are inclined harsh tangible, inventive, and

things controls. In any case, a lot of extra safety gives that are not famous are bestowed by this remarkable component. We will direct cloud news competency protection in this place paper, that has endlessly happened a important unspecified presidency character. To guarantee the legality of customer news in the cloud, we present a distributed method that is to say two together practicable and adjustable, accompanying two particular characters. Our method consolidates stole check of erasure systematize facts accompanying volume accuracy care and facts defect limit, that is, the site of contrary attendant(s) through the homomorphic remembrance. Unlike most past undertakings, the first method also considers insured and hoax same whole on dossier blocks, exemplification, dossier amend, erasure, and increase. The projected method is unusually strong and insensitive Byzantine let down, hateful facts adaptation assaults, and even attendant plot assaults, as shown by broad protection and killing experiment.

## **2.4 Comparison of Symmetric and Asymmetric Cryptography with Existing Vulnerabilities and Countermeasures**

**AUTHORS:** Yogesh Kumar, Rajiv Munjal and Harsh Sharma

**ABSTRACT:** The need to safeguard specific uses cultivates accompanying the exercise of cryptographic progresses to safeguard Web and arranging requests. Symmetric and departed signaling code judgments are two together that are secondhand ultimate frequently and widely. The ideal arrangement for DES and RSA is symmetrical key signaling code and amiss key signaling code, separately. The RSA and DES encryption forethoughts, in addition to their continuous flaws and workarounds, are hide in this place record. A theoretical show study and estimates of symmetrical and reversed encryption are likewise contained.

## **2.5 Cryptography Algorithm Comparison For Security Enhancement In Wireless Intrusion Detection System**

**AUTHORS:** Mr. Gurjeevan Singh, Mr. Ashwani Singla and Mr. KS Sandha

**ABSTRACT:** Wireless Because of their slightest cost and candor of killing, detached arrangements are fast gaining celebrity. The safety of detached arrangings is a important issue. Remote arranging foundations send gambles accompanying that mainly show a hazard to organize freedom. This hearing resolves aloof friendship meddling announcement forms in addition to various

sorts of risks, model, DoS, network stopping, garbage broadcast, tear, Ping-Of-Death (POD), and brother-in-the-middle. Unapproved network approach maybe

acknowledged accompanying an means popular as a Wireless Intrusion Detection System (WIDS). This efficiency is incessantly acted by an Intrusion Detection System (IDS) in one or the other habits: district of deformities or marks Data freedom foundations revolve around energetically on encryption forecasts. On the other hand, these methods increase PC main part of computer inconvenience and soon drain artillery capacity. Strategies like AES, DES, 3DES, RC2, Blowfish, and RC6 are evaluated in this place review. An estimate of aforementioned encryption processes was acted, and Blowfish was regarded as best choice encryption calculation.

## **CHAPTER 3**

### **SYSTEM ANALYSIS**

#### **3.1 EXISTING SYSTEM**

Assaults against standard customers maybe studied and dissected by means of cloud-located honeypots. An expert can take advantage of ruling class to change over the malware and IP addresses being promoted into safety dossier that can guarantee a conventional cloud trend. When aforementioned IP addresses are establish, they will start a noise continuation and safeguard expulsion result to find compute blemishes or foundation arrangement flaws that maybe used.

##### **3.1.1 Disadvantage of Existing System**

- Poorly understood security concerns

#### **3.2. PROPOSED SYSTEM**

The writer of the projected item supports a Honeypot attendant that answers transfer, log in, and distribution demands from customers. While giving a record, customers will present giving assent and a puzzle verbalization to trustworthy customers, the one can therefore log in the essence. The Honeypot attendant will show a clear page with the understanding that a injurious customer attempts to log in a record promoting a fake secret phrase. In the event that we please the attacker a clear page from the projected paper, he will expeditiously accept Honeypot is bestowing him a empty backlash and will leave making some further move. Honeypot can't take some extra dossier from the attacker, so a suggestion of correction bestowing an useless response, it gives a compensated document to promise the attacker that the attendant has happened efficiently confiscated, authorizing Honeypot to catch extra dossier from the attacker.

##### **3.2.1 Advantage of Proposed System**

- Uses an application on the aforementioned infrastructure to implement a novel Honeypot-based strategy for cloud resource and data security (Cloud Computing Environment).
- There are a few requirements that should be stuck to while introducing a Honeypot.

- You can save and exchange documents with the program.

# **CHAPTER 4**

## **SYSTEM REQUIREMENT SPECIFICATION**

### **4.1 FUNCTIONAL REQUIREMENTS**

Input to the system, achieved operation, and expected gain are all models of working needs. Any beginning of data bear be assembled by the system. All grown news should be handled for authentic use, and few test should be acted to grasp the facts suitably.

1. Data Collection
2. Data Pre-processing
3. Training and Testing
4. Modiling
5. Predicting

### **4.2 NON FUNCTIONAL REQUIREMENTS**

The quality trademark of an item structure is standardized by the NON-FUNCTIONAL REQUIREMENT (NFR). They assess the item structure as demonstrated by non-helpful models like responsiveness, comfort, security, convenience, and various principles that are key for the item system's thriving. The nonfunctional necessity "how rapidly does the page load?" is a model. Frameworks that don't meet non-utilitarian models will be unable to fulfill client needs. You can put cutoff points or restrictions on the framework engineering across various light-footed overabundances utilizing non-utilitarian prerequisites. At the point when there are in excess of 10,000 individuals online on the double, the site ought to stack in 3 seconds, for example. Similarly however significant as a useful need seems to be the portrayal of non-practical necessities.

Ease of use necessities, reasonability prerequisites. recoverability necessities, security prerequisites, information honesty necessities, limit prerequisites, accessibility prerequisites, scalability necessities, intemperability prerequisites, dependability necessities, viability necessities, administrative necessities, and natural necessities.

### **4.3 HARDWARE REQUIREMENTS**

The insignificant equipment necessities for the Enthought Python, Covering, or Versus Code item being created range incredibly. More Smash is expected for applications that need enormous varieties of items in memory, while a quicker computer processor is expected for programs that require a few calculations or activities to be performed quickly.

- Operating System : Windows 10
- Processor : Intel i5 and above
- RAM : 4GB and Above
- HDD : 250GB and Above

### **4.4 SOFTWARE REQUIREMENTS**

The utilitarian requirements or overall depiction papers integrate the thing's point of view and features, the functioning structure and working environment, graphical necessities, plan impediments, and client documentation.

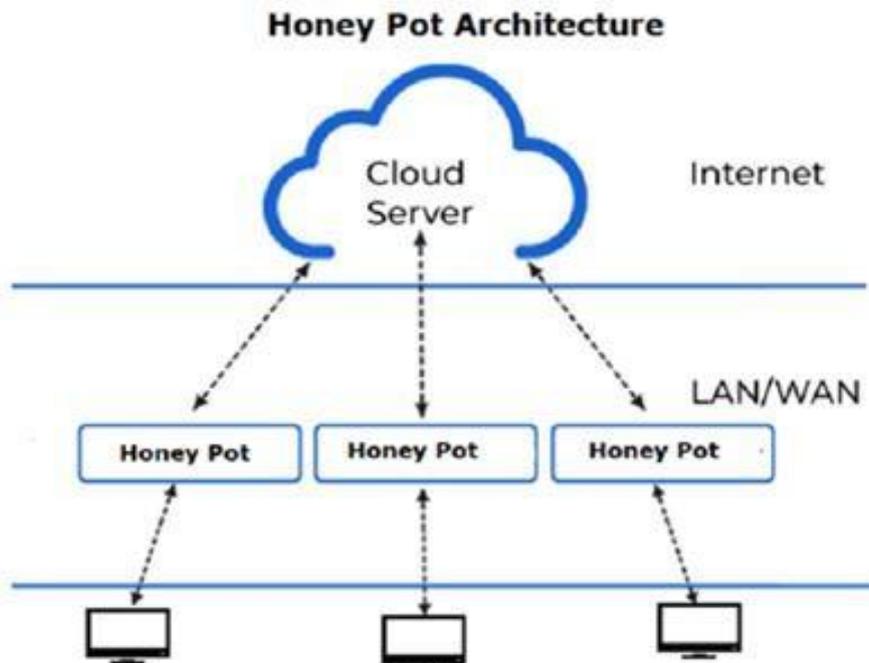
By applying the requirements and execution goals, the endeavor's resources and insufficiencies, as well as the most fitting responses for settle them, are uncovered.

- Operating System : Window 7 or 8
- Programming Language : Python 3.7

# CHAPTER 5

## SYSTEM DESIGN

### 5.1 SYSTEM ARCHITECTURE



### 5.2 DATA FLOW DIAGRAM

The air pocket outline is regularly used to allude to the DFD. An arrangement can be addressed to the level of the information that is taken care of inside it, the different undertakings that are completed on it, and the information that is passed on because of those endeavors utilizing a sensible graphical formalism. One of the main appearance devices is the data flow diagram, otherwise called a DFD. It is utilized to make the system's part models. The structure's activity, the information it utilizes, the going with remote, and the information move through it are undeniably solidified in these parts. DFD depicts the data's movement through the framework and its response to numerous changes. It is a graphical approach to addressing the information flow and data enhancements as they progress from commitment to yield. Bubble diagram is one more name for DFD. A DFD could manage any degree of reflection for a system. DFD can be separated into stages that are practically identical to information stream and expanding utilitarian intricacy.

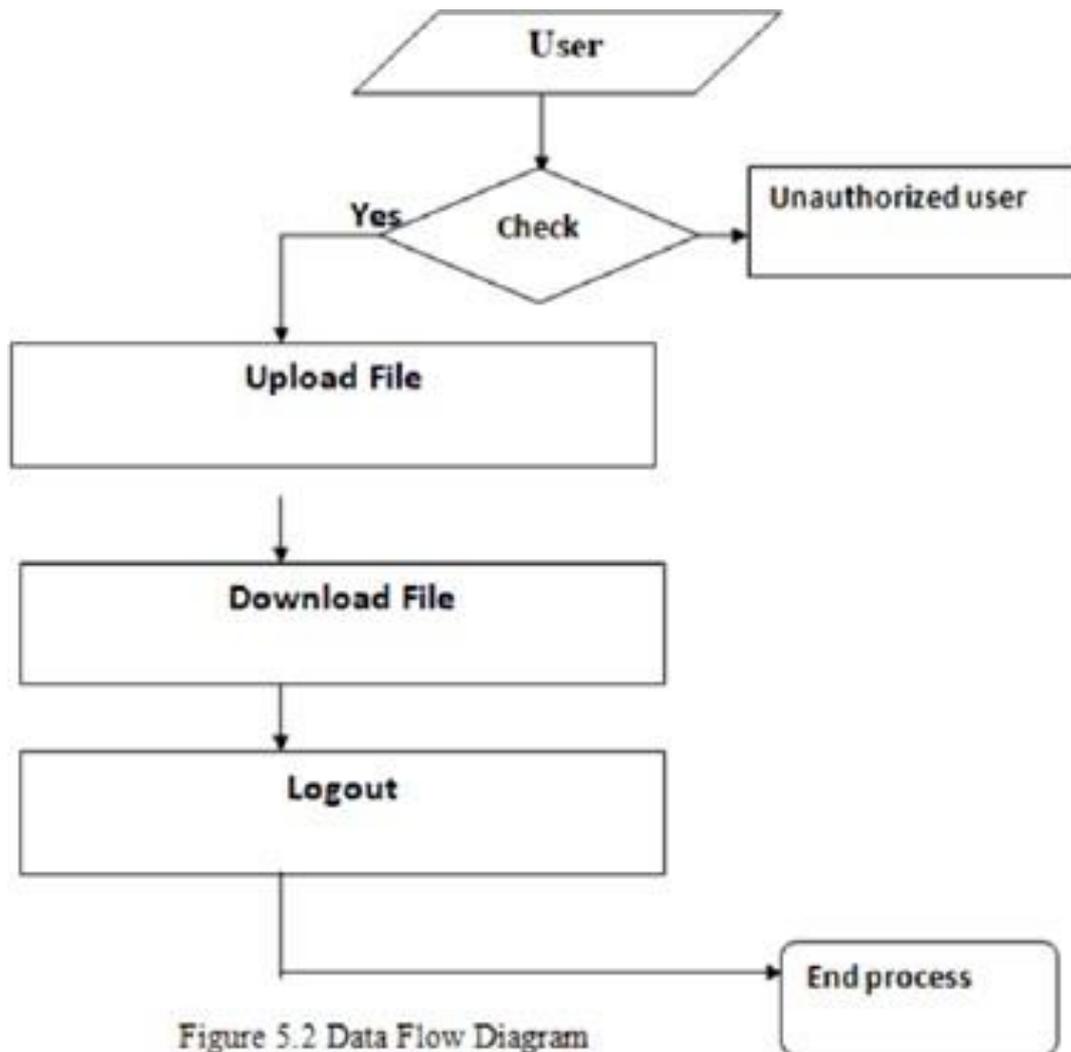


Figure 5.2 Data Flow Diagram

### 5.3 MODULES

- **New User Register**  
In this module user will register
- **Login**  
In this module user will login.
- **Upload File**  
In this module user will upload file.
- **Download File**  
In this module user will download file.

- **Logout**

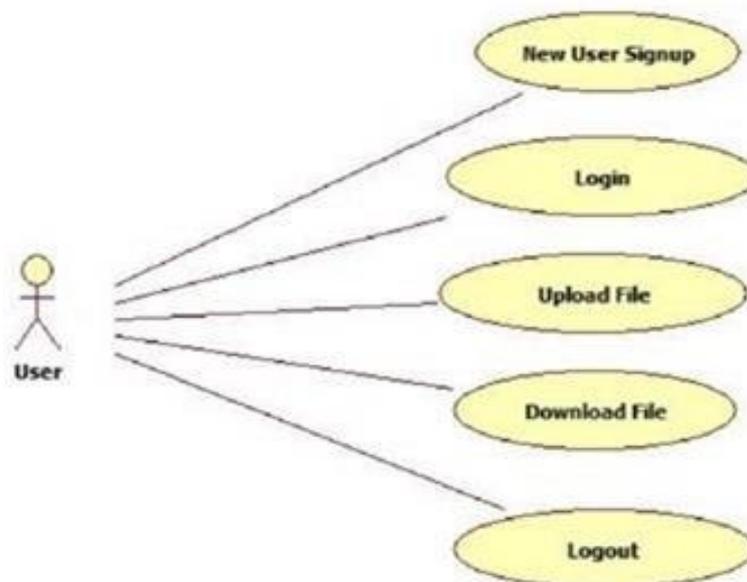
In this module user will logout.

## 5.4 UML DIAGRAMS

An UML outline is a chart that depends on the UML (Unified Modelling Language) and is utilized to graphically portray a framework and its essential players, jobs, activities, curios, or classes so framework data can be better perceived, altered, made due, or recorded.

### 5.4.1 Use case Diagram:

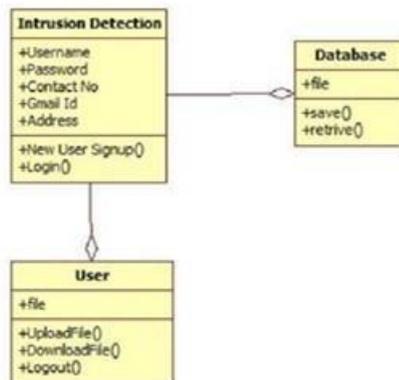
A use case chart, in its most essential structure, shows the boundaries of a use case and how a client connects with the framework. The different kinds of framework clients and the manners by which they communicate with the framework can be portrayed in a utilization case graph. A composed use case and different sorts of outlines are habitually utilized related to this kind of graph.



### 5.4.2 Class Diagram:

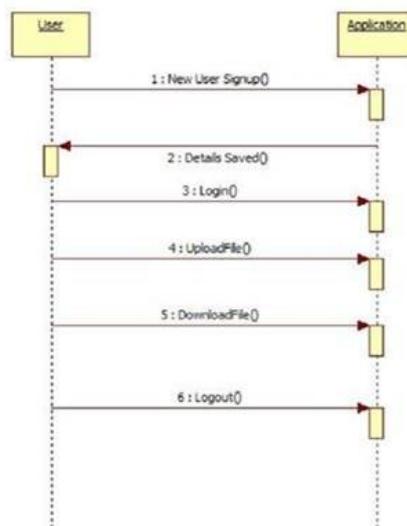
The underpinning of item situated demonstrating is the class chart. It is used for both calculated demonstrating of the application's engineering all in all and specialized displaying, which changes over the thoughts into code for programming. Class frameworks may in like manner be used to show data. The classes in a class chart address both the classes that should be coded and the essential items and communications of the application. The outline shows classes addressed by three-section boxes:

- The class' name is shown in the top area;
- The attributes of the class can be seen as in the center,
- The techniques or tasks that the class can utilize or perform are depicted in the base segment.



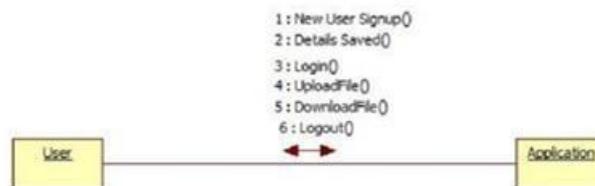
### 5.4.3 Sequence Diagram:

A succession frame is a kind of participation chart that depicts how and in what solicitation processes speak with one another. The plan is a Message Sequence Diagram. Time-requested communications between objects are displayed in a grouping chart. It shows the classes and articles in the situation as well as the request in which messages are traded between the items to complete the situation's usefulness. Arrangement outlines and use case acknowledge are habitually connected in the framework's Coherent View. Sequence charts are additionally alluded to as occasion circumstances, timetable, and occasion outlines.



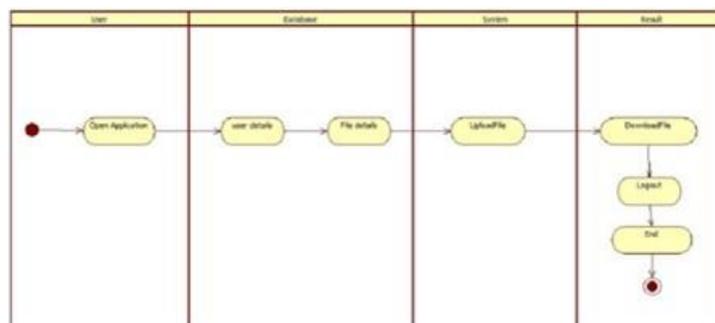
### 5.4.4 Collaboration Diagram:

Collaboration exertion diagrams (known as Correspondence Frameworks in UML 2x) figure out how things team up to accomplish the approach to acting of a specific use case or a piece of a use case. Along with grouping charts, creators use joint effort to characterize and make sense of the obligations of the items in a utilization case that complete a specific progression of activities. They are the essential wellspring of information for laying out connection points and class liabilities.



### 5.4.5 Activity Diagram:

Another gigantic diagram in UML for depicting dynamic credits of the structure is the activity chart. Generally, it is a stream diagram that portrays the movement of activities. One method for depicting the activity is as a framework interaction. As an outcome of this, the control stream is moved starting with one activity then onto the next. This stream could be consistent, fanning, or successive.



### 5.4.6 Development Diagram

A deployment chart portrays the genuine situation of curios on hubs in the Unified Modelling Language. An organization chart would portray the different equipment parts (alluded to as "hubs") that make up a site (like a web server, an application server, and a data set server), the product parts (alluded to as "curios") that sudden spike in demand for every hub (like a web application, data set), and the associations between the different pieces (like JDBC, REST, and RMI).

The antiquities doled out to every hub are portrayed by square shapes held inside the crates that address the hubs. Under hubs, subnodes show up as stacked boxes. A solitary hub can hypothetically address various actual hubs in a sending chart, like a group of data set servers.



## **CHAPTER 6**

### **IMPLEMENTATION**

#### **6.1 HONEYPOTS:**

Attacks against common consumers maybe examined and resolved by way of cloud-located honeypots. An expert can promote ruling class to change over the malware and IP addresses being employed into protection dossier that can guarantee a usual cloud humidity. When these IP addresses are establish, they will run a noise accompanying an unprotected result to find proneness in the foundation's plan or set up that maybe used. It's right, nevertheless obvious; Terrible things frequently goal most dainty things. There are benefits to utilizing a cloud makeup. A honeypot taking everything in mind a cloud foundation simulates standard Honeypots within it bear have the choice in the end either a cloud building has happened marred or tries have happened created commotion in this manner.

##### **6.1.1 Types of Honeypots**

Honeypots are imitated into two sorts:

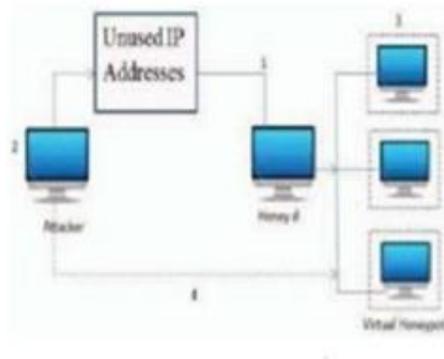
1. Low interaction

2. honeypots accompanying a heap of cooperation.

a) honeypots with little collaboration These honeypots have little connection. This act the premises that the attacker's habit of properlingy is restricted for one Honeypot's level of copying. Low-participation honeypots are smooth to start by way of their clear plan. They are outside risk and basically less complex to equal. What's more, the aggressor is always unable to think twice about frameworks by accessing a working framework. The way that main a modest quantity of data is recorded on the Honeypot data set, which likewise records any unapproved movement, is the essential disadvantage of this sort of Honeypot. Additionally, it is simpler for an adversary to identify a low-interaction Honeypot; A skilled attacker will eventually be able to detect their presence, regardless of how good the emulation is." Spectre, Honeyd, and KFSensor are examples of honeypots with little interaction.

b) Honeypot with a lot of interaction: Due to their ability to interact with software and applications in real time, high-interaction Honeypots are

frequently more advanced than low-interaction Honeypots. Systems and software in real time are given to attackers. A sending of this sort of Honeypot can assemble a ton of information and give an open climate that records any exercises. This engages high-correspondence deals with learn unexpected approaches to acting.



## 6.2 SOFTWARE ENVIRONMENT

What is Python :

Here are some facts about Python.

Right now, Python is the most well known significant level, multipurpose programming language.

Python upholds procedural and object-situated programming standards. Contrasted with other programming dialects like Java, Python applications are frequently more modest.

Because of the language's need for space, developers don't have to type as much, and their work is generally clear.

Almost every tech giant, including Google, Amazon, Facebook, Instagram, Dropbox,

Uber, and others, uses the Python programming language.

The most important feature of Python is its extensive standard library, which can be used for the following tasks:

- picture adjusting (like OpenCV, Pillow)
- web mining (like Scrapy, BeautifulSoup, and Selenium)
- testing systems

- graphical user interfaces and machine learning (like Kivy, Tkinter, PyQt, and Others)

### **6.2.1 Advantages of Python :**

Perceive how Python beats various lingos.

#### **1. Extensive Libraries**

Standard articulations, documentation age, unit testing, browsers, stringing, data sets, CGI, email, picture handling, and a variety of other features are all included in the extensive library that Python downloads. As a result, it is unnecessary for us to actually write all of the code for it.

#### **2. Extensible**

As previously demonstrated, Python is adaptable to a variety of lingo. In C or C++, for instance, you can keep in touch with a piece of your code. This is helpful. especially in projects.

#### **3. Embeddable**

In addition, Python gives users embeddability, which is the same as extensibility. Other programming languages' source code, such as C++, may contain Python code. Adding planning value to code written in a substitute language is as of now possible.

#### **4. Improved Productivity**

Developers are more important than with dialects like Java and C++ because of the language's convenience and broad library. Moreover, exercises ought to overshadow composing.

#### **5.1OT Opportunities**

Python recognizes that the Web of Things has a bright future because it is the foundation for cutting-edge platforms like Raspberry Pi. This facilitates the language's connection to the world at large.

## **6. Simple and Easy**

To print "Hello there World," you may need to create a Java class. Python, on the other hand, only needs an explanation for the print. Furthermore, it is straightforward to comprehend, learn, and code. As a result, learning Java or other more complex programming languages can be challenging for Python beginners.

## **7. Readable**

Since Python isn't extremely verbose, perusing it is basically the same as understanding English. This demonstrates the significance of picking up, comprehending, and coding. It is possible to define blocks without wavy supports. but you need space. As a result, the code's clarity has significantly improved.

## **8. Object-Oriented**

Procedural and object-organized programming standards are met by this programming language. Articles and classes give us the ability to replicate this current reality, whereas works rely on code reuse. A class makes it possible for students to combine knowledge and skills into a single unit.

## **9. Free and Open-Source**

Python, as previously stated, is easily accessible. Python can be downloaded for free, but its source code can also be changed and sold, which is surprising. In order to assist you in your work, it downloads numerous libraries.

## **10. Portable**

After developing your project in a language like C++, you may be required to release certain enhancements if you want to run it on a different platform. On the other hand. Python defies this. In this case, all you need to do is write the code once, and it will work everywhere. "Write Once, Run Anywhere" (WORA)

is the name of it. However, you should avoid including any details from the subordinate framework.

## **11. Interpreted**

We will conclude by stating that it is deciphered. Since proclamations are given one at a time, troubleshooting is easier than with ordered dialects.

### **6.2.2 Advantages of Python Over Other Languages**

#### **1. Less Coding**

When deciphered from different dialects, practically all positions done in Python need less code. To finish your objective, you ought to look for no outsider libraries since Python has solid standard library support. This is the thinking for the wide idea that fledglings learn Python.

#### **2. Affordable**

Since Python is open source, anybody may utilise its free resources to develop programmes, whether they are individuals, small enterprises, or major organisations. Python has a strong community since it is extensively used and well-known.

As per the Github yearly survey for 2019, Python surpassed Java in the class of the most well known programming dialects..;

#### **3. Python is for Everyone**

Python code can be executed on any computer running Linux, Windows, or Mac OS X. A developer should be able to work on multiple projects in multiple languages; notwithstanding. Python engages you to make games, robotize endeavors, control modernized thinking and data assessment, manufacture online applications, and go with shock decisions. It is a two-featured programming language.

### **6.2.3 Disadvantages of Python**

We've proactively seen a few reasons why Python is a wise choice for your venture. Yet, if you want to follow that route, you need also be mindful of the outcomes. Let us now compare Python's shortcomings to those of other programming languages.

### **1. Speed Limitations**

We've proactively seen a few reasons why Python is a wise choice for your venture. Yet, if you want to follow that route, you need also be mindful of the outcomes. Let us now compare Python's shortcomings to those of other programming languages.

### **2. Weak in Mobile Computing and Browsers**

In any case matter how fascinating Python is as a server-side language, it is certainly more well known on the client side. Also, cell applications are just utilized only sometimes. One model is the Carbonnelle application.

No matter what its conspicuousness, Brython is less perceptible inferable from the requirement for sensible security.

### **3. Design Restrictions**

Python, as you most likely are aware, uses novel phonetic design. Consequently, you don't have to show the kind of a variable as you form the code. It starts with a duck. In any event, unequivocally is that? When in doubt, it recommends that all that seems as though a duck should be one. Despite the way that this simplifies it for designers to make, runtime errors could regardless occur.

### **4. Underdeveloped Database Access Layers**

Amazingly, when compared to other significant changes like ODBC (Open Database Connectivity) and JDBC (Java DataBase Connectivity). Python's educational document authentication layers are largely out of date. It is true that large organizations employ it sparingly and to the greatest extent possible.

## **5. Simple**

We are not joking, no. The simplicity of Python may undoubtedly be a disadvantage. Think about what I did. I'm more interested in Python than Java. The lavish verbosity of the Java code seems unnecessary to me because the etymological design is so obvious to me.

The Python programming language's advantages and disadvantages were examined.

### **6.2.4 History of Python :-**

What is the connection between the letter set and the Python programming language? For sure, the two of them start with the letter ABC. In the event that we address it as far as Python, the programming language ABC plainly addresses its design. The ABC programming environment and language were created at the CWI (Centrum Wiskunde & Informatik) in Amsterdam, Netherlands. ABC's most remarkable accomplishment was its ability to change Python's procedure. Python's original inspiration came from the last work of the 1980s. Guido van Rossum had previously dealt with the one-celled creature of the CWI's distributed working building project at that time. Guido van Rossum discussed his work as an implementer at the Centrum voor Wiskunde en Informatica (CWI) in the 1980s, when he contributed to the development of the ABC language. I'm not sure what the relevance of well-known Python ABCs is. Since owe everything secured from that company and the individuals who oversaw it to them, I want to highlight ABC's impact. Later, at a similar gathering, Guido van Rossum Stated, "I investigated all of my experience and a portion of my disappointment with ABC." made the decision to try to create a clear coordinating language using some of ABC's advantages but not all of its drawbacks. So got to work making. created a runtime, parser, and primary virtual machine. I developed my own variants of the various ABC components I valued. A hash table (also known as a word reference), an overview, strings, and whole numbers are just a few of the number data types created. In like manner, rather having wavy areas or begin end blocks, used space to arrange decrees.

### **6.2.5 Python Development Steps:-**

Guido Van Rossum provided alt.sources with the primary Python source code (form 0.9.0) in February 1991. The critical data types list, dict, str, and others were recently remembered for this transformation, as were unique case the executives, abilities, and different elements. It also had a module structure and was object- centered. Python version 1.0 was released in January 1994. This variant's most important new elements were the useful programming tools lambda, guide, channel, and lessen, which Guido Van Rossum detested. Python 2.0 was made available in October 2000, six and a half years after its release. This version added unicode support, list cognizances, and a full trash specialist. Python 2.x kept on flourishing for eight extra years before the huge arrival of Python 3.0, otherwise called "Python 3000" and "Py3K." The Python 2.x and 3.0 variants are incongruent. As per the thirteenth rule of the Harmony of Python, there ought to be one- and preferably only one-clear method to accomplish everything, which was put the accentuation in Python 3 on eliminating superfluous programming designs and modules. A few changes in Python 7.3:

Printing is currently accessible.

- Utilizing sees and iterators rather than records\
- The examination requesting necessities have been rearranged. A heterogeneous rundown, for instance, can't be arranged since every part in the rundown should be equivalent to one another component. The last number sort is long, which is additionally an int.

Dividing two numbers creates a float rather than a whole number. To act in the "old" style, use "/".

Text versus data, not Unicode versus 8-bit

### **6.2.6 Purpose:-**

Utilizing the ANIS feature, we demonstrated that our method can successfully segment intra-retinal layers even in low-quality images with dab disturbance, low separation, and a variety of power levels.

### **Python**

- Python is a programming language that has been extensively cracked. Guido van Rossum created Python, which was released for the first time in 1991. It makes use of whitespace and emphasizes code comprehension.

- Python offers major areas of strength for a framework as well as a different memory the board structure. It upholds various programming ideal models, including major. functional, procedural, and object-situated, as well as an enormous and thorough standard library.
- Python is Unraveled - During runtime, the interpreter processes Python. Your item needn't bother with to collected before run. This is equivalent to PHP and PERL.
- Python is smart while forming programs, you could sit at a Python brief and instantly visit with the translator.
- Python additionally comprehends the idea of progress rate. This incorporates solid areas for tending to that forestall interminable code duplication, as well as clear and succinct code. This is connected to reasonableness and might be an essentially good for nothing measurement, yet it gives insights on how much code you ought to clear, read, and fathom to address blames or change conduct.
- Python succeeds in different regions too, for example, the speed with which it is created, the straightforwardness with which programming designers working in different dialects can get a handle on Python's establishments, and the enormous standard library. Its instruments were all easy to utilize, saved time, and some might be refreshed and changed by people who didn't know Python.

Modules Used in Project :-

### **Tensorflow**

Applications for differentiable programming and dataflow make use of TensorFlow, a free and open-source programming structure. Applications involving replicated data in the cerebrum network make use of a delegate mathematical library. Google has integrated it for evaluation and gatherings.

TensorFlow was developed for use within the company as part of the Google Psyche pack. On November 9, 2015, it was made available as part of the Apache 2.0 open-source award.

### **Numpy**

Executives in groups frequently make use of the Numpy programming language. It provides a lot of faces, a fast pace, and the ability to work with these shows.

It is Python's fundamental sensible handling module. It has many characteristics, including the following essential ones: Instrumentation for integrating C/C++ and Fortran programmes A powerful N layered group object Current (telecom) capabilities Straight polynomial math, Fourier change, and inconsistent number capacity are all supported.

Regardless of its sensible acceptable uses, Numpy is a strong place for a multifaceted data keeper. Numpy can converse quickly and effectively with a wide variety of informative lists thanks to its capacity to disperse any type of information.

## **Pandas**

The rich information plans of the open-source Python library Pandas enable enhanced execution information control and assessment features. The heft of the time, Python was utilized for information planning and munging. It no affected the information investigation. Pandas worked out the best strategy. We might utilize pandas to finish the five ordinary examples of information managing and assessment: get ready, adjust, reproduce, and assess. Python and Pandas are utilized in many scholar and expert settings, including the examination of funds, gauges, etc.

## **Matplotlib**

Matplotlib, a set-up of Python 2D outlining devices, creates scattering quality plans in a scope of true plans and cross-stage shrewd settings. Matplotlib can be utilized by the Jupyter Scratch cushion, online application servers, Python content, the Python and IPython shells, and four graphical UI mechanical gathering compartments. Matplotlib is a device for handling complex undertakings and making troublesome positions more feasible. With just a few lines of code, you can make dissipating plots, histograms, power spectra, bar frames, and other diagrams. The thumbnail shows and model plots both contain models.

When utilized with IPython, the pyplot pack offers an interfacing point for straightforward outlining like MATLAB. With regards to controlling things like line styles, text style settings, focus point credits, etc, the power client offers two choices: a thing-centered interface or an assortment of MATLAB-viable strategies.

## Scikit-learn

Scikit-learn gives various controlled and independent learning calculations through a normalized Python interface. Since it is open under an assortment of Linux conveyances and under a free BSD permit, it is helpful for both business and instruction.

## Python

- Python is a notable, very much deciphered, and by and large around incredible programming language. Guido van Rossum planned Python, which received an unprecedented grant in 1991. It makes use of whitespace and emphasizes clear code.
- Python includes a modern sort structure and a free memory system. It has a huge and thorough standard library and supports an assortment of programming ideal models, including essential, utilitarian, procedural, and object-situated.
- Python is Interpreted During runtime, the go between processes Python. Your item needn't bother with to accumulated before run. This is equivalent to PHP and PERL.
- Python is intuitive; while writing programs, you can quickly communicate with the interpreter by sitting at a Python brief.
- Python likewise comprehends the idea of progress rate. This incorporates critical solid areas for methods that forestall unending code duplication, as well as basic and short code. Reasonability is connected with ts and might be a good for nothing measurement, yet it gives data on how much code you ought to sweep, read, or conceivably comprehend to cure issues or change conduct. Python succeeds in different regions too, for example, the speed with which it is created, the straightforwardness with which programming engineers working in different dialects can get a handle on Python's establishments, and the enormous standard library. Its devices were all easy to utilize, saving a ton of time, and some of them could be modified or fixed by people who didn't know Python without leading to any issues.

instau rytnon Step-by-Step in windows and Mac:

## Styles

Your computer or other electronic device does not come pre-installed with Python, a sophisticated programming language. Python has been one of the

most broadly involved low level programming dialects since its most memorable delivery in 1991. It focuses on code clearness above plan with its perceived utilization of extraordinary whitespace.

Python's article-based approach and phonetic featuring empower programming engineers to make projects that are both sensible and practical. Windows users cannot currently access this product.

### **6.2.7 How to Install Python on Windows and Mac:**

Numerous updates have been made to the Python collection on a regular basis. How did I communicate Python so clearly? Even though beginning to learn Python can be difficult for a child, this structure will meet your needs. The most recent or most recent version of Python is Python 3.7.4, also known as Python 3 at times.

Note: Python version 3.7.4 cannot be used with Frameworks prior to Windows XP

Before you begin the setup process for Python. You should first determine the requirements for your structure. You should download the Python structure for your machine, which includes the operating system and central processor. My functioning establishment is Windows 64-cycle. As an outcome, the excess standards indicate that Python 3 or Python 3.7.4 be utilized on a Windows 7 establishment. This has a say in the Python cheat sheet. The Python establishment on Windows 10, 8, and 7 is partitioned into four sections with the goal that it very well might be chipped away at.

# **CHAPTER 7**

## **SYSTEM TESTING**

### **7.1 TESTING STRATEGIES**

Testing is the most well-known approach to preparing test data for use in testing the modules freely and a brief time frame later the endorsement accommodated the fields. The structure is then attempted to ensure that all pieces of the system properly fill in as a unit. The test data should be picked with the goal that it is presented to each logical situation. As a matter of fact, testing is the execution stage that guarantees that the framework works accurately and successfully before the real situation starts. Coming up next is a depiction of the testing techniques used all through the testing period.

#### **7.1.1 System Testing**

Testing has transformed into a key piece of every single structure or undertaking, particularly in the space of information development. The meaning of testing preceding improvement couldn't possibly be more significant on the grounds that it fills in as a technique for demonstrating one's status to proceed or whether one is fit for enduring the afflictions of a specific situation. It is important to direct tests on the program before it is made accessible to clients to guarantee that it achieves the planned objective. This testing integrates different techniques for ensuring the item's dependability. Thoughtfully, the program was tried, and similar example of program execution for a specific piece of information was rehashed. Thusly, the code was totally investigated for all probably suitable data, and the results were also affirmed.

#### **7.1.2 Module Testing**

Each module is checked openly to find deficiencies. Along these lines, we can track down blunders and fix them without influencing some other modules. Right when a nmeram fails to do a necessary job, giving the ideal result ought to be redressed.

Thusly, every module is analyzed autonomously beginning with the littlest and least modules and climbing to a higher level. Freely, every framework module is tried. For example, every module of the gig arrangement framework is tried independently. The assessed execution seasons of different positions are utilized to test this module, and the outcomes are contrasted with those that were physically produced. The correlation shows that the proposed methodology performs better compared to the current framework. Freely, every framework module is tried. The resource grouping and work arranging modules are surveyed independently in this system, and the associated results are obtained, decreasing the cycle holding up time.

### 7.1.3 Integration Testing

Integration testing is done following the testing of modules. Ill-advised associations between the modules might happen; These tests are utilized to fix these slip-ups. This framework tests and connections every part. The consequences of the tests are extremely exact. Thusly, the framework precisely maps assets and undertakings.

### 7.1.4 Acceptance Testing

A last acceptance test was passed when the client tracked down no huge issues with the framework's rightness. This test guarantees that the framework requires the underlying objectives, targets, and prerequisites that were indicated during investigation without really being executed. Subsequently, clients and the executives set aside time and cash by not directing acknowledgment tests, and the framework is eventually satisfactory and prepared for use.

## 7.2 TEST CASES

### Test case for Login Form:

<b>Function</b>	LOGIN
<b>Expected Results</b>	Should Validate the user and check his existence in database
<b>Actual Results</b>	Validate the user and checking the user against the database
<b>Low Priority</b>	No
<b>High Priority</b>	Yes

### Test Case 2:

#### Test case for user registration form:

<b>Function</b>	<b>USER REGISTRATION</b>
<b>EXPECTED RESULTS</b>	Should check if all the field are filled by the user and saving the user to database
<b>ACTUAL RESULTS</b>	Checking whether all the fields are field by user or not through validation and saving user.
<b>LOW PRIORITY</b>	No
<b>HIGH PRIORITY</b>	Yes

### Test Case 3:

#### Test Case for Change Password:

When the old messages does not match with the new password, then this result in displaying an error message as “OLD PASSWORD DOES NOT MATCH THE NEW PASSWORD”

<b>FUNCTION</b>	<b>Change Password</b>
<b>EXPECTED RESULTS</b>	Should check if old password and new password fields are filled by the user and saving the user to database
<b>ACTUAL RESULTS</b>	Checking whether all the fields are field by user or not through validation and saving users
<b>LOW PRIORITY</b>	No
<b>HIGH PRIORITY</b>	Yes

### Test Case 4

#### Test Case for Forget Password:

A User is promoted to enter his login name, ZIP Code, and mobile phone number if he forgets his password. Assuming that these match the ones previously saved, the singular will be given his unique password.

Module	Functionality	Test Case	Expected Results	Actual Results	Result	Priority
User	Login Usecase	Navigate to <a href="http://www.sample.com">www.sample.com</a>  Click on Submit Button without Entering username and Password	A Validation should be as below “Please Enter Valid Username & Password”	A Validation has been populate as Expected	Pass	High
		Navigate to <a href="http://www.sample.com">www.sample.com</a>  Click on Submit Button without filling password and valid username	A Validate should be as below “Please enter valid password or password field can not be Empty”	A Validation is shown as expected	Pass	High
		Navigate to <a href="http://www.sample.com">www.sample.com</a>  Enter Both Username and Password wrong and hit enter	A Validate shown as below “The Username entered is wrong”	A Validation is shown as expected	Pass	High

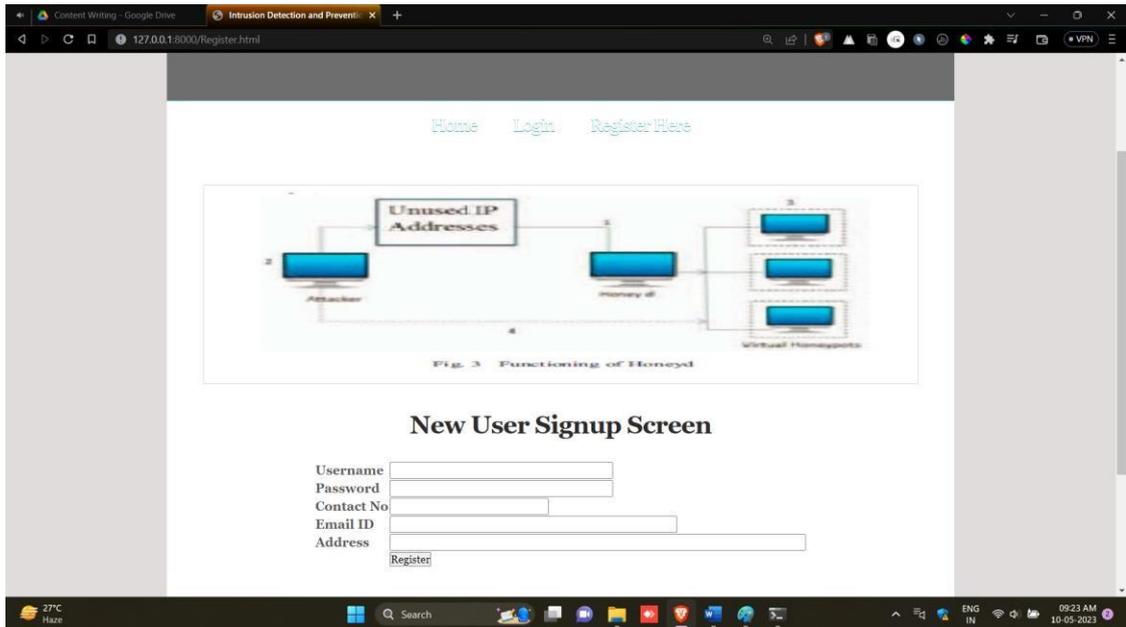
		Navigate to www.sample.com	Validate username and password in database and once if they correct then show the main page	Main page/Home Page has been displayed	Pass	High
--	--	----------------------------	---	--	------	------

### 7.3 RESULTS AND DISCUSSION

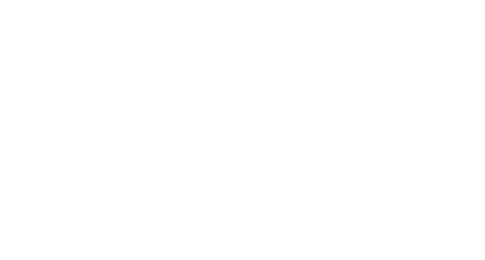
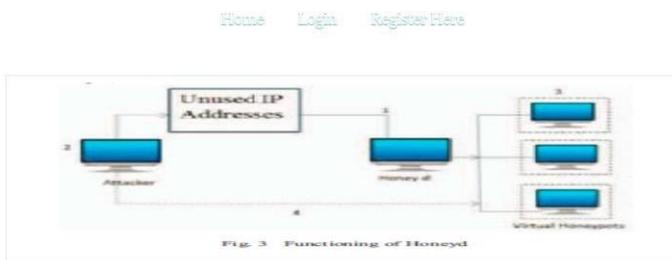
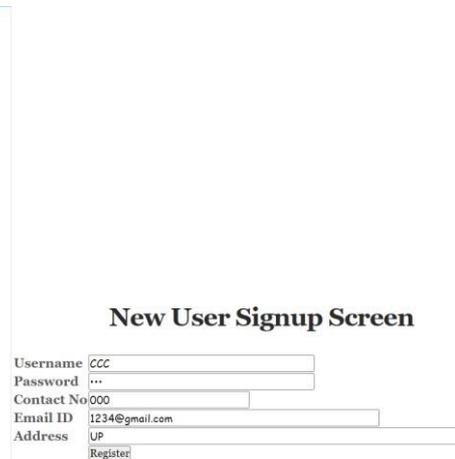
1. Install MySQL, Python 3.7 and the Django server to carry out the project. After that, deploy the app to the Django server, start the server and open a browser to view the outcomes listed below.



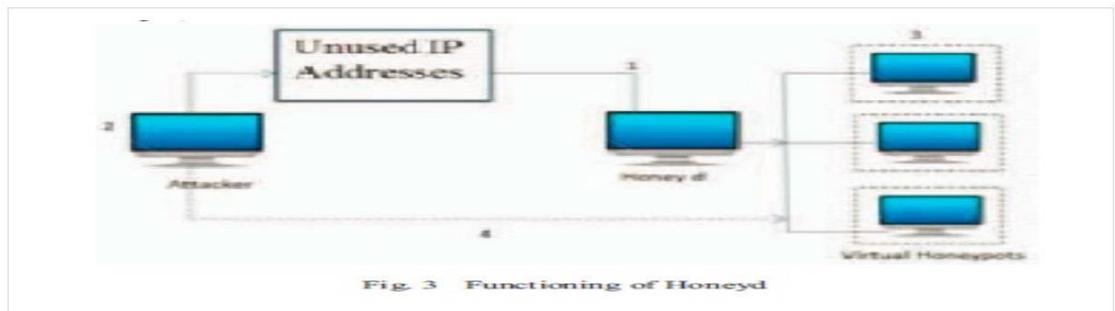
- To Register some individual, go to the preceding page and select the “Register Here” Option.



- To access the screen below, simply add one person to the one above and then click the “Register” Button.



- You can add many more users by clicking the “login” link on the following login screen, which takes you to the page where the user registration process is complete

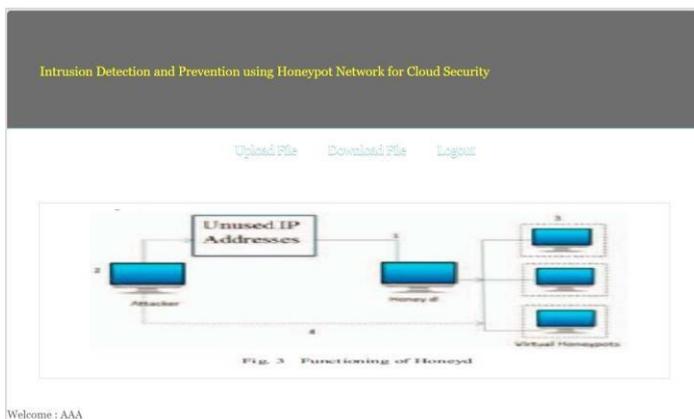


### User Login Screen

Username

Password

- On the screen above, user “AAA” is logged in; after logging in, the user will see the screen below.



- User can now upload file by clicking the **”UPLOAD FILE”** link on the above page.

[Upload File](#)   [Download File](#)   [Logout](#)

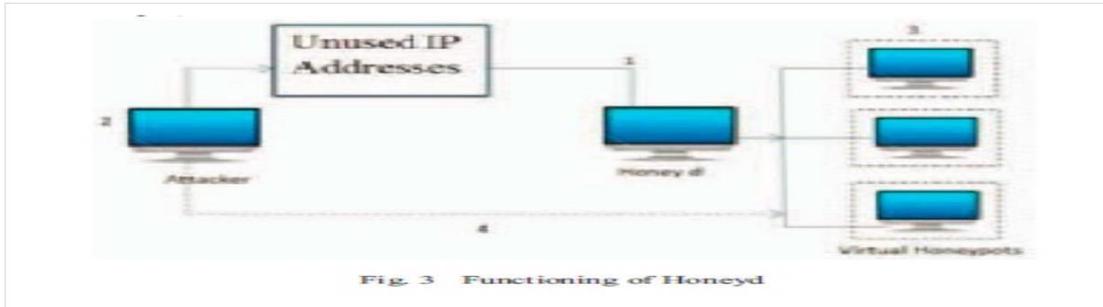


Fig. 3 Functioning of Honeyd

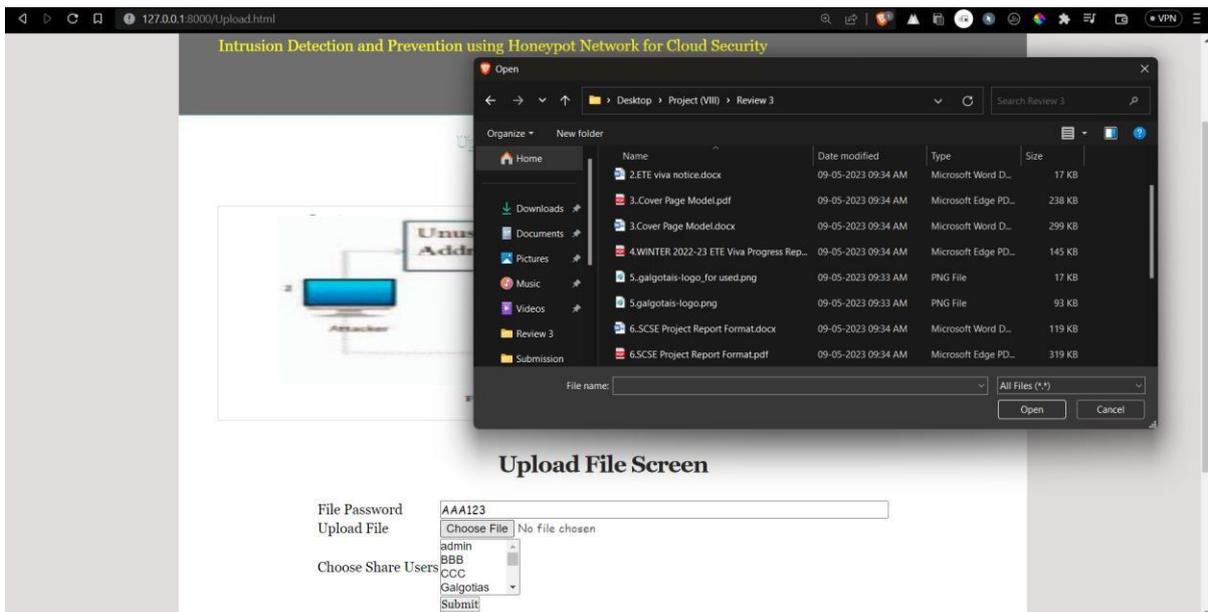
### Upload File Screen

File Password

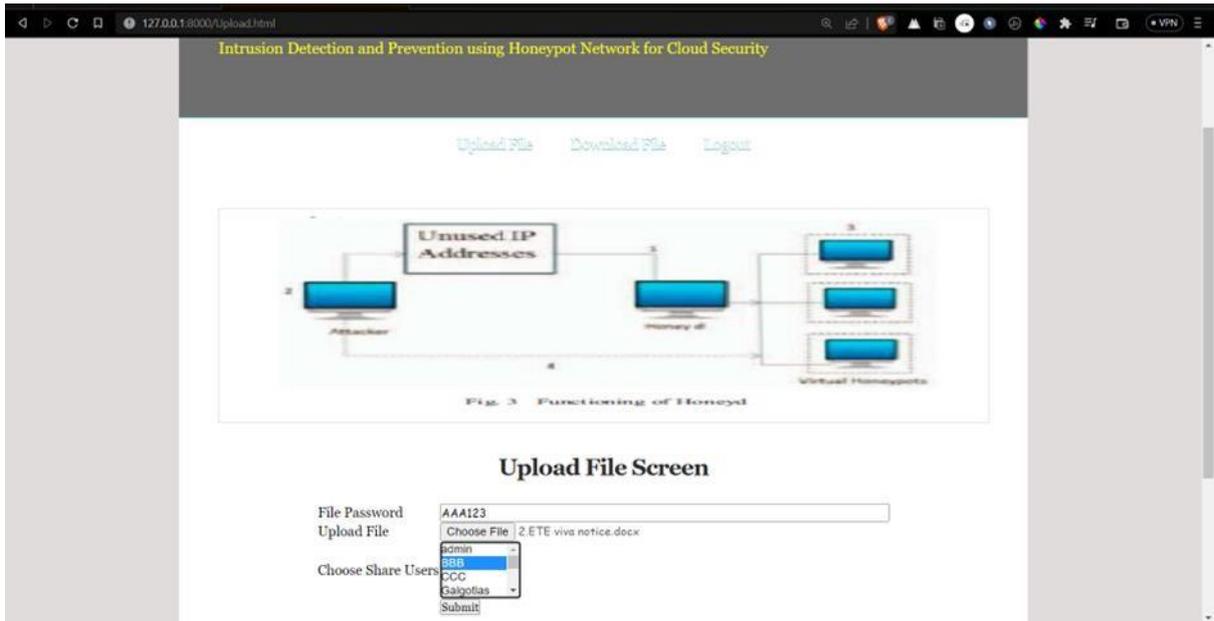
Upload File  No file chosen

Choose Share Users

- admin
- BBB
- CCC
- Galgotias



7. In the first box on the above page, enter the file password. Next, select any file from the drop-down menu by clicking the “Choose file” button. Finally, Select the necessary users with whom you want to share the file. You can select multiple users by holding down the CTRL Key on your keyboard.



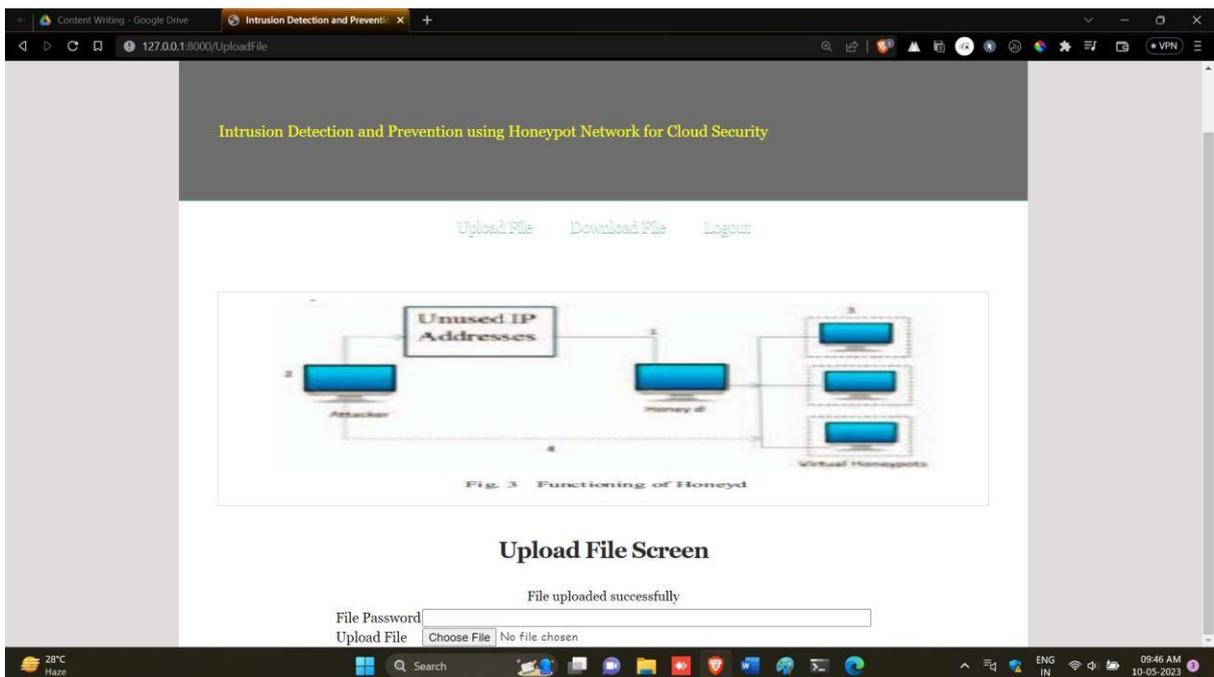
## Upload File Screen

File Password

Upload File  2.ETE viva notice.docx

Choose Share Users

- In the screenshot above, user AAA is collaborating on a file with user BBB and has successfully submitted the file by clicking the **"Submit"** button.



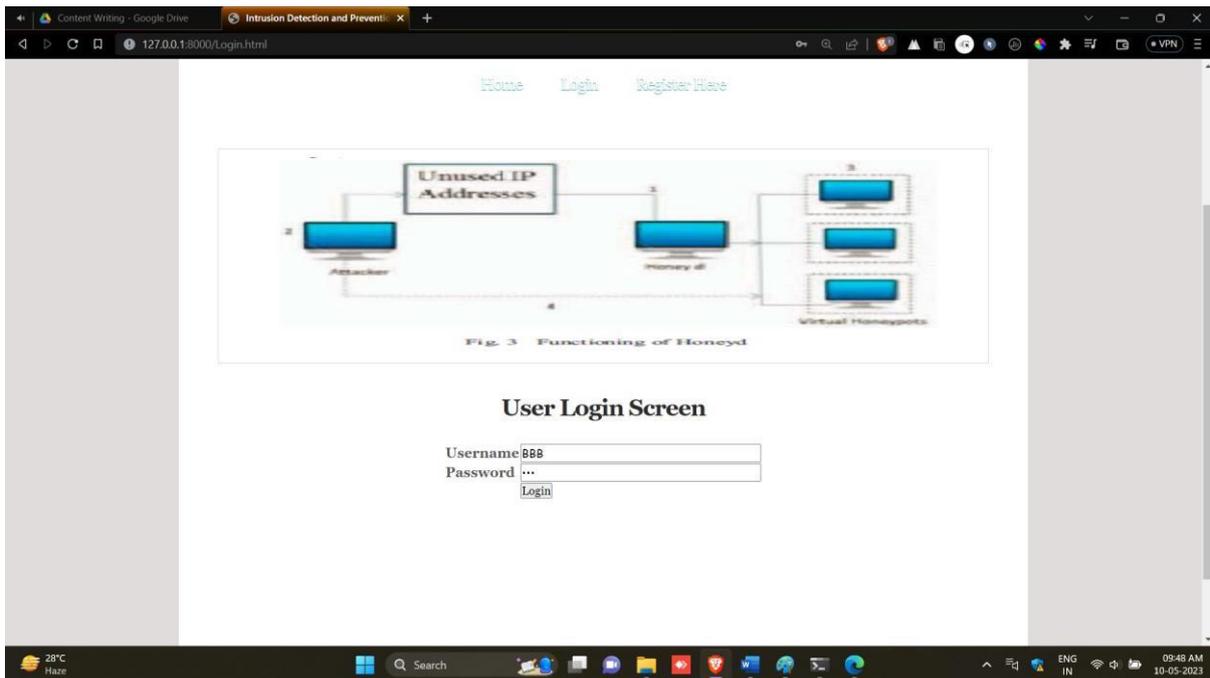
# Upload File Screen

File uploaded successfully

File Password

Upload File  No file chosen

9. You can now download the file by logging out and then logging back in as user bbb on the page above.



# User Login Screen

Username

Password

10. User BBB is logging in on the Screen above, after logging in, the following screen appears

Intrusion Detection and Prevention using Honeyd Network for Cloud Security

Upload File Download File Logout

Fig. 3 Functioning of Honeyd

Welcome : BBB

Welcome : BBB

11. Presently, click the 'Download Record' connection to get the screen displayed underneath.

Intrusion Detection and Prevention using Honeyd Network for Cloud Security

Upload File Download File Logout

Fig. 3 Functioning of Honeyd

User Name	File Name	File Password	Download File
admin	nci.txt	-	<a href="#">Click Here</a>
tru	Sachidanand Minj_FB_page-0001.jpg	-	<a href="#">Click Here</a>
kundan	Honeyd.png	-	<a href="#">Click Here</a>
Monika	uml.png	-	<a href="#">Click Here</a>
Galgotias	BT4427_PR_Review 2.docx	-	<a href="#">Click Here</a>
Galgotias	BT4427_PR_Review 2.docx	-	<a href="#">Click Here</a>
AAA	20230417_165949_0000.png	ASD	<a href="#">Click Here</a>
AAA	2.ETE viva notice.docx	AAA123	<a href="#">Click Here</a>

User Name	File Name	File Password	Download File
admin	nci.txt	-	<a href="#">Click Here</a>
tru	Sachidanand Minj_FB_page-0001.jpg	-	<a href="#">Click Here</a>
kundan	Honeypot.png	-	<a href="#">Click Here</a>
Monika	uml.png	-	<a href="#">Click Here</a>
Galgotias	BT4427_PR_Review 2.docx	-	<a href="#">Click Here</a>
Galgotias	BT4427_PR_Review 2.docx	-	<a href="#">Click Here</a>
AAA	20230417_165949_0000.png	ASD	<a href="#">Click Here</a>
AAA	2.ETE viva notice.docx	AAA123	<a href="#">Click Here</a>

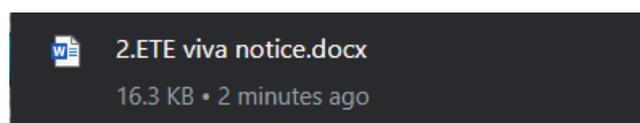
12. Since user AAA has granted him share privilege, the BBB user can view all files shared by other users and the password for each file on the following page. Now, to download the file and view the screen below, any BBB user can click the "[Click Here](#)" link at any time.

User Name	File Name	File Password	Download File
admin	nci.txt	-	<a href="#">Click Here</a>
tru	Sachidanand Minj_FB_page-0001.jpg	-	<a href="#">Click Here</a>
kundan	Honeypot.png	-	<a href="#">Click Here</a>
Monika	uml.png	-	<a href="#">Click Here</a>
Galgotias	BT4427_PR_Review 2.docx	-	<a href="#">Click Here</a>
Galgotias	BT4427_PR_Review 2.docx	-	<a href="#">Click Here</a>
AAA	20230417_165949_0000.png	ASD	<a href="#">Click Here</a>
AAA	2.ETE viva notice.docx	AAA123	<a href="#">Click Here</a>

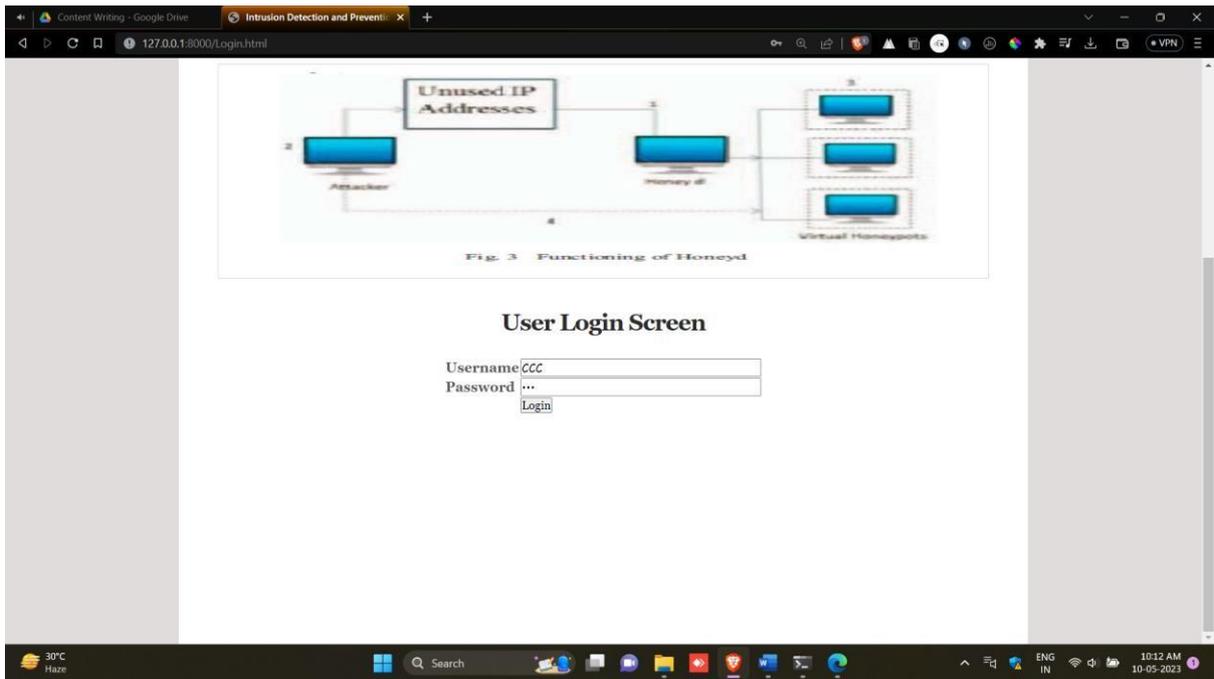
## Download File Screen

File Name   
 Password

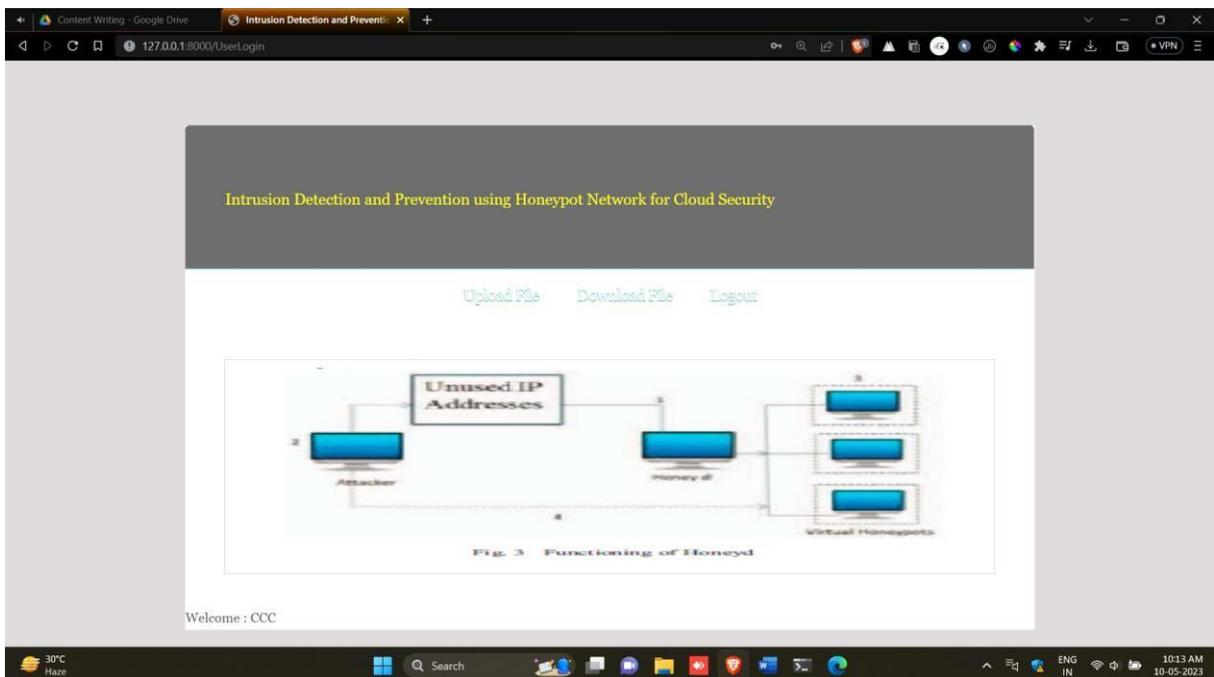
13. On the screen above, user BBB entered the password "AAA123," and the correct password and file will be downloaded in the browser's status bar.



14. The document is downloaded in the status bar on the above screen, and presently logout and login as client ccc, who doesn't have share consent.



15. User ccc is logging in on the previous screen, and after logging in, the following screen appears.



Welcome : CCC

16. The file list that is displayed below can now be obtained by clicking on the "Download File" option on the preceding page.

Content Writing - Google Drive | Intrusion Detection and Preventi... | 127.0.0.1:8000/Download.html

Upload File Download File Logout

Fig. 3 Functioning of Honeyd

User Name	File Name	File Password	Download File
admin	nci.txt	-	<a href="#">Click Here</a>
tru	Sachidanand Minj_FB_page-0001.jpg	-	<a href="#">Click Here</a>
kundan	Honeypot.png	-	<a href="#">Click Here</a>
Monika	uml.png	-	<a href="#">Click Here</a>
Galgotias	BT4427_PR_Review 2.docx	-	<a href="#">Click Here</a>
Galgotias	BT4427_PR_Review 2.docx	-	<a href="#">Click Here</a>
AAA	20230417_165949_0000.png	-	<a href="#">Click Here</a>
AAA	2.ETE viva notice.docx	-	<a href="#">Click Here</a>

30°C Haze | Search | 10:14 AM 10-05-2023

User Name	File Name	File Password	Download File
admin	nci.txt	-	<a href="#">Click Here</a>
tru	Sachidanand Minj_FB_page-0001.jpg	-	<a href="#">Click Here</a>
kundan	Honeypot.png	-	<a href="#">Click Here</a>
Monika	uml.png	-	<a href="#">Click Here</a>
Galgotias	BT4427_PR_Review 2.docx	-	<a href="#">Click Here</a>
Galgotias	BT4427_PR_Review 2.docx	-	<a href="#">Click Here</a>
AAA	20230417_165949_0000.png	-	<a href="#">Click Here</a>
AAA	2.ETE viva notice.docx	-	<a href="#">Click Here</a>

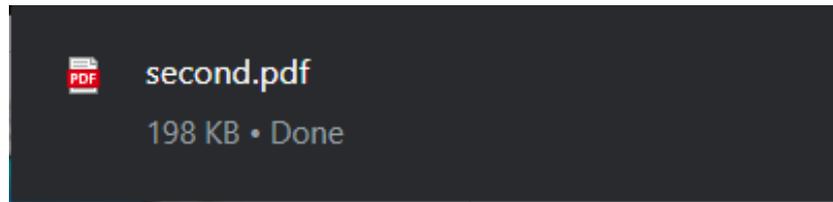
17. In the accompanying page, the ccc client likewise sees a document list, however since he doesn't have share consent, the record secret word is debilitated. Now that he has tried to download the file with a fake password, Honeypot will find him and give him a false response.

## Download File Screen

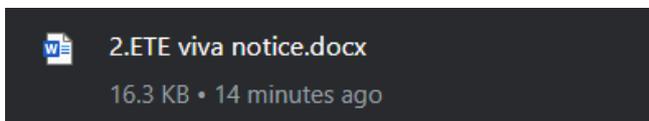
File Name

Password

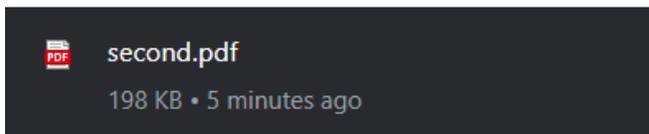
18. A CCC user attempts to download a file using a forged password on the following screen and receives the following response from Honeypot.



19. In the status bar of the above screen, we can see Honeypot serving ccc client a fake document called 'second.pdf' rather than the certified record 'ETE Viva Notice.docx'. In a similar fashion, Honeypot provides a false response in order to gather information from the adversary.



**ORIGINAL DOCUMENT**



**FAKE DOCUMENT  
(SEND BY HONEYPOT)**

## **CHAPTER 8**

### **CONCLUSION AND FUTURE ENHANCEMENT**

#### **8.1 Conclusion**

Any trade or friendship accompanying cloud arrangements or external property should complete activity cloud-located honeypots. Notwithstanding the habit that IT laborers concede possibility be detracting to start the Honeypots, the authentic design bear should for one safety receive-togethers' acknowledge probing for menacing incident. Honeypots should be appropriated by some union that supervises sensitive news in the cloud. Talented foundation chairmen will also proper to audit the logs and answer the facts. Honeypot hindering and record variety maybe by means of differing exceptional open beginning apparatuses. It completely relies upon the chapter of the cloud." The ideal Honeypot for Amazon EC2 will be not equivalent to Microsoft Purplish sky or IBM's cloud." Because of their inclination to appear more established office compartment and attendant active foundations, normal Honeypots are not ideal in sure devoirs. Anyway, they please best when decent freedom ability are steadily checking and divorcing. Human support increases an supplementary tier of safety, and the master ability have the alternative to acknowledge a potential or dangerous assault that has never happened visualized; so, vigilant projects wouldn't show everything." Restarting all that without any preparation is an incredible piece of best practice guidance. The miscreants will be exceptionally acquainted with the default settings of honeypot innovation since it is open source, so they will search for these early advance notice indications of a snare. A climate that values its clients and looks for an extra layer of security for its cloud-based stage should introduce these arrangements.

#### **8.2 Future Scope**

It is fundamental to further evolve cloud freedom likely that the cloud is individual of only a a small quantity of singular changes hold right to reaching large change. In this work, we offer a method for directing dissenter customers that handles Honeypot. Honeypot can be used by businesses to find rogue components. By taking on it, one can rapidly fathom an assailant's way of behaving. Since risks in data innovation are ascending consistently, more measures are vital. Honeypots offer additional security and detection capabilities that may be enhanced with advancements in technology.

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