CHAPTER-1
INTRODUCTION

1.1 Motivation

In recent years, widespread adoption of the internet has resulted in to rapid advancement in information technologies. The internet is used by the general population for the purposes such as financial transactions, educational endeavours, and countless other activities. The use of the internet for accomplishing important tasks, such as transferring a balance from a bank account, always comes with a security risk. Today's web sites strive to keep their users' data confidential and after years of doing secure business online, these companies have become experts in information security. The database systems behind these secure websites store non-critical data along with sensitive information, in a way that allows the information owners quick access while blocking break-in attempts from unauthorized users.

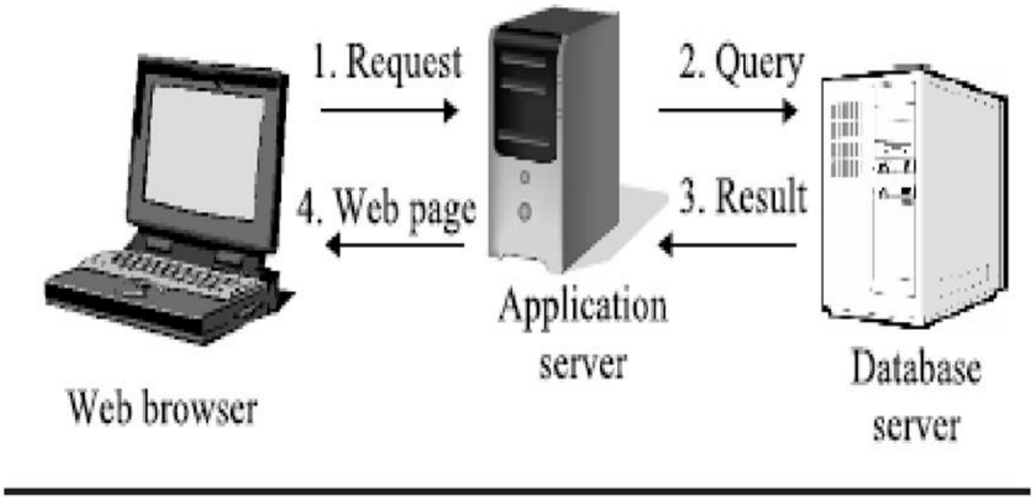


Figure 1.1 "Web application Architecture "
Source: Gary Wassermann ZhendongSu, Sound and Precise Analysis of Web Applications for Injection Vulnerabilities, University of California, Davis, 2007

A web application, based on the above model, takes text as input from users to retrieve information from a database. Some web applications assume that the input is legitimate and use it to build SQL queries to access a database. Since these web applications do not validate user queries before submitting them to retrieve data, they become more susceptible to SQL injection attacks. For example, attackers, posing as normal users, use maliciously crafted input queries containing SQL instructions to produce SQL queries on the web application end. Once processed by the web application, the accepted malicious query may break the security policies of the underlying database architecture because the result of the query might cause the database parser to malfunction and release sensitive information.

1.2Problem Definition

The back-end database is pivotal to the storage of the massive size of big data Internet exchanges stemming from cloud-hosted web applications to Internet of Things (IoT) smart devices. Structured Query Language (SQL) Injection Attack(SQLIA) remains an intruder’s exploit of choice on vulnerable web applications to pilfer confidential data from the database with potentially damaging consequences.

The existing solutions of mostly signature approaches were all before the recent challenges of big data mining and at such lacks the functionality and ability to cope with new signatures concealed in web requests. An alternative Machine Learning(ML) predictive analytics provides a functional and scalable mining to big data in detection and prevention of SQLIA. Unfortunately, lack of availability of readymade robust corpus or data set with patterns and historical data items to train a classifier are issues well known in SQLIA research. In this paper, we explore the generation of data set containing extraction from known attack patterns including SQL tokens and symbols present at injection points. Also, as a test case, we build a web application that expects dictionary word list as vector variables to demonstrate massive quantities of learning data.

The trained classifier to be deployed as a web service that is consumed in a application implementing a web proxy Application Programming Interface (API) to intercept and accurately predict SQLIA in web requests thereby preventing malicious web requests from reaching the protected back-end database. This paper demonstrates a full proof of concept implementation of an ML predictive analytics and deployment of resultant webservice that accurately predicts and prevents SQLIA.

CHAPTER-2
LITERATURE SURVEY

2.1 Introduction

Title: Efficient malicious code detection using N-gram analysis [1]

Abstract

As the use of the internet increases, the distribution of web based malicious code has also vastly increased. By inputting malicious code that can attack vulnerabilities, it enables one to perform various illegal acts, such as SQL Injection and Cross Site Scripting (XSS). Furthermore, an extensive amount of computer, network and human resources are consumed to prevent it. As a result much research is being done to prevent and detecting malicious code. Currently, research is being done on readable sentences which do not use proper grammar. This type of malicious code cannot be classified by previous vocabulary analysis or document classification methods. This paper proposes an approach that results in an effective n-gram feature extraction from malicious code for classifying executable as malicious or benign with the use of Support Vector Machines (SVM) as the machine learning classifier.

Title: Applied web traffic analysis for numerical encoding of SQL injection attack features [2]

Abstract

SQL Injection Attack (SQLIA) remains a technique used by a computer network intruder to pilfer an organization's confidential data. This is done by an intruder re-crafting web form's input and query strings used in web requests with malicious intent to compromise the security of an organization's confidential data stored at the back-end database. There is therefore a need for an automated scalable methodology in the pre-processing of SQLIA features fit for a supervised learning model. However, obtaining a ready-made scalable dataset that is feature engineered with numerical attributes dataset items to train Artificial Neural Network (ANN) and Machine Leaning (ML) models is a known issue in applying artificial intelligence to effectively address ever evolving novel SQLIA signatures. This proposed approach applies numerical attributes encoding ontology to encode features (both legitimate web requests and SQLIA) to numerical data items as to extract scalable dataset for input to a supervised learning model in moving towards a ML SQLIA detection and prevention model. In numerical attributes encoding of features, the proposed model explores a hybrid of static and dynamic pattern matching by implementing a Non-Deterministic Finite Automaton (NFA). This combined with proxy and SQL parser Application Programming Interface (API) to intercept and parse web requests in transition to the back-end database. In developing a solution to address SQLIA, this model allows processed web requests at the proxy deemed to contain injected query string to be excluded from reaching the target back-end database. This paper is intended for evaluating the performance metrics of a dataset obtained by numerical encoding of features ontology in Microsoft Azure Machine Learning (MAML) studio using Two-Class Support Vector Machines (TCSVM) binary classifier. This methodology then forms the subject of the empirical evaluation.

Title: Automated Security Testing of Web-Based Systems Against SQL Injection Attacks [3]

Abstract

Web services are increasingly adopted in various domains, from finance and e-government to social media. As they are built on top of the web technologies, they suffer also an unprecedented amount of attacks and exploitations like the Web. Among the attacks, those that target SQL injection vulnerabilities have consistently been top-ranked for the last years. Testing to detect such vulnerabilities before making web services public is crucial. We present in this paper an automated testing approach, namely µ4SQLi, and its underpinning set of mutation operators. µ4SQLi can produce effective inputs that lead to executable and harmful SQL statements. Executability is key as otherwise no injection vulnerability can be exploited. Our evaluation demonstrated that the approach is effective to detect SQL injection vulnerabilities’ and to produce inputs that bypass application firewalls, which is a common configuration in real world.

2.1 Existing Systems

White-box testing is a static code analysis penetration testing to detect error and correctness. Gould et al. developed a tool named JDBC Checker for code analysis to only detect some SQLIA types but not to prevent. Wassermann and Sue tended white box testing to detect tautology.

Black-box testing is a runtime dynamic penetration testing to detect error and correctness. Applet proposed a machine learning tool to automate penetration testing of Web Application Firewall(WAF) for vulnerabilities which look plausible, but the tool relies heavily on synthetic attack features lacking in reality of new attack signatures.

Hybrid of astatic and dynamic approach employs pattern matching between valid request against dynamic web requests to detect and prevent SQLIA as applied in Halfond & Orsowidely referenced AMNESIA tool to mitigate SQLIA.

2.2 Disadvantage of Existing system

- These are approaches that scaled well in traditional string matching at the time and are not functional in big data scenarios that require predictive analytics techniques.
- Results may not be accurate.

2.3 Proposed System

2.3.1 SQL Injection Detection and Prevention Using Predictive Analytics

In proposed system, we build a predictive analytics web application with quantities of learning data to train a classifier. The learning data are labelled vector matrix, or features of both patterns of dictionary word list (SQLIA negative) and SQL tokens(SQLIA positive).

The contributions this paper makes provide a representative data to train a supervised learning model implementing Support Vector Machine (SVM) algorithm that accurately predicts SQLIA thereby preventing malicious web requests from reaching the target back-end database.

This application uses authentication. The authentication contains two types of categories. They are the admin and the user. The user have the only access for downloading important files. Admin has the access to everything. He/she has the access of can view the attack details on user page and he can view the graphical analysis of the attack and he/she can upload the files of users for their use.

CHAPTER-3
FEASIBILTY STUDY

FEASIBILITY STUDY

The feasibility of the project is analyzed in this phase and business proposal is put forth with a very general plan for the project and some cost estimates. During system analysis the feasibility study of the proposed system is to be carried out. This is to ensure that the proposed system is not a burden to the company.

For feasibility analysis, some understanding of the major requirements for the system is essential.
Three key considerations involved in the feasibility analysis are,

- ECONOMICAL FEASIBILITY
- TECHNICAL FEASIBILITY
- SOCIAL FEASIBILITY

3.1 ECONOMICAL FEASIBILITY

This study is carried out to check the economic impact that the system will have on the organization. The amount of fund that the company can pour into the research and development of the system is limited. The expenditures must be justified. Thus the developed system as well within the budget and this was achieved because most of the technologies used are freely available. Only the customized products had to be purchased.

3.2 TECHNICAL FEASIBILITY

This study is carried out to check the technical feasibility, that is, the technical requirements of the system. Any system developed must not have a high demand on the available technical resources. This will lead to high demands on the available technical resources. This will lead to high demands being placed on the client. The developed system must have a modest requirement, as only minimal or null changes are required for implementing this system.

3.4 SOCIAL FEASIBILITY

The aspect of study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system efficiently. The user must not feel threatened by the system, instead must accept it as a necessity. The level of acceptance by the users solely depends on the methods that are employed to educate the user about the system and to make him familiar with it. His level of confidence must be raised so that he is also able to make some constructive criticism, which is welcomed, as he is the final user of the system.

CHAPER-4
REQUIREMENTS

4.1 Software Requirement Specification

Software Requirement Specification (SRS) is the starting point of the software development activity. It is a complete description of the behaviour of a system which is to be developed. The SRS document enlists all necessary requirements for project development. To derive the requirements we need to have clear and thorough understanding of the product which is to be developed. This is prepared after detailed communication with project team and the customer.

A SRS is a comprehensive description of the intended purpose and environment for software under development. The SRS fully describes what the software will do and how it will be expected to perform.

An SRS minimizes the time and effort required by developers to achieve desired goals and also minimizes the development cost. A good SRS defines how an application will interact with system hardware, other programs and human users in a wide variety of real-world situations.

Characteristics of SRS:

Correct - An SRS is correct if, and only if, every requirement stated therein is one that the software shall meet. Traceability makes this procedure easier and less prone to error.

Unambiguous - An SRS is unambiguous if, and only if, every requirement stated there in has only one interpretation. As a minimum, this requires that each characteristic of the final product be described using a single unique term.

Verifiable – It is verifiable if there exists some finite cost-effective process with which a person or machine check whether software product meets requirements.

Consistent - Consistency refers to internal consistency. If an SRS does not agree with some higher-level document, such as a system requirements specification, then it is not correct. An SRS is internally consistent if, and only if, no subset of individual requirements described in it conflict.

Modifiable – SRS is said to be modifiable if its structure and style are such that any changes to the requirements can be made easily, completely and consistently while retaining the structure and style.

Traceable – SRS is said to be traceable if the origin of each of its requirements is clear and it facilitates the referencing of each requirement in future enhancement.

Ranked for importance or stability – SRS is ranked for importance or stability if each requirement in it has an identifier to indicate either the importance or stability of that particular requirement.

4.1.1 User Requirements

The software requirements specification is produced at the culmination of the analysis task. The function and performance allocated to the software as a part of system engineering and refined by establishing a complex information description, detailed functional and behavioural description, and indication of performance requirements and design constraints, appropriate validation criteria and other data pertinent to requirements.

The major requirement included in this application is to detect and prevent the SQL injection attack. This is the highest level abstraction of the requirement, this to be converted into lower level requirement language in detail. The programmer has to correctly has understood.

4.1.2 Software Requirements

- Operating system: Windows 7 or above.
- Coding Language: Python.
- Front-End: Python.

- Designing: Html, CSS, JavaScript.
- Data Base: MySQL.
- Tools: PyCharm

4.1.3 Hardware Requirements

- CPU type: Intel Pentium V
- Hard Disk: 16 GB available hard disk space (32-bit) or 20GB (64-bit)
- Ram: 4 GB.

CHAPTER-5
ANALYSIS

5.1 Introduction to Django

Django is a high-level Python web framework that enables rapid development of secure and maintainable websites. Built by experienced developers, Django takes care of much of the hassle of web development, so you can focus on writing your app without needing to reinvent the wheel. It is free and open source, has a thriving and active community, great documentation, and many options for free and paid-for support.

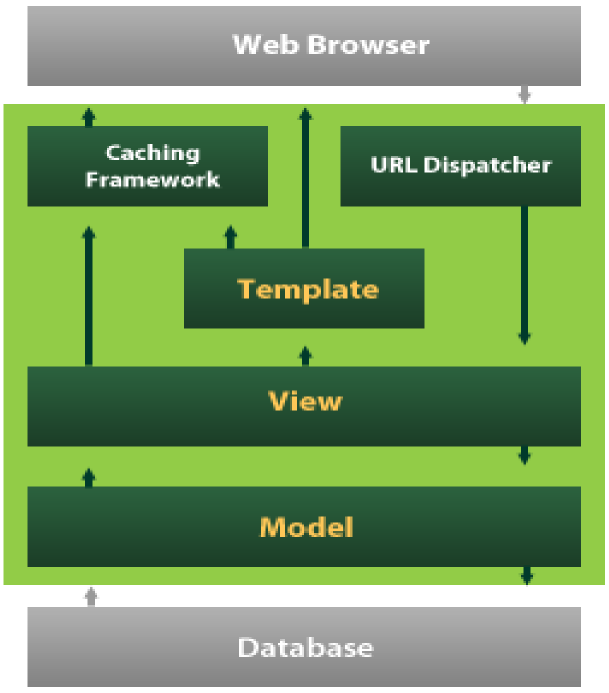


Figure 5.1 Django architecture

1.The URL dispatcher(urls.py)maps the requested URL to a view function and calls it. If caching is enabled, the view function can check to see if a cached version of the page exists and bypass all further steps, returning the cached version, instead. Note that this page-level caching is only one available caching option in Django. You can cache more granularly, as well.

2.The view function(usually in views.py)performs the requested action, which typically involves reading or writing to the database. It may include other tasks, as well.

3.The model(usually in models.py)defines the data in Python and interacts with it. Although typically contained in a relational database (MySQL, PostgreSQL, SQLite, etc.),other data storage mechanisms are possible as well(XML, text files, LDAP ,etc.).

4.After performing any requested tasks, the view returns an HTTP response object(usually after passing the data through a template)to the web browser. Optionally, the view can save a version of the HTTP response object in the caching system for a specified length of time.

5.Templateds typically return HTML pages. The Django template language offers HTML authors a simple-to-learn syntax while providing all the power needed for presentation logic.

Features of Django

- Rapid Development
- Secure
- Scalable
- Fully loaded
- Versatile
- Open Source
- Vast and Supported Community

Rapid Development

Django was designed with the intention to make a framework which takes less time to build web application. The project implementation phase is a very time taken but Django creates it rapidly.

Secure

Django takes security seriously and helps developers to avoid many common security mistakes, such as SQL injection, cross-site scripting, cross-site request forgery etc. Its user authentication system provides a secure way to manage user accounts and passwords.

Scalable

Django is scalable in nature and has ability to quickly and flexibly switch from small to large scale application project.

Fully loaded

Django includes various helping task modules and libraries which can be used to handle common Web development tasks. Django takes care of user authentication, content administration, site maps, RSS feeds etc.

Versatile

Django is versatile in nature which allows it to build applications for different-different domains. Now a days, Companies are using Django to build various types of applications like: content management systems, social networks sites or scientific computing platforms etc.

Open Source

Django is an open source web application framework. It is publicly available without cost. It can be downloaded with source code from the public repository. Open source reduces the total cost of the application development.

Vast and Supported Community

Django is an one of the most popular web framework. It has widely supportive community and channels to share and connect

5.1.1 Advantages of Django framework

Accelerates custom web application development

Django is one of the most mature web frameworks for Python. Its design rules focus extensively on reducing web application development time. The features provided by Django enable developers to build custom web applications rapidly according to varying business requirements. A large percentage of Python programmers even opt for Django when they have to meet both goals and deadlines.

Written in Python

Django is one of the web frameworks which are written in Python programming language. Hence, it becomes easier for programmers to build web applications with clean, readable, and maintainable code by taking advantage of syntax rules of Python. Also, the developers can easily curtail the development time by building custom web applications without writing additional code.

Designed as a batteries-included web framework

Django is one of the web frameworks that adopt the batteries-included approach. While developing a custom web application, Django provides the resources required by developers out of the box. It provides code for common operations like database manipulation, HTML templating, URL routing, session management, and security. The batteries included approach help developers to curtail web application development time significantly.

Supports MVC programming paradigm

Django, like other modern web frameworks, supports model-view-controller (MVC) design rule. The MVC programming paradigm allows programmers to keep a web application's user interface (UI) and business logic layers separated. The approach further helps programmers to simplify and speed up development of large web applications by separating their user interface and business logic layers. Django further allows programmers to reuse the same business logic across multiple projects.

Compatible with major operating systems and databases

Nowadays, users access web applications on various devices and platforms. Django enhances the accessibility of web applications by supporting major operating systems like Windows, Linux and MacOS. At the same time, the ORM system provided by Django makes it easier for programmers to work with several widely used databases. They can even use the ORM system to perform common database operations and migrate from one database to another without writing additional code.

Provides robust security features

The built-in security features provided by Django help developers to protect the web applications from a variety of targeted security attacks – cross-site scripting, SQL injection and cross-site request forgery. At the same time, the web framework enhances the security of web applications by preventing common security mistakes related to Python coding.

5.2 Algorithm

5.2.1 Support Vector Machine

Support Vector Machine (SVM) is one of the most robust and accurate methods in all machine-learning algorithms. It primarily includes Support Vector Classification (SVC) and Support Vector Regression (SVR). The SVC is based on the concept of decision boundaries. A decision boundary separates a set of instances having different class values between two groups. The SVC supports both binary and multi-class classifications. The support vector is the closest point to the separation hyperplane, which determines the optimal separation hyperplane. In the classification process, the mapping input vectors located on the separation hyperplane side of the feature space fall into one class, and the positions fall into the other class on the other side of the plane. In the case of data points that are not linearly separable, the SVM uses appropriate kernel functions to map them into higher dimensional spaces so that they become separable in those spaces.

SVM Advantages

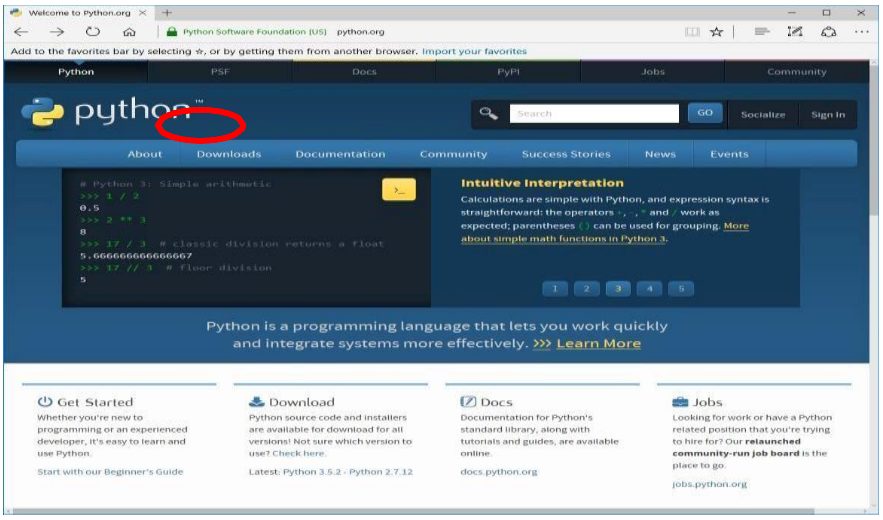
- SVM's are very good when we have no idea on the data.
- Works well with even unstructured and semi structured data like text, Images and trees.
- The kernel trick is real strength of SVM. With an appropriate kernel function, we can solve any complex problem.
- Unlike in neural networks, SVM is not solved for local optima.
- It scales relatively well to high dimensional data.

- SVM models have generalization in practice, the risk of over-fitting is less in SVM.
- SVM is always compared with ANN. When compared to ANN models, SVMs give better results.

5.3Installation of Python

Go towww.python.org

Click “Downloads” Link at the top of the page.



```
# Python 3: Simple arithmetic
>>> 1 / 2
0.5
>>> 2 ** 3
8
>>> 17 / 3  # classic division returns a float
5.666666666666667
>>> 17 // 3  # floor division
5
```

Intuitive Interpretation

Calculations are simple with Python, and expression syntax is straightforward: the operators +, -, * and / work as expected; parentheses () can be used for grouping. More about simple math functions in Python 3.

Python is a programming language that lets you work quickly and integrate systems more effectively. >>> Learn More

Get Started
Whether you're new to programming or an experienced developer, it's easy to learn and use Python.
Start with our Beginner's Guide

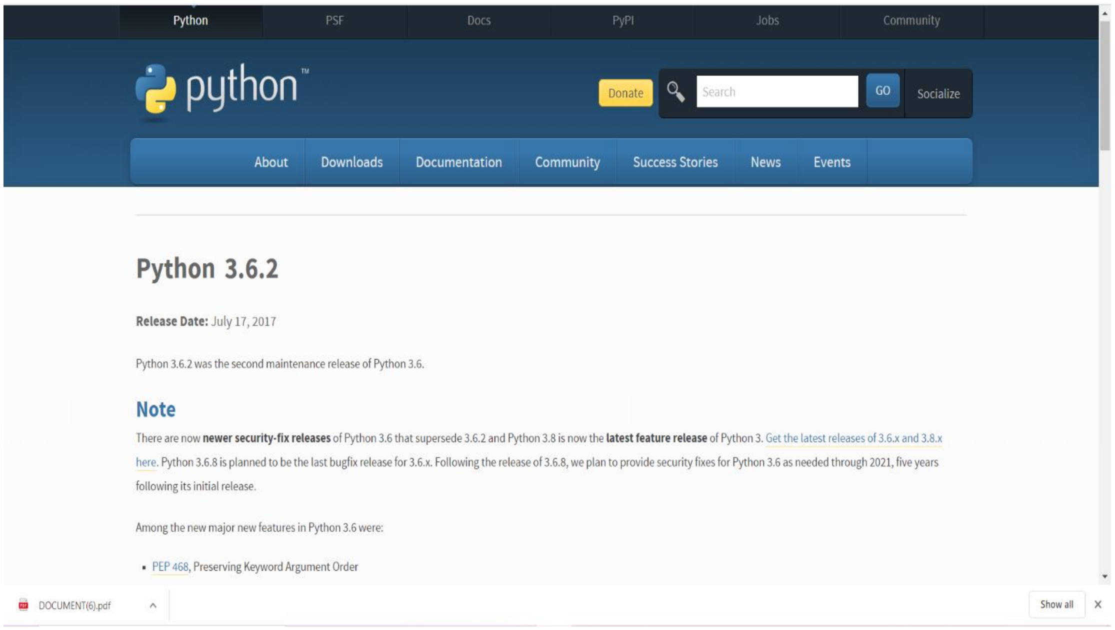
Download
Python source code and installers are available for download for all versions! Not sure which version to use? Check here.
Latest: Python 3.5.2 - Python 2.7.12

Docs
Documentation for Python's standard library, along with tutorials and guides, are available online.
docs.python.org

Jobs
Looking for work or have a Python related position that you're trying to hire for? Our **relaunched community-run job board** is the place to go.
jobs.python.org

Figure 5.3.1 Python Welcome Window

Click “Download Python 3.6.2” or whatever the 3.X version currently is:



Python 3.6.2

Release Date: July 17, 2017

Python 3.6.2 was the second maintenance release of Python 3.6.

Note

There are now **newer security-fix releases** of Python 3.6 that supersede 3.6.2 and Python 3.8 is now the **latest feature release** of Python 3. Get the latest releases of 3.6.x and 3.8.x here. Python 3.6.8 is planned to be the last bugfix release for 3.6.x. Following the release of 3.6.8, we plan to provide security fixes for Python 3.6 as needed through 2021, five years following its initial release.

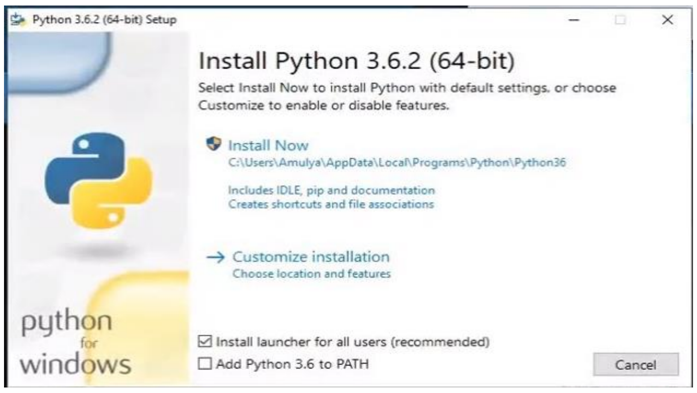
Among the new major new features in Python 3.6 were:

- PEP 468, Preserving Keyword Argument Order

Figure 5.3.2 Download python

- When the installation window comes up, click “Install Now”
- You can choose to check the “Install launcher for all users (recommended) or not either way should be OK
- You can choose to “Add Python 3.6 to PATH” or not – either way should be OK Note: Depending on how Windows is set up, you might need to provide an administrator password to install on your system at this point.
- You can choose to “Customize Installation” if you want, especially if you want to install to a location other than the default one shown. Generally, I recommend installing to the default location unless you have a problem doing so.

In any case, you might want to note the location of the installation in case you have difficulty later. If you are specifying the location yourself, put it in a location you are likely to easily find/remember.



Install Python 3.6.2 (64-bit)

Select Install Now to install Python with default settings, or choose Customize to enable or disable features.

Install Now
C:\Users\Amulya\AppData\Local\Programs\Python\Python36

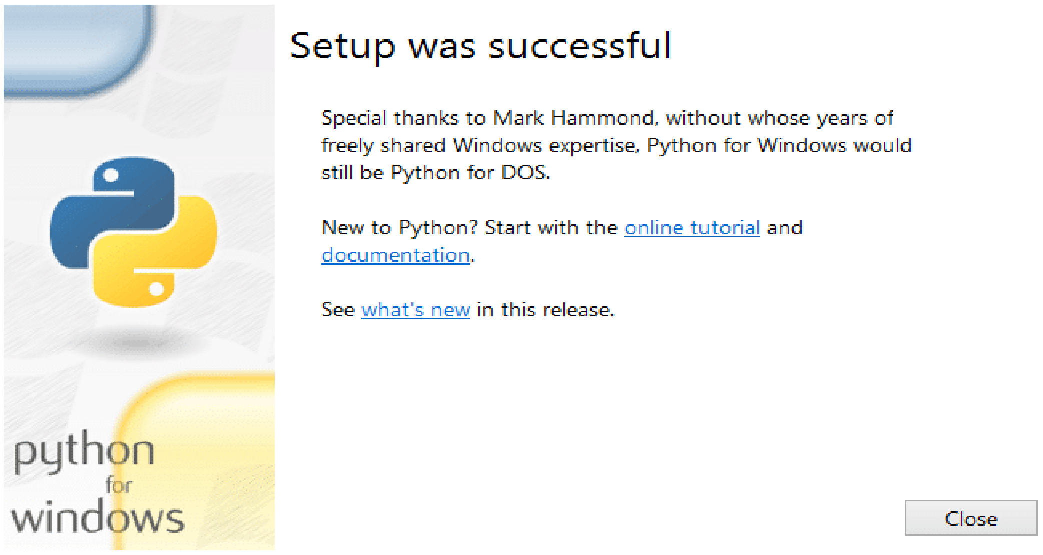
Includes IDLE, pip and documentation
Creates shortcuts and file associations

→ Customize installation
Choose location and features

☑ Install launcher for all users (recommended)
☐ Add Python 3.6 to PATH

5.3.3 Installation window

- You should see Python installing at this point. When it finishes, you should see a screen that says the installation was successful. You can click “Close”



Setup was successful

Special thanks to Mark Hammond, without whose years of freely shared Windows expertise, Python for Windows would still be Python for DOS.

New to Python? Start with the online tutorial and documentation.

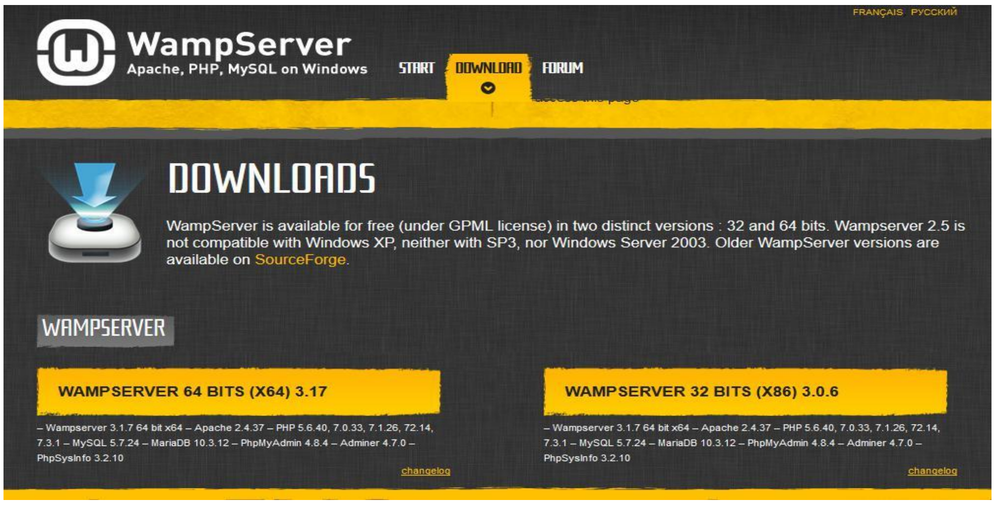
See what's new in this release.

Figure 5.3.4 Installation Completed Window

5.4 Installing WAMP Server

1: Download the WAMP Server

Go to the official website www.wampserver.com/en/ and download the WampServer setup. There are two versions of WampServer are available i.e. 64-bits (x64) and 32-bits (x86), choose according to your computer's configuration.



DOWNLOADS

WampServer is available for free (under GPML license) in two distinct versions : 32 and 64 bits. Wampserver 2.5 is not compatible with Windows XP, neither with SP3, nor Windows Server 2003. Older WampServer versions are available on SourceForge.

WAMPSERVER

WAMPSERVER 64 BITS (X64) 3.17

– Wampserver 3.1.7 64 bit x64 – Apache 2.4.37 – PHP 5.6.40, 7.0.33, 7.1.26, 72.14, 7.3.1 – MySQL 5.7.24 – MariaDB 10.3.12 – PhpMyAdmin 4.8.4 – Adminer 4.7.0 – PhpSysInfo 3.2.10

changelog

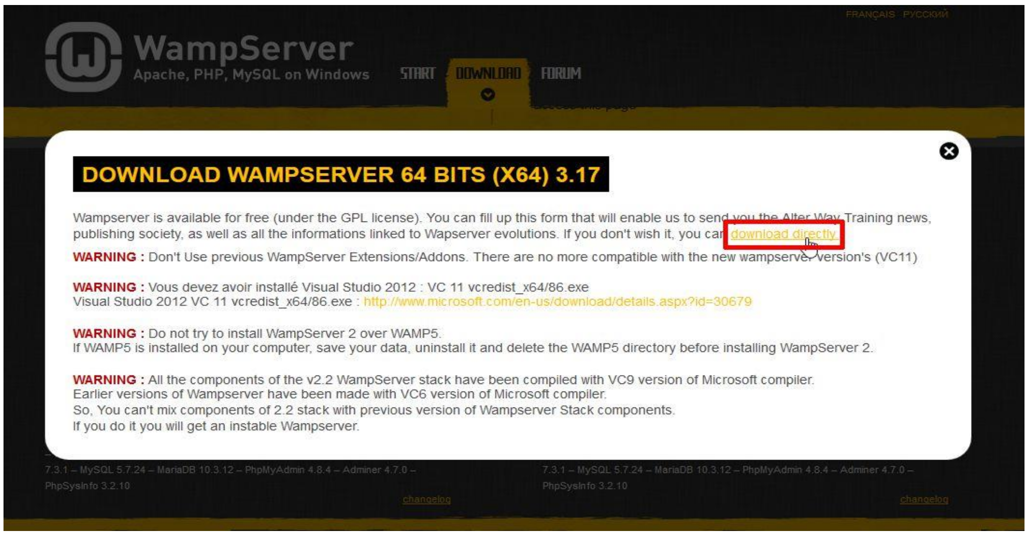
WAMPSERVER 32 BITS (X86) 3.0.6

– Wampserver 3.1.7 64 bit x64 – Apache 2.4.37 – PHP 5.6.40, 7.0.33, 7.1.26, 72.14, 7.3.1 – MySQL 5.7.24 – MariaDB 10.3.12 – PhpMyAdmin 4.8.4 – Adminer 4.7.0 – PhpSysInfo 3.2.10

changelog

Figure 5.4.1 Downloading WampServer

As soon as you will click on the download option, a pop up will appears showing some warnings. Just don't worry about these warning rather simply click on the link "download directly" like shown below and move ahead with the download process.



DOWNLOAD WAMPSERVER 64 BITS (X64) 3.17

Wampserver is available for free (under the GPL license). You can fill up this form that will enable us to send you the Alter Way Training news, publishing society, as well as all the informations linked to Wapserver evolutions. If you don't wish it, you can download directly

WARNING : Don't Use previous WampServer Extensions/Addons. There are no more compatible with the new wampserver version's (VC11)

WARNING : Vous devez avoir installé Visual Studio 2012 : VC 11 vcredist_x64/86.exe
Visual Studio 2012 VC 11 vcredist_x64/86.exe : http://www.microsoft.com/en-us/download/details.aspx?id=30679

WARNING : Do not try to install WampServer 2 over WAMP5.
If WAMP5 is installed on your computer, save your data, uninstall it and delete the WAMP5 directory before installing WampServer 2.

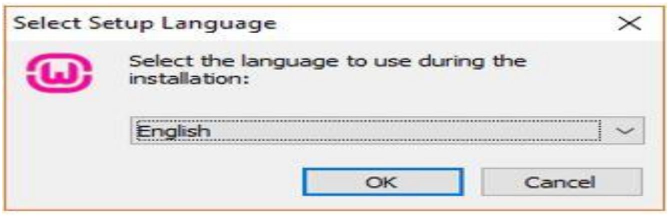
WARNING : All the components of the v2.2 WampServer stack have been compiled with VC9 version of Microsoft compiler.
Earlier versions of Wampserver have been made with VC6 version of Microsoft compiler.
So, You can't mix components of 2.2 stack with previous version of Wampserver Stack components.
If you do it you will get an instable Wampserver.

7.3.1 – MySQL 5.7.24 – MariaDB 10.3.12 – PhpMyAdmin 4.8.4 – Adminer 4.7.0 – PhpSysInfo 3.2.10 changelog

7.3.1 – MySQL 5.7.24 – MariaDB 10.3.12 – PhpMyAdmin 4.8.4 – Adminer 4.7.0 – PhpSysInfo 3.2.10 changelog

2: WAMP server Installation

Run the setup and select the language in which you want to install the Wamp server or Windows 10.

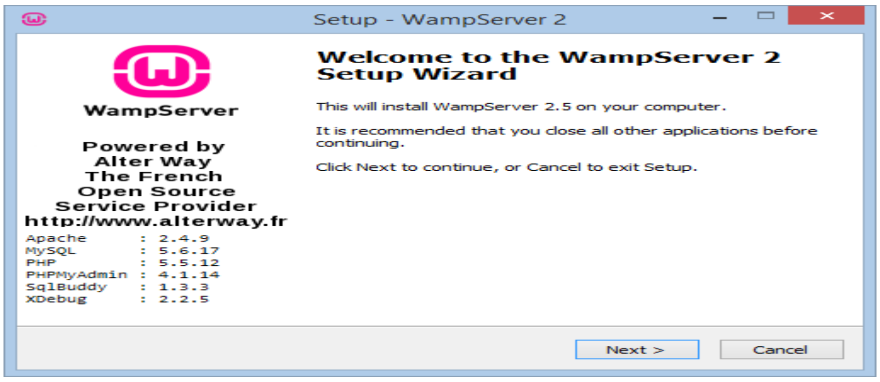

Select Setup Language

Select the language to use during the installation:

English

Figure 5.4.2 Choosing language

Click next to continue


Setup - WampServer 2

WampServer

Powered by
Alter Way
The French
Open Source
Service Provider
http://www.alterway.fr

```
Apache      : 2.4.9
MySQL       : 5.6.17
PHP         : 5.5.12
PHPMyAdmin  : 4.1.14
SqlBuddy    : 1.3.3
XDebug      : 2.2.5
```

Welcome to the WampServer 2 Setup Wizard

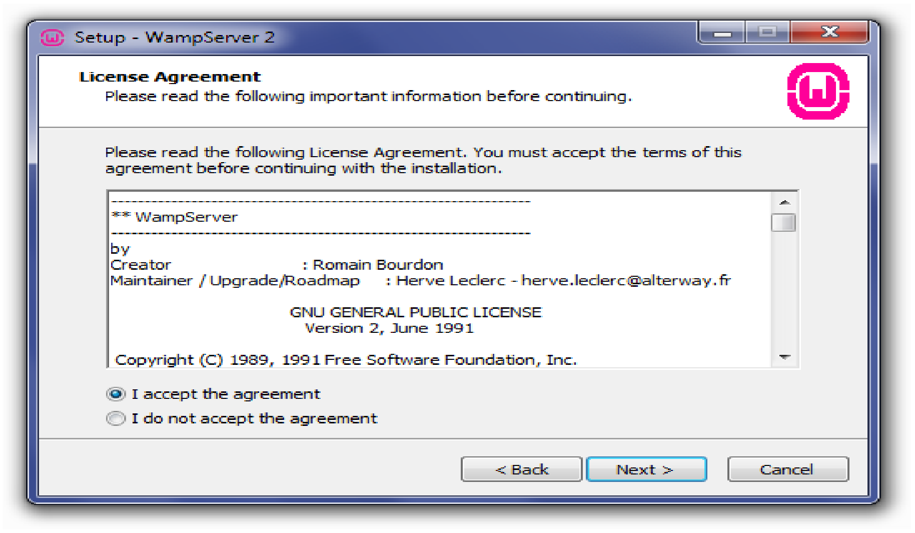
This will install WampServer 2.5 on your computer.

It is recommended that you close all other applications before continuing.

Click Next to continue, or Cancel to exit Setup.

Figure 5.4.3 Setup WampServer

Select the "I accept the agreement"


Setup - WampServer 2

License Agreement
Please read the following important information before continuing.

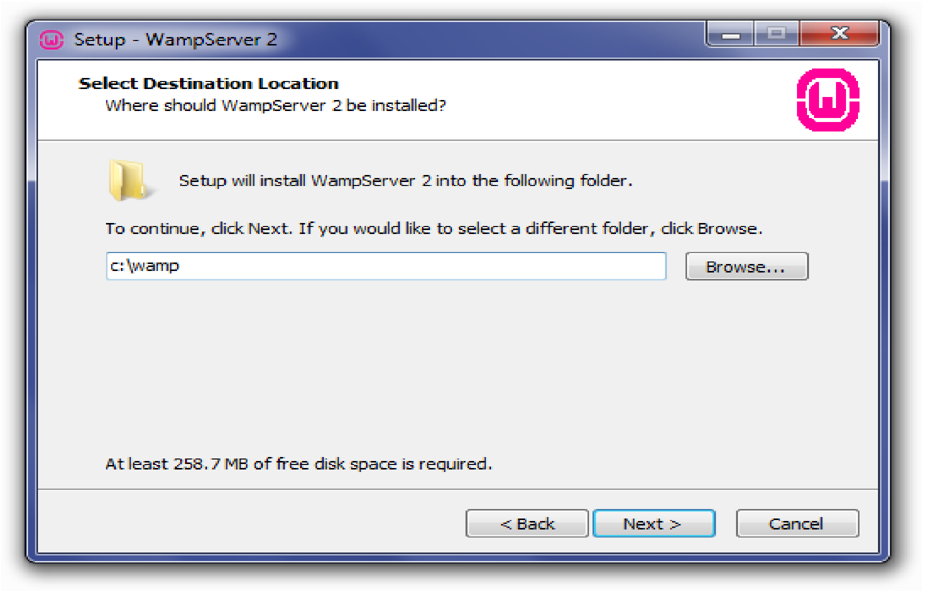
Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.

```
-----------------------------------------------------------------
** WampServer
-----------------------------------------------------------------
by
Creator                    : Romain Bourdon
Maintainer / Upgrade/Roadmap    : Herve Leclerc - herve.leclerc@alterway.fr

                     GNU GENERAL PUBLIC LICENSE
                       Version 2, June 1991

 Copyright (C) 1989, 1991 Free Software Foundation, Inc.
```

[✓ I accept the agreement]
I do not accept the agreement

Figure 5.4.4 Accept the license agreement to continue installation

Basically here we can configure installation location in local PC hard drive. So, type in the exact location and click next to move with further steps.


Setup - WampServer 2

Select Destination Location
Where should WampServer 2 be installed?

Setup will install WampServer 2 into the following folder.

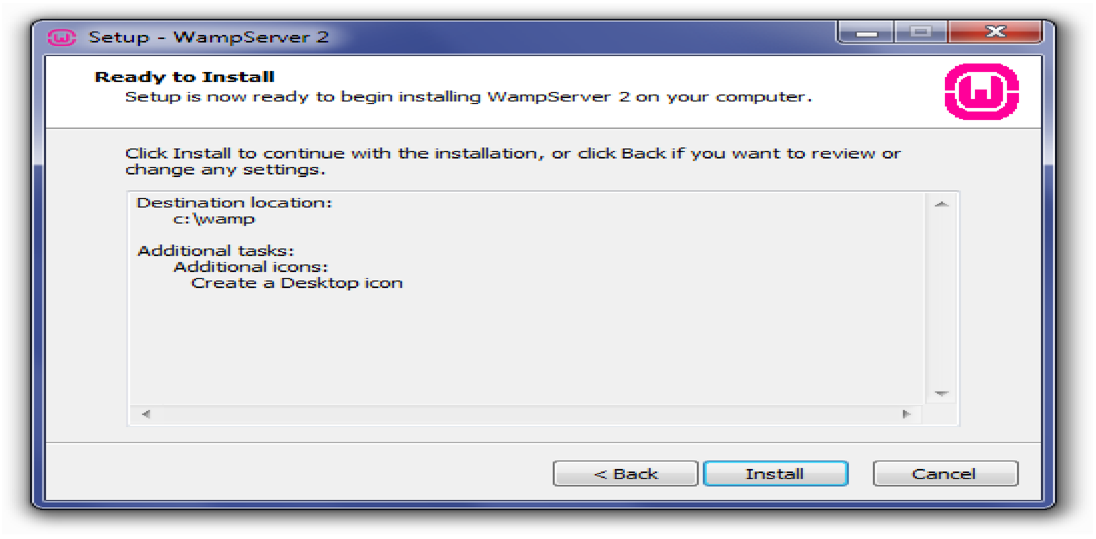
To continue, click Next. If you would like to select a different folder, click Browse.

c:\wamp

At least 258.7 MB of free disk space is required.

Figure 5.4.5 Setup location to store files

Next screen is a screen where we can set the icons both in Windows Quick Launch & Desktop. For example if we want to show the desktop icon we'll tick the square box in front of that option.



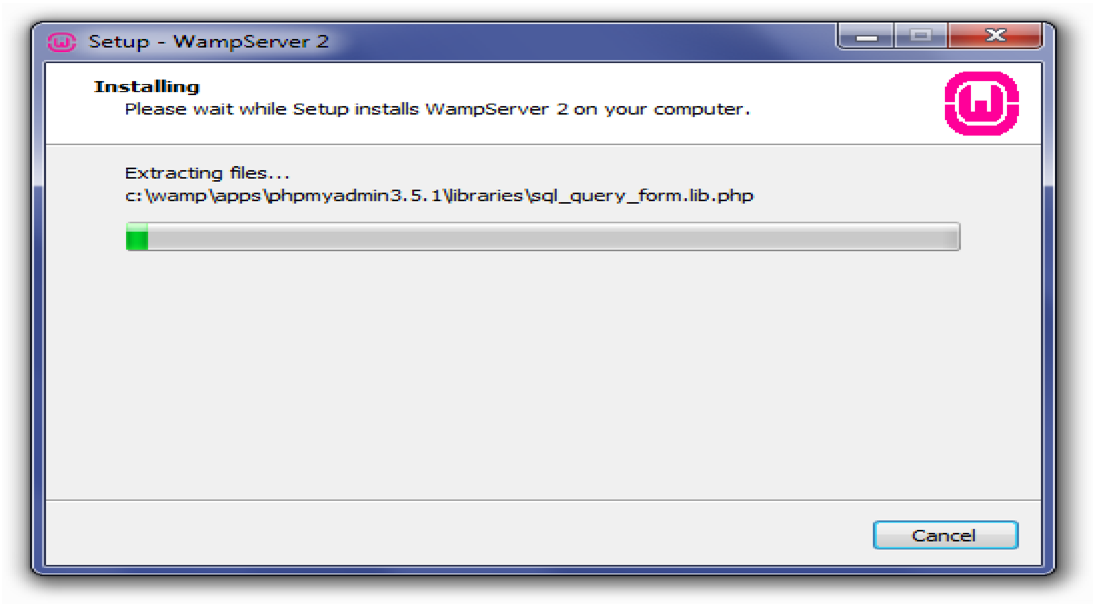
Ready to Install
Setup is now ready to begin installing WampServer 2 on your computer.

Click Install to continue with the installation, or click Back if you want to review or change any settings.

Destination location:
c:\wamp

Additional tasks:
Additional icons:
Create a Desktop icon

However by clicking next we're finally on the installation. Here the screen also show the options selected for installation to review. If everything goes right click Install and it'll begin to extract the files to install.



Installing
Please wait while Setup installs WampServer 2 on your computer.

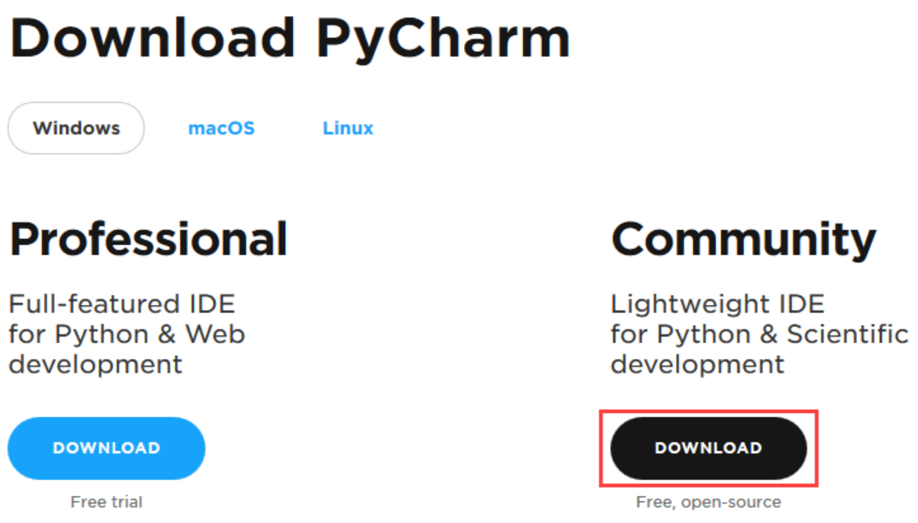
Extracting files...
c:\wamp\apps\phpmyadmin3.5.1\libraries\sql_query_form.lib.php

Figure 5.4.6 Installing WampServer

5.5 Installation of PyCharm

Installing PyCharm

Step1) To download PyCharm visit the website: https://www.jetbrains.com/pycharm/download/ Click the DOWNLOAD" link under the Community Section.



Download PyCharm

Windows macOS Linux

Professional

Full-featured IDE for Python & Web development

DOWNLOAD

Free trial

Community

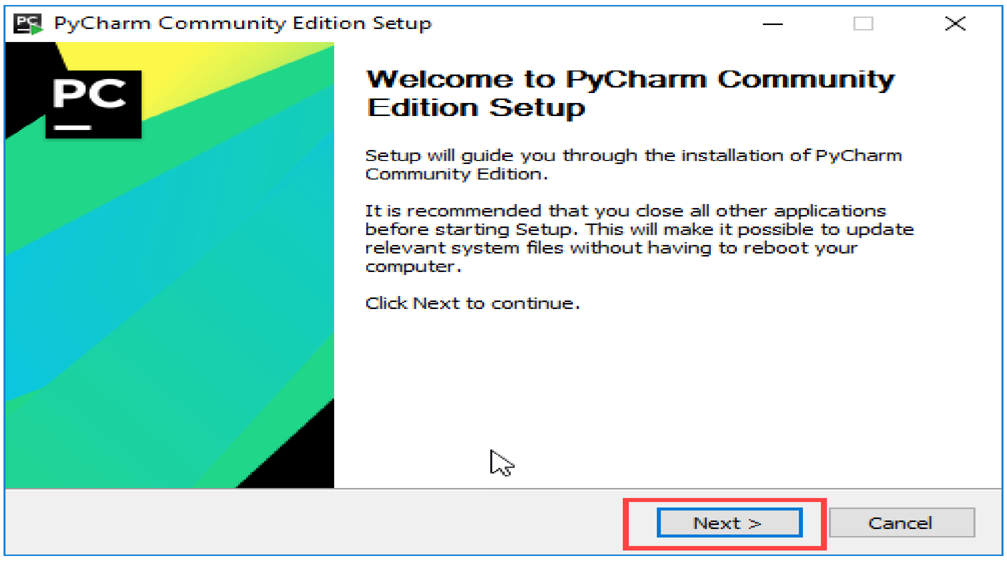
Lightweight IDE for Python & Scientific development

DOWNLOAD

Free, open-source

Figure 5.5.1 Downloading PyCharm

Step 2) Once the download is complete, run the exe for install PyCharm. The setup wizard should have started. Click "Next".



PyCharm Community Edition Setup

Welcome to PyCharm Community Edition Setup

Setup will guide you through the installation of PyCharm Community Edition.

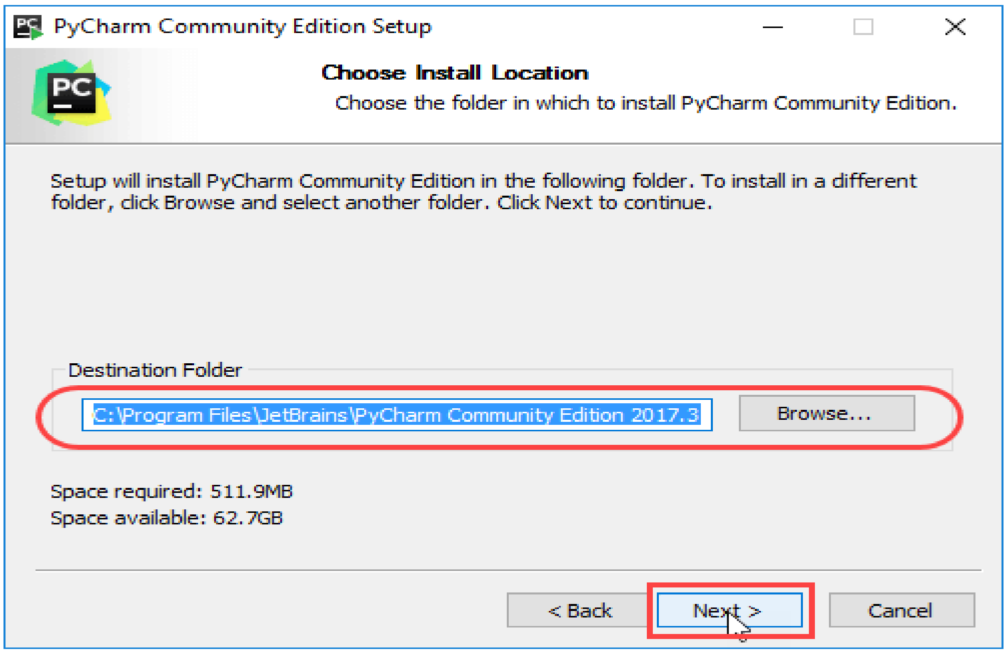
It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.

Click Next to continue.

Next > Cancel

Figure 5.5.2 Setup PyCharm

Step 3) On the next screen, Change the installation path if required. Click "Next".


PyCharm Community Edition Setup

Choose Install Location

Choose the folder in which to install PyCharm Community Edition.

Setup will install PyCharm Community Edition in the following folder. To install in a different folder, click Browse and select another folder. Click Next to continue.

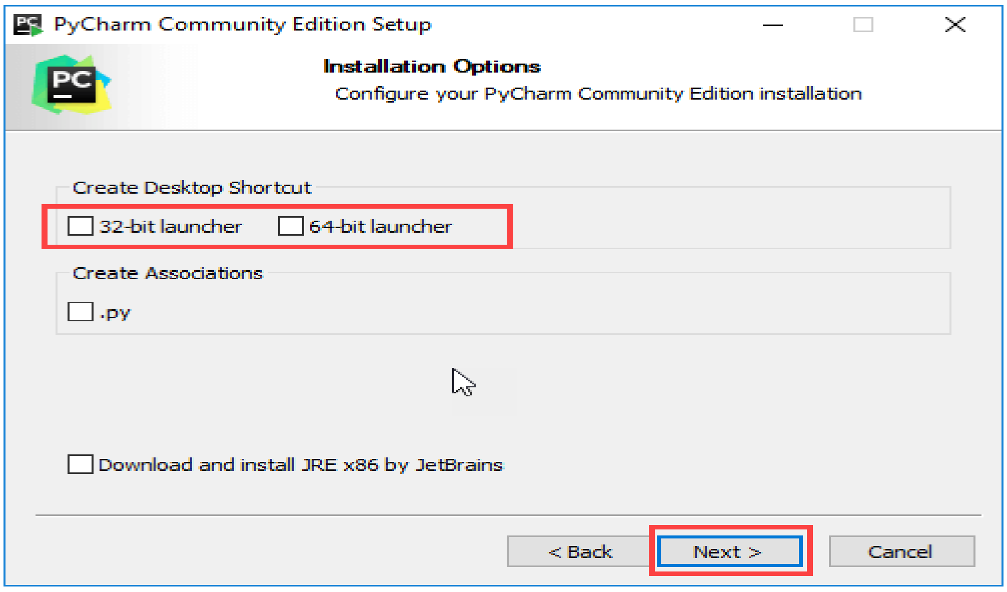
Destination Folder

C:\Program Files\JetBrains\PyCharm Community Edition 2017.3

Space required: 511.9MB
Space available: 62.7GB

Figure 5.5.3 Select location

Step 4) On the next screen, you can create a desktop shortcut if you want and click on "Next".


PyCharm Community Edition Setup

Installation Options

Configure your PyCharm Community Edition installation

Create Desktop Shortcut

☐ 32-bit launcher ☐ 64-bit launcher

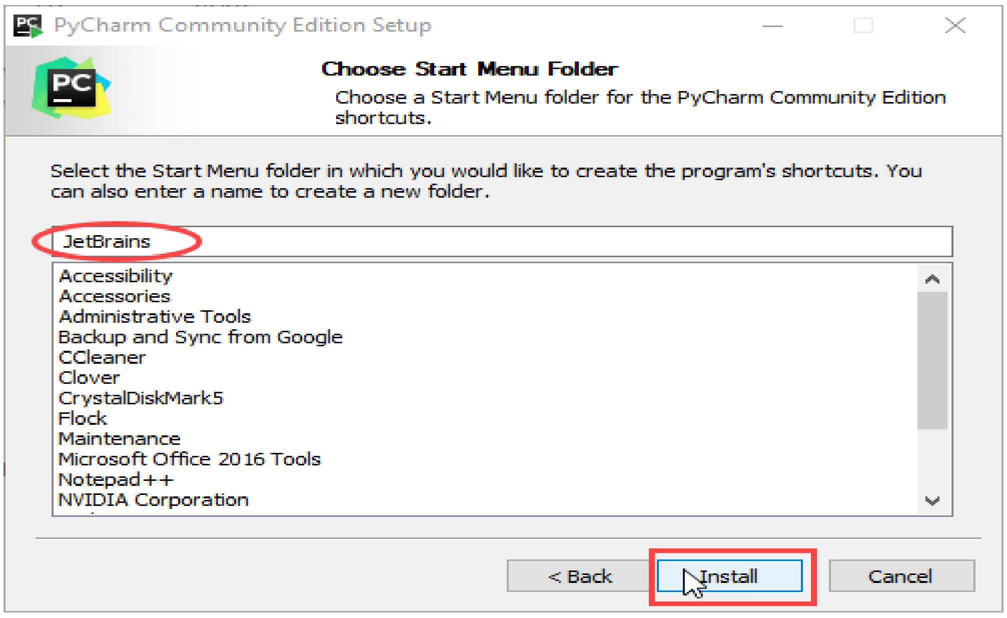
Create Associations

☐ .py

☐ Download and install JRE x86 by JetBrains

Figure 5.5.4 Installation options

Step 5) Choose the start menu folder. Keep selected JetBrains and click on "Install".


PyCharm Community Edition Setup

Choose Start Menu Folder

Choose a Start Menu folder for the PyCharm Community Edition shortcuts.

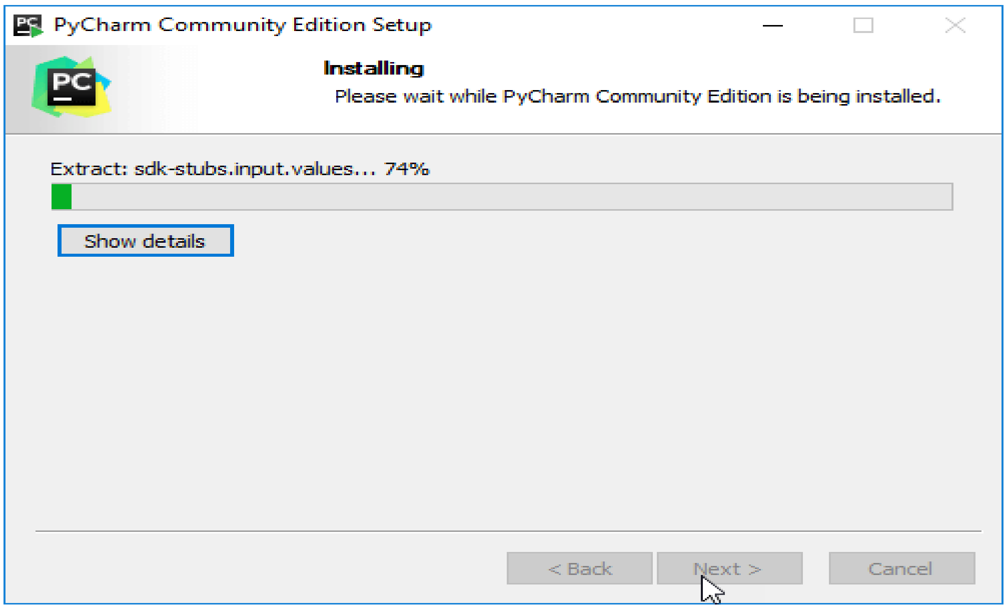
Select the Start Menu folder in which you would like to create the program's shortcuts. You can also enter a name to create a new folder.

JetBrains

Accessibility
Accessories
Administrative Tools
Backup and Sync from Google
CCleaner
Clover
CrystalDiskMark5
Flock
Maintenance
Microsoft Office 2016 Tools
Notepad++
NVIDIA Corporation

Figure 5.5.5 Choose Start menu folder

Step 6) Wait for the installation to finish.


PyCharm Community Edition Setup

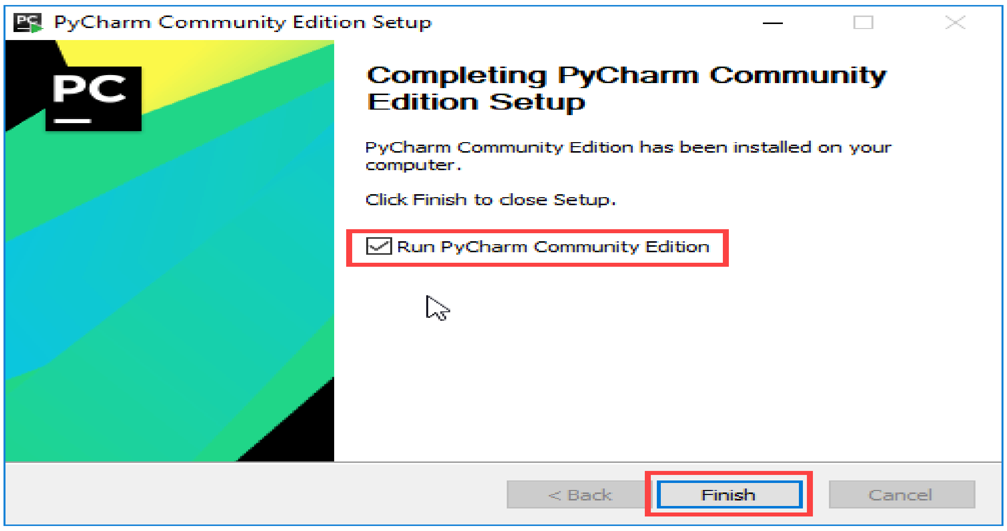
Installing

Please wait while PyCharm Community Edition is being installed.

Extract: sdk-stubs.input.values... 74%

Figure 5.5.6 Installing PyCharm

Step 7) Once installation finished, you should receive a message screen that PyCharm is installed. If you want to go ahead and run it, click the "Run PyCharm Community Edition" box first and click "Finish".


PyCharm Community Edition Setup

Completing PyCharm Community Edition Setup

PyCharm Community Edition has been installed on your computer.

Click Finish to close Setup.

☑ Run PyCharm Community Edition

< Back | Finish | Cancel

Figure 5.5.7 Leave the Run PyCharm Community Edition check box checked to run this software.

5.6 Modules used

- DJANGO
- MYSQLCLIENT
- PANDAS
- SKLEARN

5.7 HTML

Hyper Text Mark up Language is a structural mark-up language used to create and format web document. A mark-up language such as HTML is simply a collection of codes, called Elements that are used to indicate the structure and format of a document. A user agent, usually a web browser that renders the document, interprets the meaning of these codes to figure how to structure or display a document. HTML is not invention but it is an improved version of Standard Generalized Mark-up Language (SGML).

HTML in the following four stages:

- Level-0 included only the basic structural elements and assured that all browsers supported all features.
- Level-1 advanced features included highlighted text and graphics that were supported depending on the browser capability.

- Level –2 introduced the World Wide Web as an interactive medium and the feature of fill out forms on the Internet.
- Level-3 introduced frames, inline, video, sound, etc.

5.7.1 Importance of HTML

- HTML can be used to display any type of document on the host computer, which can be geographical at a different location.
- It is a versatile language and can be used on any platform or desktop.
- The appearance of a Web page is important, and HTML provides tags to make the document look attractive. Using graphics, fonts, different sizes, color, etc. can enhance the presentation of the document.

5.7.2 Functionality of HTML in the project

As we know this is purely web-based project. This helps to embed PHP Pages with the page using some simple tags.

- Used to design the forms.
- Admin can communicate easily with server.

CHAPTER-6
DESIGN

System engineering and analysis encompasses requirements gathering at the system level with a small amount of top level analysis design. Information engineering encompasses requirements at the strategic business level and at the business area level.

6.1 UML Introduction

The unified modelling language allows the software engineer to express an analysis model using the modelling notation that is governed by a set of syntactic, semantic and pragmatic rules. A UML system is represented using five different views that describe the system from distinctly different perspective.

- UML is specifically constructed through two different domains they are:
- UML Analysis modelling, this focuses on the user model and structural model views of
- the system.
- UML design modelling, which focuses on the behavioural modelling, implementation
- modelling and environmental model views.

6.2 Why Use UML in Projects?

As the strategic value of software increases for many companies, the industry looks for techniques to automate the production of software and to improve quality and reduce cost and time-to-market. These techniques include component technology, visual programming, patterns and frameworks. Businesses also seek techniques to manage the complexity of systems as they increase in scope and scale. In particular, they recognize the need to solve recurring architectural problems, such as physical distribution, concurrency, replication, security, load balancing and fault tolerance.

Additionally, the development for the World Wide Web, while making some things simpler, has exacerbated these architectural problems. The Unified Modelling

Language(UML) was designed to respond to these needs. Simply, Systems design refers to the process of defining the architecture, components, modules, interfaces and data for a system to satisfy specified requirements which can be does easily through UML diagrams.
In this project two basic UML diagrams have been explained

1. Class Diagrams
2. Use Case Diagrams
3. Sequence Diagrams
4. Activity Diagrams
5. Collaboration Diagrams
6. Deployment Diagrams
7. State Chart Diagrams
8. Component Diagrams

Class Diagrams

In software engineering, a class diagram in the Unified Modeling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, and the relationships between the classes.This is one of the most important of the diagrams in development. The diagram breaks the class into three layers. One has the name, the second describes its attributes and the third its methods. A padlock to left of the name represents the private attributes. The relationships are drawn between the classes. Developers use the Class Diagram to develop the classes. Analyses use it to show the details of the system.

Architects look at class diagrams to see if any class has too many functions and see if they are required to be split.

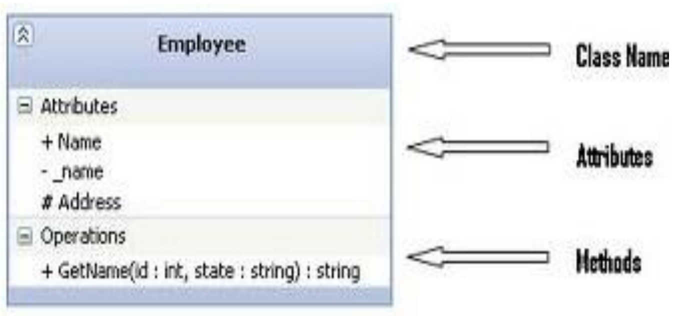


Figure 6.2.1 Class Structure

Use Case Diagrams

In software engineering, a use case diagram in the Unified Modeling Language (UML) is a type of behavioral diagram defined by and created from a Use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases. The main purpose of a use case diagram is to show what system functions are performed for which actor. Roles of the actors in the system can be depicted. Use cases are used during requirements elicitation and analysis to represent the functionality of the system. Use cases focus on the behavior of the system from the external point of view. The actors are outside the boundary of the system, whereas the use cases are inside the boundary of the system

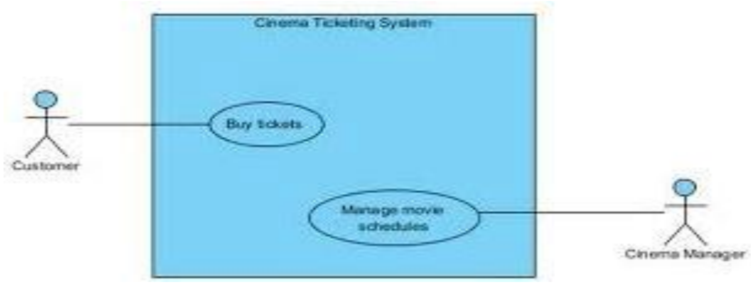


Figure 6.2.2 Actors and Use cases

Sequence Diagrams

A sequence diagram in Unified Modeling Language (UML) is a kind of interaction diagram that shows how processes operate with one another and in what order. It is a construct of a Message Sequence Chart. Sequence diagrams are sometimes called Event-trace diagrams, event scenarios, and timing diagrams

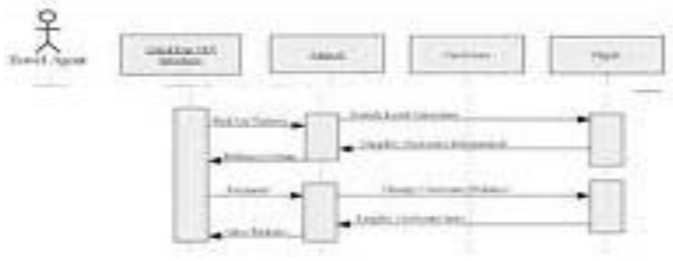


Figure 6.2.3 Objects and Timestamps

Activity Diagrams

Activity diagrams are a loosely defined diagram technique for showing workflows of stepwise activities and actions, with support for choice, iteration and concurrency. In the Unified Modeling Language, activity diagrams can be used to describe the business and operational step-by-step workflows of components in a system. An activity diagram shows the over rill flow of control.

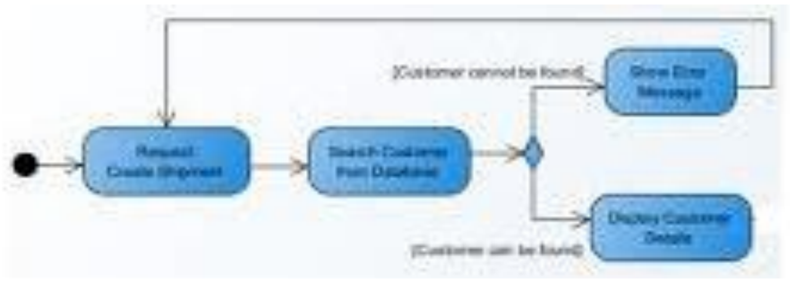


Figure 6.2.4 Activities

Collaboration Diagrams

A Communication diagram models the interactions between objects or parts in terms of sequenced messages. Communication diagrams represent a combination of information taken from Class, Sequence, and Use Case Diagrams describing both the static structure and dynamic behavior of a system.

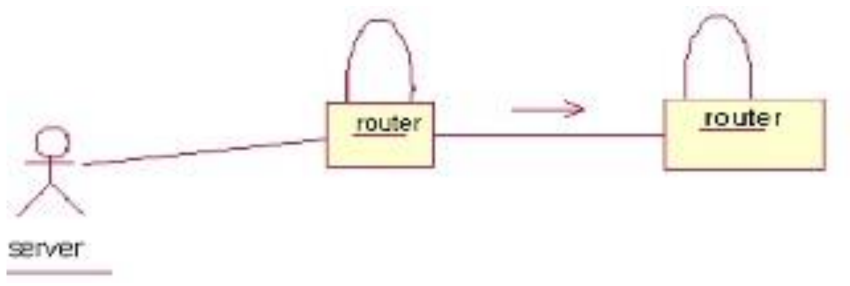


Figure 6.2.5 Collaborations

Deployment Diagrams

A deployment diagram in the Unified Modeling Language models the physical deployment of artifacts on nodes. To describe a web site, for example, a deployment diagram would show what hardware components ("nodes") exist (e.g., a web server, an application server, and a database server), what software components ("artifacts") run on each node (e.g., web application, database), and how the different pieces are connected (e.g. JDBC, REST, RMI).

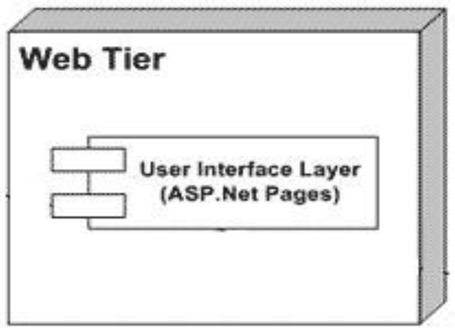


Figure 6.2.6 Deployment

State Chart Diagrams

A state diagram is a type of diagram used in computer science and related fields to describe the behavior of systems. State diagrams require that the system described is composed of a finite number of states; sometimes, this is indeed the case, while at other times this is a reasonable abstraction. Many forms of state diagrams exist, which differ slightly and have different semantics.

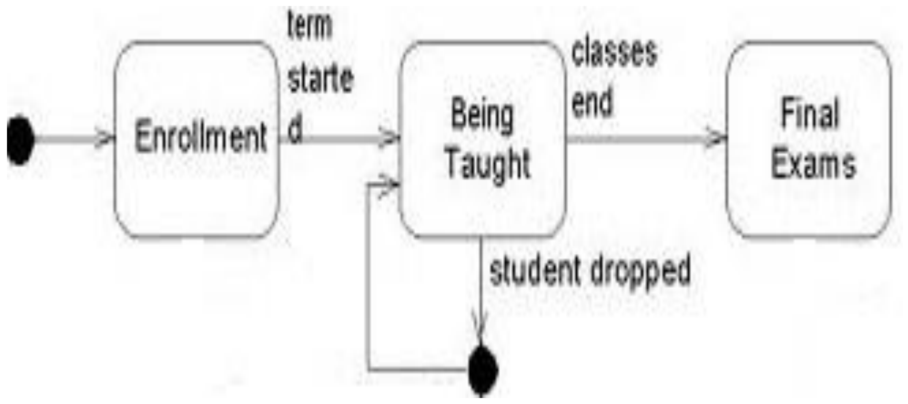


Figure 6.2.7 States and Relationships

Component Diagrams

In the Unified Modeling Language, a component diagram depicts how components are wired together to form larger components and or software systems. They are used to illustrate the structure of arbitrarily complex systems.

User Interface Layer
(ASP.Net Pages)

Figure 6.2.8 Components

These are different diagrams are available in a UML. Each diagram will be used for specific purpose. All diagrams programmers mainly used class diagram in order to generate code this kind of technique is called as forward engineering. That means here we convert model into code. If you convert code into model that kind of process is called as backward engineering.

6.3 Diagrams

6.3.1 UML Diagrams

UML stands for Unified Modelling Language. UML is a standardized general-purpose modelling language in the field of object-oriented software engineering. The standard is managed, and was created by, the Object Management Group.

The goal is for UML to become a common language for creating models of object-oriented computer software. In its current form UML is comprised of two major components, a Meta-model and a Notation. In the future, some form of method or process may also be added to or associated with, UML.

The Unified Modelling Language is a standard language for Specifying, Visualization, Constructing and documenting the artifacts of software system, as well as for business modelling and other non-software systems. The UML represents a collection of best engineering practices that have proven successful in the modelling of large and complex systems.

The UML is a very important part of developing objects oriented software and the software development process. The UML uses mostly graphical notations to express the design of software projects.

GOALS

The primary goals in the design of the UML are as follows:

1. Provide users a ready-to-use, expressive visual modelling language so that they can develop and exchange meaningful models.
2. Provide extendibility and specialization mechanisms to extend the core concepts.
3. Be independent of particular programming languages and development process.
4. Provide a formal basis for understanding the modelling language.
5. Encourage the growth of OO tools market.
6. Support higher level development concepts such as collaborations, frameworks, patterns and components.
7. Integrate best practices.

6.3.1.1 Activity Diagram

An Activity Diagram is essentially a flow chart showing flow of control from activity to activity. They are used to model the dynamic aspects of as system. They can also be used to model the flow of an object as it moves from state to state at different points in the flow of control.

An activity is an ongoing non-atomic execution with in a state machine. Activities ultimately result in some action, which is made up of executable atomic computations that result in a change of state of distinguishes a use case diagram from all other kinds of diagrams is its particular content.

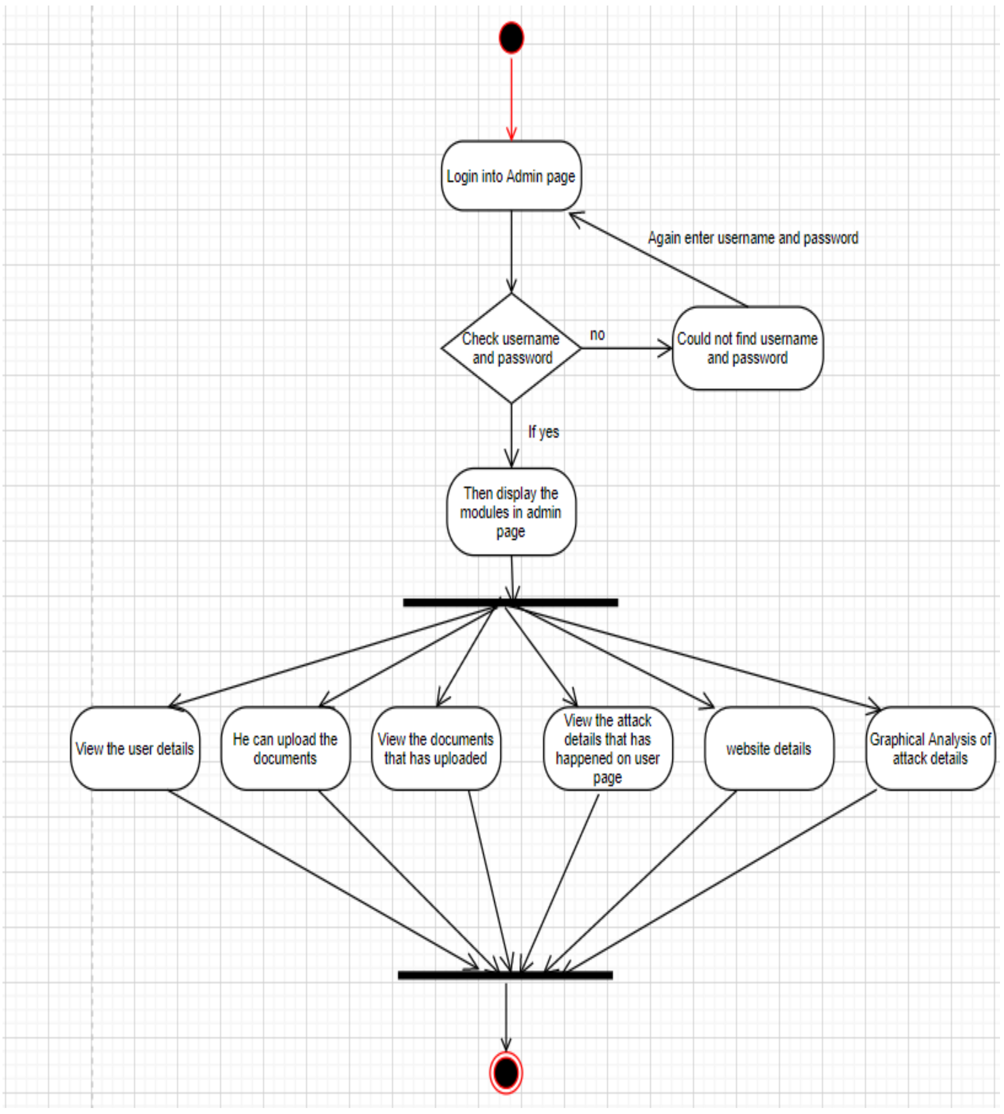

Login into Admin page
Again enter username and password
Check username and password
no
Could not find username and password
If yes
Then display the modules in admin page
View the user details
He can upload the documents
View the documents that has uploaded
View the attack details that has happened on user page
website details
Graphical Analysis of attack details

Figure 6.3.1.1.1 Activity diagram for Admin

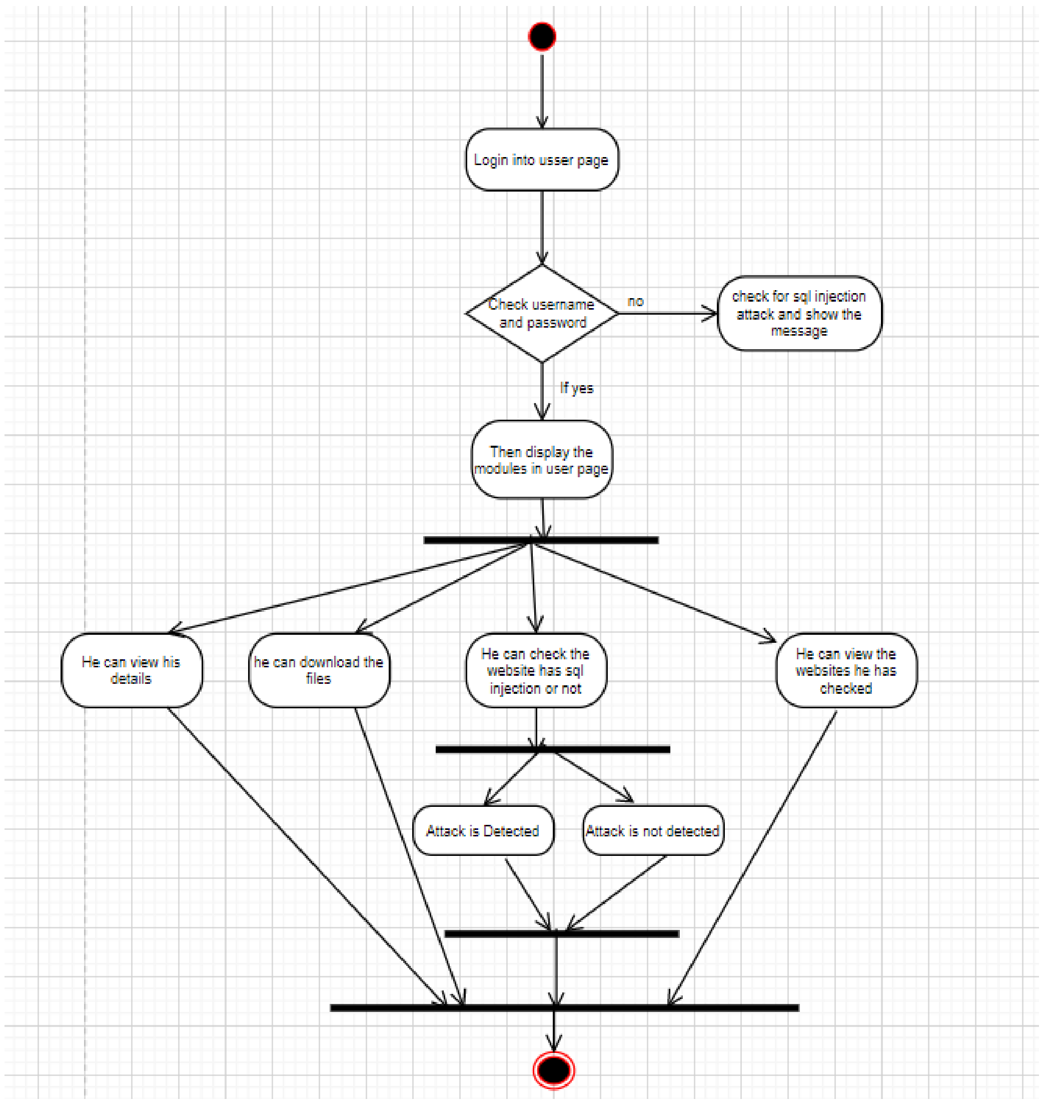

Login into usser page
Check username and password
no
check for sql injection attack and show the message
If yes
Then display the modules in user page
He can view his details
he can download the files
He can check the website has sql injection or not
He can view the websites he has checked
Attack is Detected
Attack is not detected

Figure 6.3.1.1.2 Activity diagram for User

6.3.1.2. Use Case Diagram

Use Case Diagram represent the functionality of the system from a user's point of view. Use cases are used during requirements elicitation and analysis to represent the functionality of the system. Use case focus on the behaviour of the system from external point of view.

Use Case contains the following:

- The name of the use case is unique across the system so that developers(and project participants) can unambiguously refer to the use case.
- Participating actors are actors interacting with the use case.

- Entry Conditions describe the conditions that need to be stratified before the use case is initiated.
- The Flow of events describes the sequence of interactions of the use case, which are to be numbered for reference. The common case (i.e., cases that are expected by the user)and the exceptional cases(i.e., cases unexpected by the user, such a errors, and unusual conditions) are described separately in different use cases for clarity. We organize the steps in the flow of events in two columns, the left column representing steps accomplished by the actor, the right column representing steps accomplished by the system. Each pair of actor system steps represents an interaction.
- Exit conditions describe the conditions that are satisfied after the completion of the use case.
- Quality requirements are requirements that are not related to the functionality of the system, its implementation, and hardware platforms it runs on, and so on.

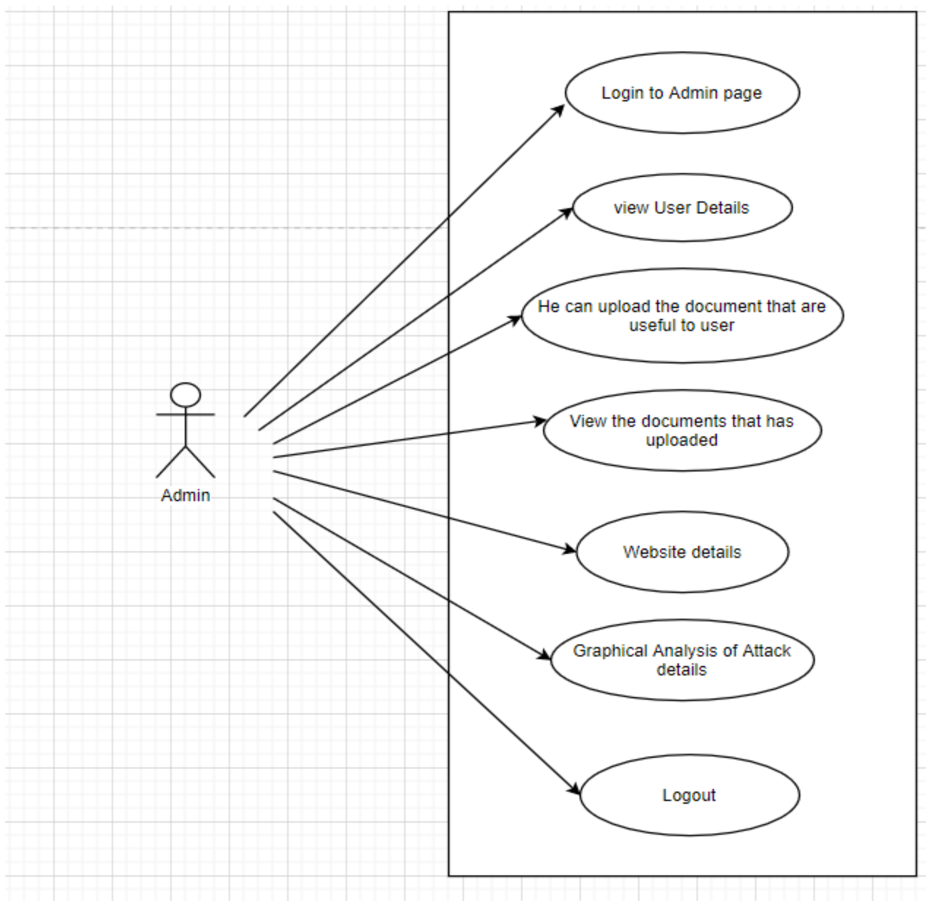

Login to Admin page
view User Details
He can upload the document that are useful to user
View the documents that has uploaded
Admin
Website details
Graphical Analysis of Attack details
Logout

Figure 6.3.1.2.1 Use Case Diagram for Admin

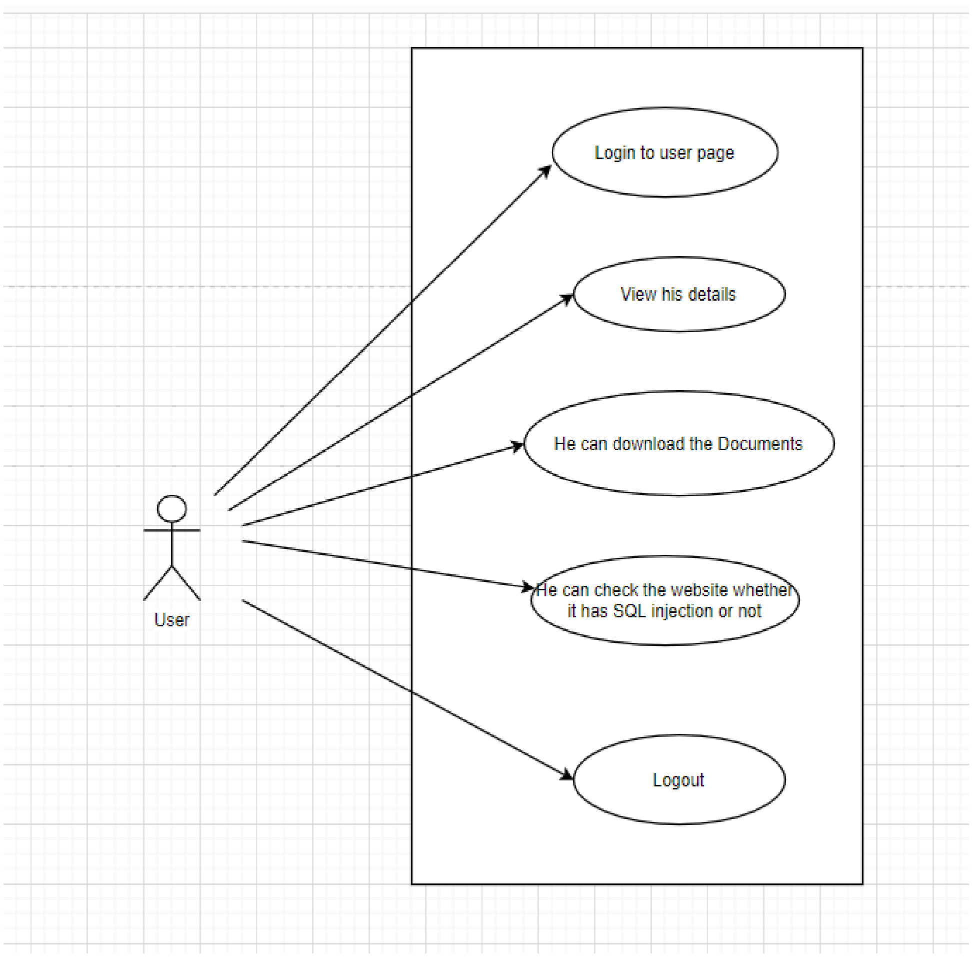

Login to user page
View his details
He can download the Documents
He can check the website whether it has SQL injection or not
Logout
User

Figure 6.3.1.2.2 Use Case Diagram for User

CHAPTER-7
MODEL

7.1 What is SDLC?

SDLC stands for Software Development Life Cycle. A Software Development Life Cycle is essentially a series of steps, or phases, that provide a model for the development and lifecycle management of an application or piece of software. SDLC is the process consisting of a series of planned activities to develop or alter the software products.

Benefits of the SDLC Process

The intent of a SDLC process it to help produce a product that is cost-efficient, effective, and of high quality. Once an application is created, the SDLC maps the proper deployment and decommissioning of the software once it becomes a legacy. The SDLC methodology usually contains the following stages: Analysis (requirements and design), construction, testing, release, and maintenance (response). Veracode makes it possible to integrate automated security testing into the SDLC process through use of its cloud based platform.

1. Requirements Gathering: In this phase we gather all the requirements from the client, i.e. what are the
client expected input, output……

2. Analysis: In this phase based upon the client requirements we prepare one documentation is called "High Level Design Document". It contains Abstract, Functional Requirements, Non Functional Requirements, Existing System, Proposed System, SRS,………

3. Design: It is difficult to understand the High Level Design Document for all the members, so to understand easily we use "Low Level Design Document". To design this document we use UML (Unified Modelling Language). In this we have Use case, Sequence, Collaboration……..

4. Coding: In this phase we develop the coding module by module. After developing all the modules we integrate them.

5. Testing: After developing we have to check weather client requirements are satisfied or not. If not we are again going to develop.

6. Implementation: In testing phase if client requirements are satisfied, we go for implementation. i.e. we need to deploy the application in some server.

7. Maintenance: After deployment, if at all any problems come from the client side; we are providing maintenance for that application.

CHAPTER-8
IMPLEMENTATION

8.1 Admin Module

- User Details
- Upload Document
- View Document
- Attack Details
- Graphical analysis

8.2 User Module

- File View
- File Download
- Check Website
- View Website

8.3 SQL injection Point

A web proxy API is the most suitable to intercept requests originating from any injection mechanisms. Injection mechanisms can originate from any: Web page forms e.g. login screen; second-order injection by concealing a Trojan horse for the attack at a later date; exploiting web-enabled server variables to gain access to the back-end database; and, through cookies that have stored state information used to obtain unauthorised access to the back-end database. SQLIA types are techniques an intruder would employ at injection points in any combination to carry out an attack that includes: Tautology; Invalid/Logical Incorrect; Union; Piggybacked; Store procedure; Time-based; and, Alternate encoding obfuscation. SQLIA types provide an extract for the SQLIA positive in data set items during labelling.

8.4 Proxy Filters

This method intercepts web requests at a proxy for SQLIA detection and prevention having the advantage of being able to decrypt obfuscated internet traffic

for thorough analysis. We propose a SQL parsing tree which uses a combination of proxy and SQL parser tree for SQL syntax sequence alignment. The model
proposed in this paper uses proxy API to backhaul web requests for predictive analytics of incoming web requests for SQLIA negatives and positives.

8.5 Classifying Attacks

Here, we compare the classification performance of SVM with other popular machine learning algorithms. We have selected several popular classification algorithms. For all algorithms, we attempt to use multiple sets of parameters to maximize the performance of each algorithm. Using SVM algorithms classification for malware bag-of-words weightage.

CHAPTER-9
TESTING

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, sub assemblies, assemblies and/or a finished product It is the process of exercising software with the intent of ensuring that the Software system meets its requirements and user expectations and does not fail in an unacceptable manner. There are various types of test. Each test type addresses a specific testing requirement.

9.1 TYPES OF TESTS

9.1.1 Unit testing

Unit testing involves the design of test cases that validate that the internal program logic is functioning properly, and that program inputs produce valid outputs. All decision branches and internal code flow should be validated. It is the testing of individual software units of the application .it is done after the completion of an individual unit before integration. This is a structural testing, that relies on knowledge of its construction and is invasive. Unit tests perform basic tests at component level and test a specific business process, application, and/or system configuration. Unit tests ensure that each unique path of a business process performs accurately to the documented specifications and contains clearly defined inputs and expected results.

9.1.2 Integration testing

Integration tests are designed to test integrated software components to determine if they actually run as one program. Testing is event driven and is more concerned with the basic outcome of screens or fields. Integration tests demonstrate that although the components were individually satisfaction, as shown by successfully unit testing, the combination of components is correct and consistent. Integration testing is specifically aimed at exposing the problems that arise from the combination of components.

9.1.3 Functional test

Functional tests provide systematic demonstrations that functions tested are available as specified by the business and technical requirements, system documentation, and user manuals.

Functional testing is centred on the following items:

Valid Input : identified classes of valid input must be accepted.

Invalid Input : identified classes of invalid input must be rejected.

Functions : identified functions must be exercised.

Output : identified classes of application outputs must be exercised.

Systems/Procedures : interfacing systems or procedures must be invoked.

Organization and preparation of functional tests is focused on requirements, key functions, or special test cases. In addition, systematic coverage pertaining to identify Business process flows; data fields, predefined processes, and successive processes must be considered for testing. Before functional testing is complete, additional tests are identified and the effective value of current tests is determined.

9.1.4 System Test

System testing ensures that the entire integrated software system meets requirements. It tests a configuration to ensure known and predictable results. An example of system testing is the configuration oriented system integration test. System testing is based on process descriptions and flows, emphasizing pre-driven process links and integration points.

9.1.5 White Box Testing

White Box Testing is a testing in which in which the software tester has knowledge of the inner workings, structure and language of the software, or at least its purpose. It is purpose. It is used to test areas that cannot be reached from a black box level.

9.1.6 Black Box Testing

Black Box Testing is testing the software without any knowledge of the innerworkings, structure or language of the module being tested. Black box tests, as most other kinds of tests, must be written from a definitive source document, such as specification or requirements document, such as specification or requirements document. It is a testing in which the software under test is treated, as a black box .you cannot “see” into it. The test provides inputs and responds to outputs without considering how the software works.

9.1.7 Test strategy and approach

Field testing will be performed manually and functional tests will be written in detail.

Test objectives

- All field entries must work properly.
- Pages must be activated from the identified link.
- The entry screen, messages and responses must not be delayed.

Features to be tested

- Verify that the entries are of the correct format
- No duplicate entries should be allowed
- All links should take the user to the correct page.

Integration Testing

Software integration testing is the incremental integration testing of two or more integrated software components on a single platform to produce failures caused by interface defects.

The task of the integration test is to check that components or software applications, e.g. components in a software system or – one step up – software applications at the company level –interact without error.

Test Results: All the test cases mentioned above passed successfully. No defects encountered.

Acceptance Testing

User Acceptance Testing is a critical phase of any project and requires significant participation

by the end user. It also ensures that the system meets the functional requirements.

Test Results: All the test cases mentioned above passed successfully. No defects encountered.

CHAPTER-10
EXECUTION AND RESULTS

10.1 Introduction

Executing consists of the processes used to complete the work defined in the project plan to accomplish the project's requirements. Execution process involves coordinating people and resources, as well as integrating and performing the activities of the project in accordance with the project plan.

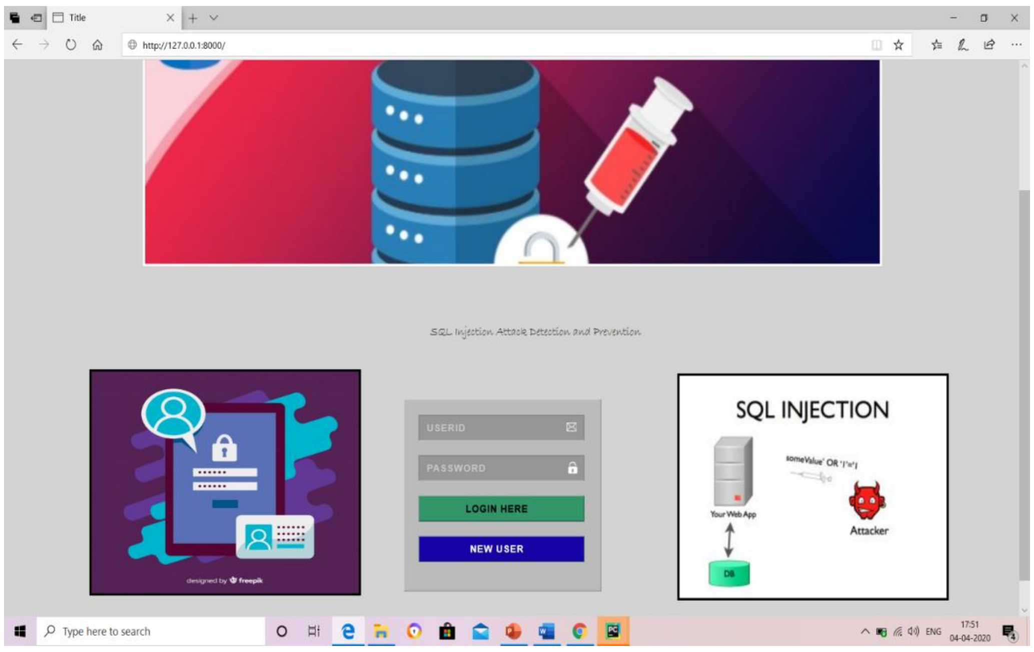
Command to run the project is:

"Python project.py runserver"

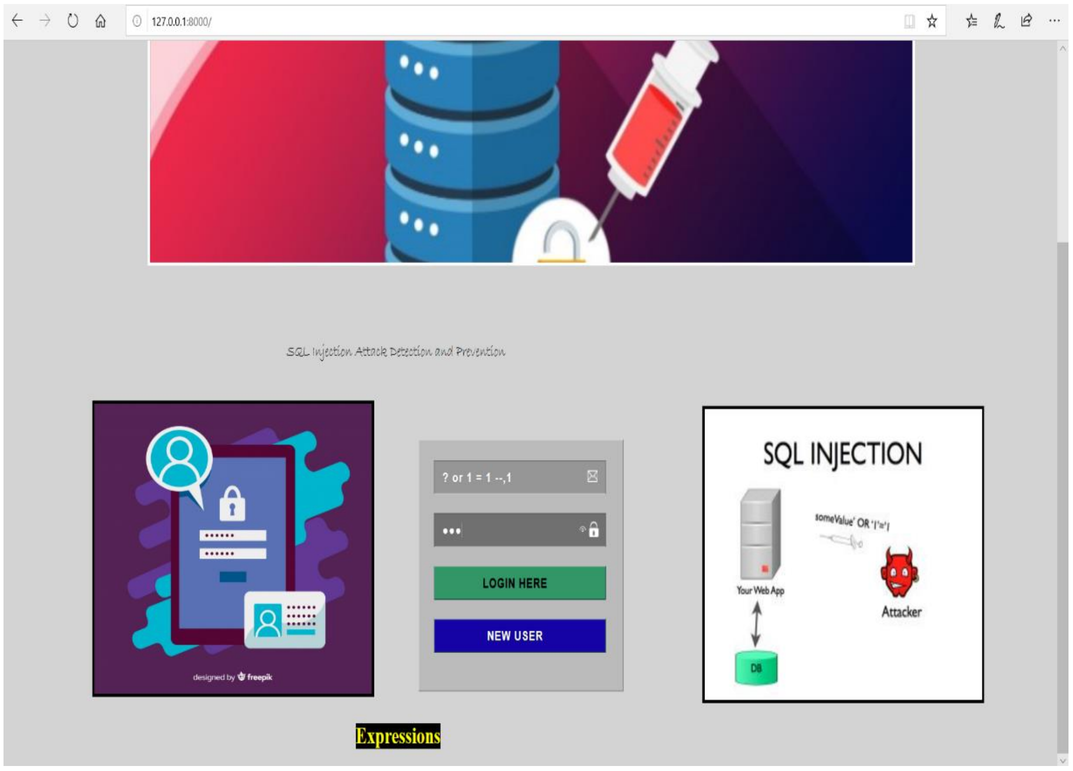
10.2 output screens of User Module

Following are the screenshots that will display after execution of our project Source Code:

Screen 1: User Interface main output screen

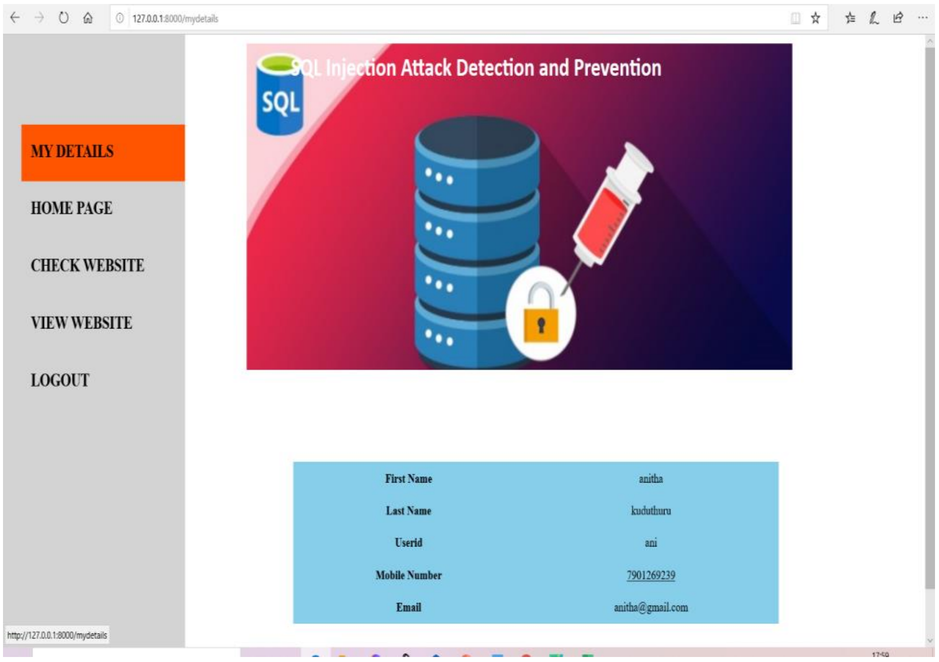


Screen 2: Output of the project when you enter SQL injection commands



When injected command into username and password here you will get the message and it not enter into the page.

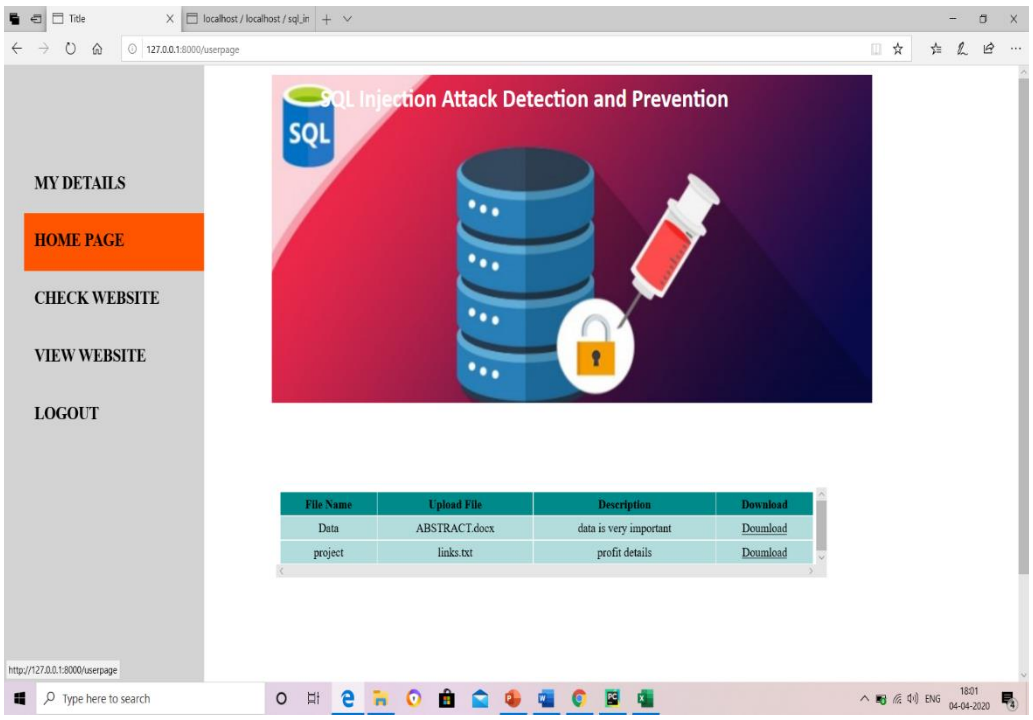
Screen 3: When you correct user credentials



First Name	anitha
Last Name	kuduthuru
Userid	ani
Mobile Number	7901269239
Email	anitha@gmail.com

Here user his details what he has filled at the time of registration.

Screen 4: When you click on Home page

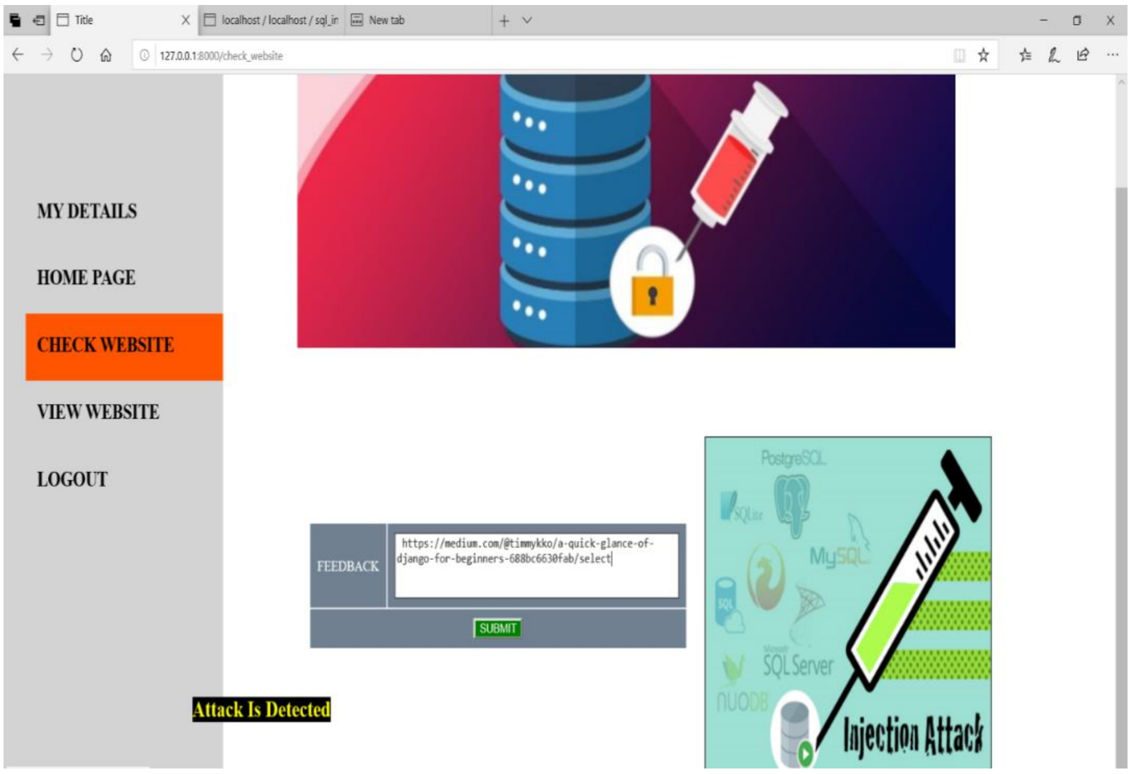


File Name	Upload File	Description	Download
Data	ABSTRACT.docx	data is very important	Doumload
project	links.txt	profit details	Doumload

When you click on Home page you will see the documents and you have the ability to download those files.

Screen 5: Check Website

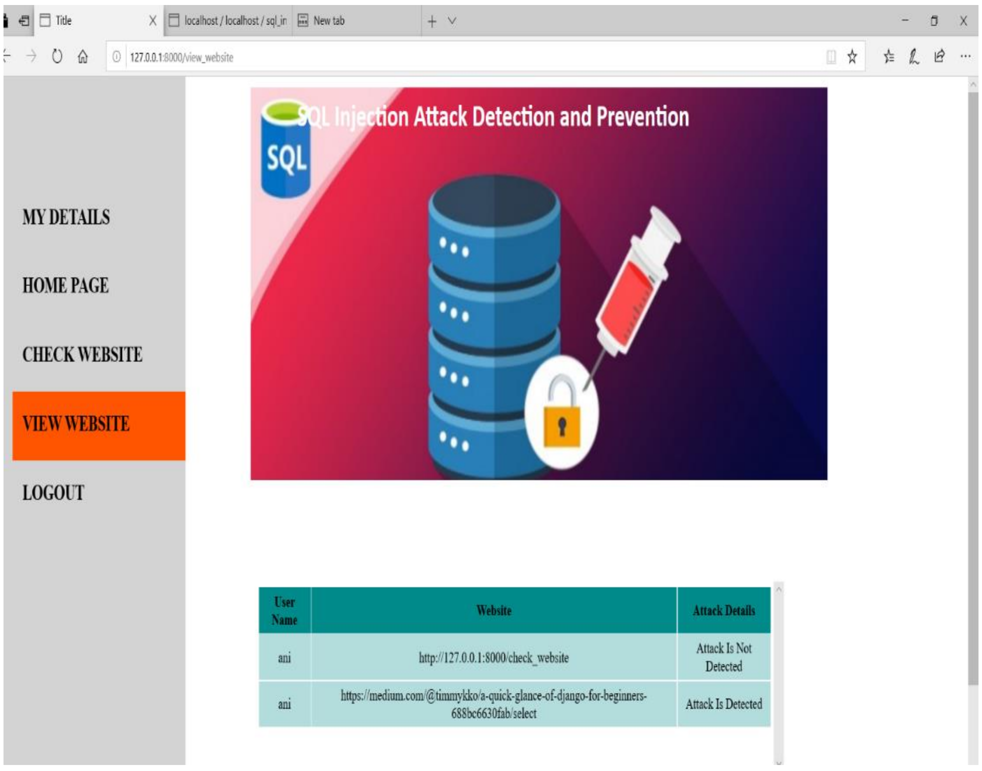
Here is the option to check the website that whether the it has SQL injection or not. If the website has attack you will get Attack is detected otherwise it will show Attack is not detected



https://medium.com/@timmykko/a-quick-glance-of-django-for-beginners-688bc6630fab/select

Screen 6: View the website

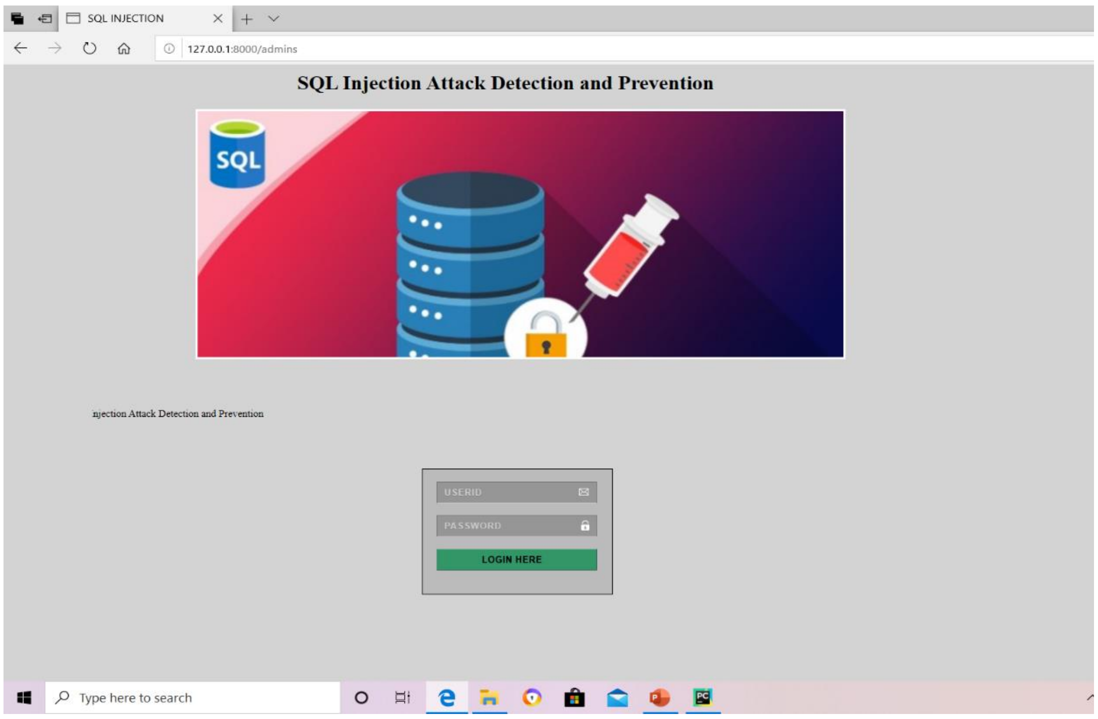
In this we will see the website that we have checked for attack.


Title
localhost / localhost / sql_in
New tab
127.0.0.1:8000/view_website
SQL Injection Attack Detection and Prevention
SQL
MY DETAILS
HOME PAGE
CHECK WEBSITE
VIEW WEBSITE
LOGOUT

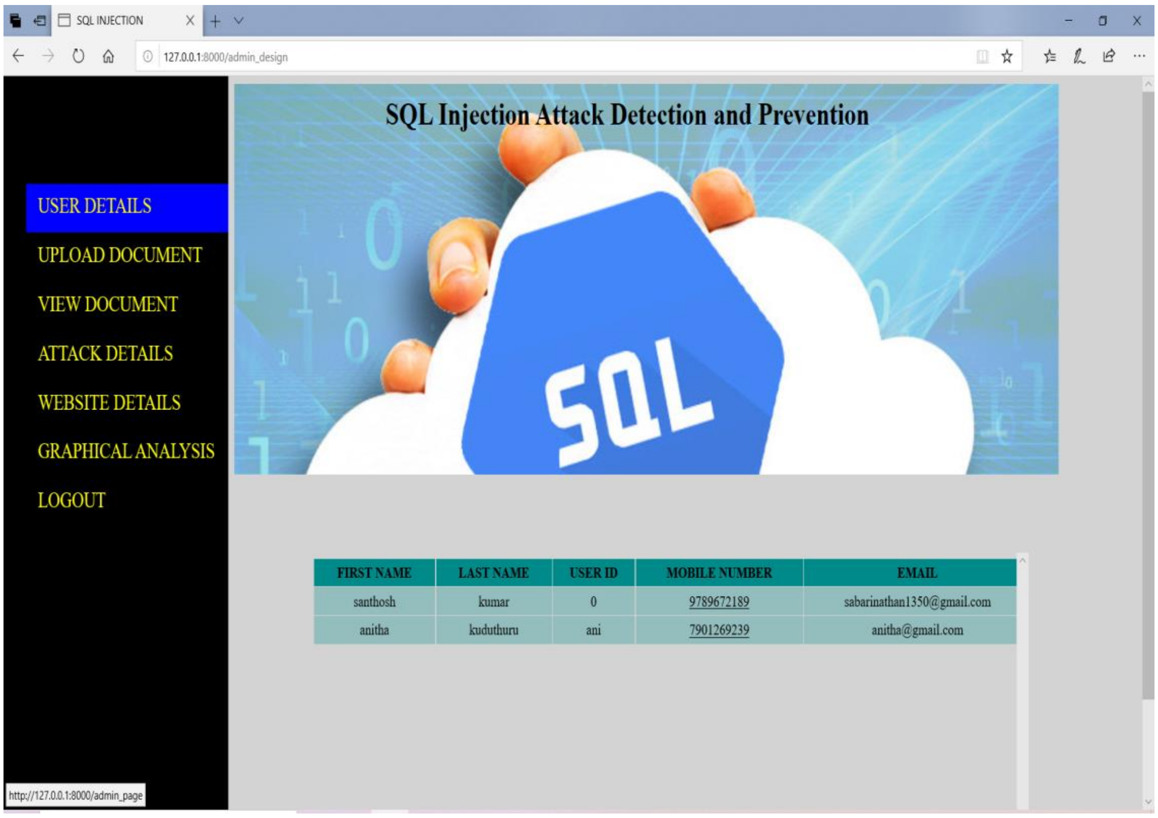
User Name	Website	Attack Details
ani	http://127.0.0.1:8000/check_website	Attack Is Not Detected
ani	https://medium.com/@timmykko/a-quick-glance-of-django-for-beginners-688bc6630fab/select	Attack Is Detected

10.3 Output screens of Admin Module

Screen 7: Admin Interface


SQL INJECTION
127.0.0.1:8000/admins
SQL Injection Attack Detection and Prevention
SQL
njection Attack Detection and Prevention
USERID
PASSWORD
LOGIN HERE
Type here to search

Screen 8: After logging into admin page

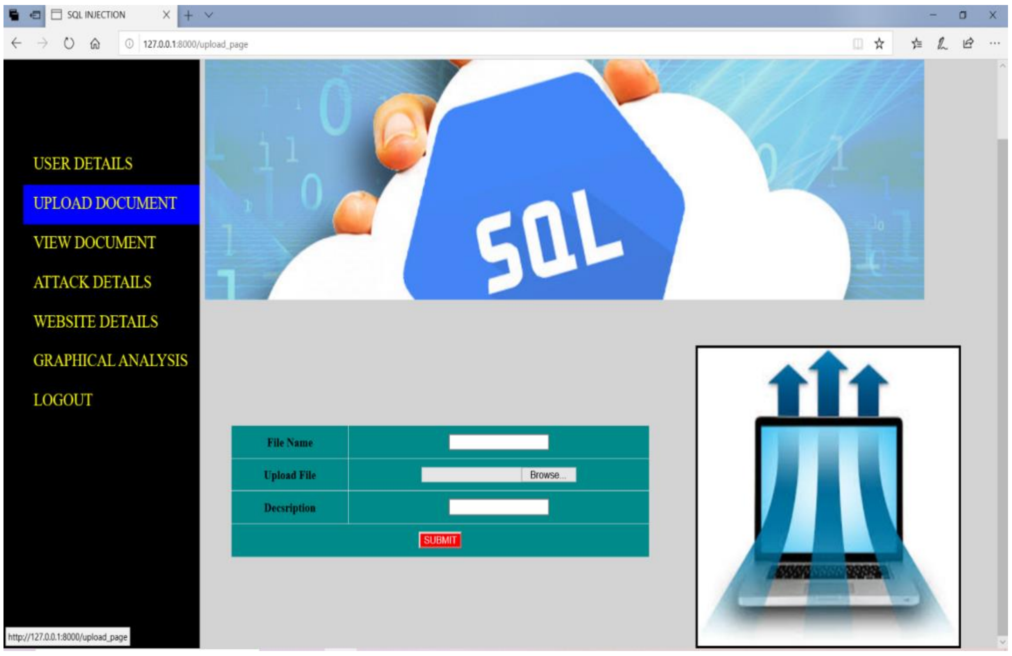


FIRST NAME	LAST NAME	USER ID	MOBILE NUMBER	EMAIL
santhosh	kumar	0	9789672189	sabarinathan1350@gmail.com
anitha	kuduthuru	ani	7901269239	anitha@gmail.com

When you enter into the admin page you will get this home page.

Screen 9: Upload Document

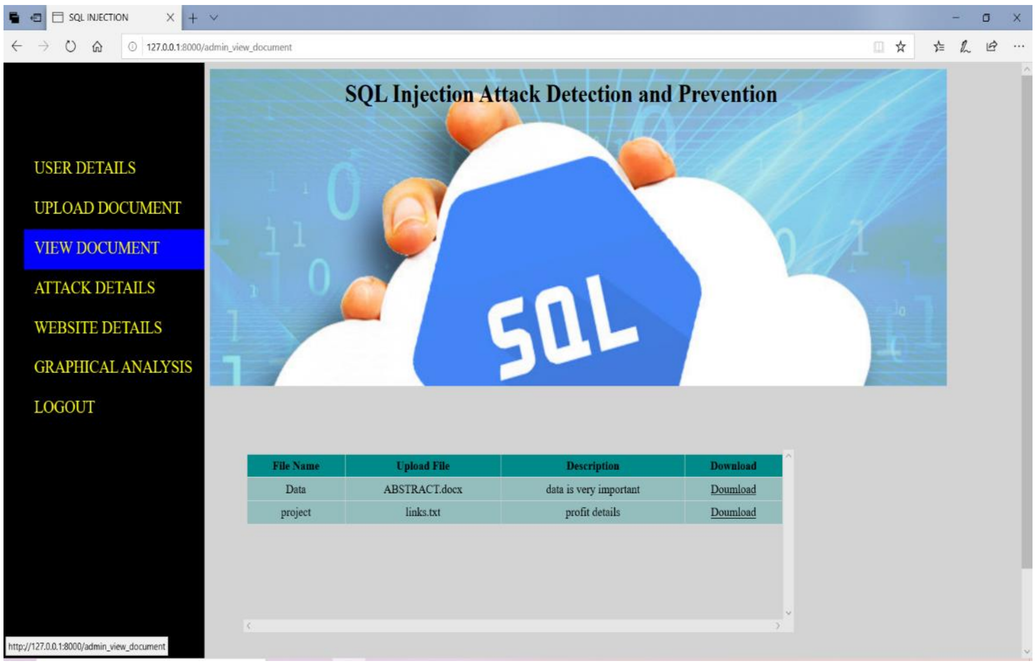
Here admin can upload the documents that are needed to the user.



File Name	
Upload File	
Description	

Screen 10: View Document

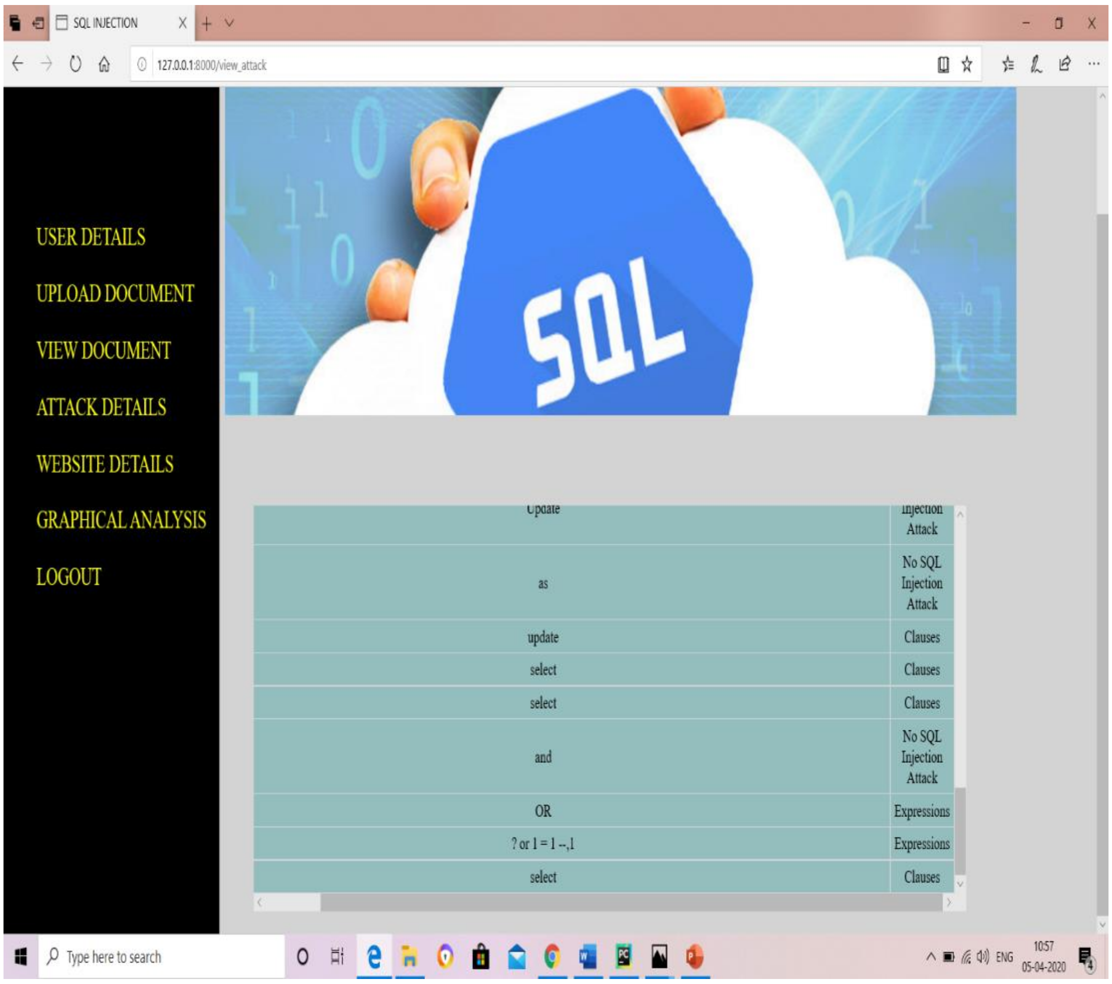
Here admin can view the document that he uploaded


SQL INJECTION
127.0.0.1:8000/admin_view_document
SQL Injection Attack Detection and Prevention
USER DETAILS
UPLOAD DOCUMENT
VIEW DOCUMENT
ATTACK DETAILS
WEBSITE DETAILS
GRAPHICAL ANALYSIS
LOGOUT
SQL
http://127.0.0.1:8000/admin_view_document

File Name	Upload File	Description	Download
Data	ABSTRACT.docx	data is very important	Doumload
project	links.txt	profit details	Doumload

Screen 11: Attack Details

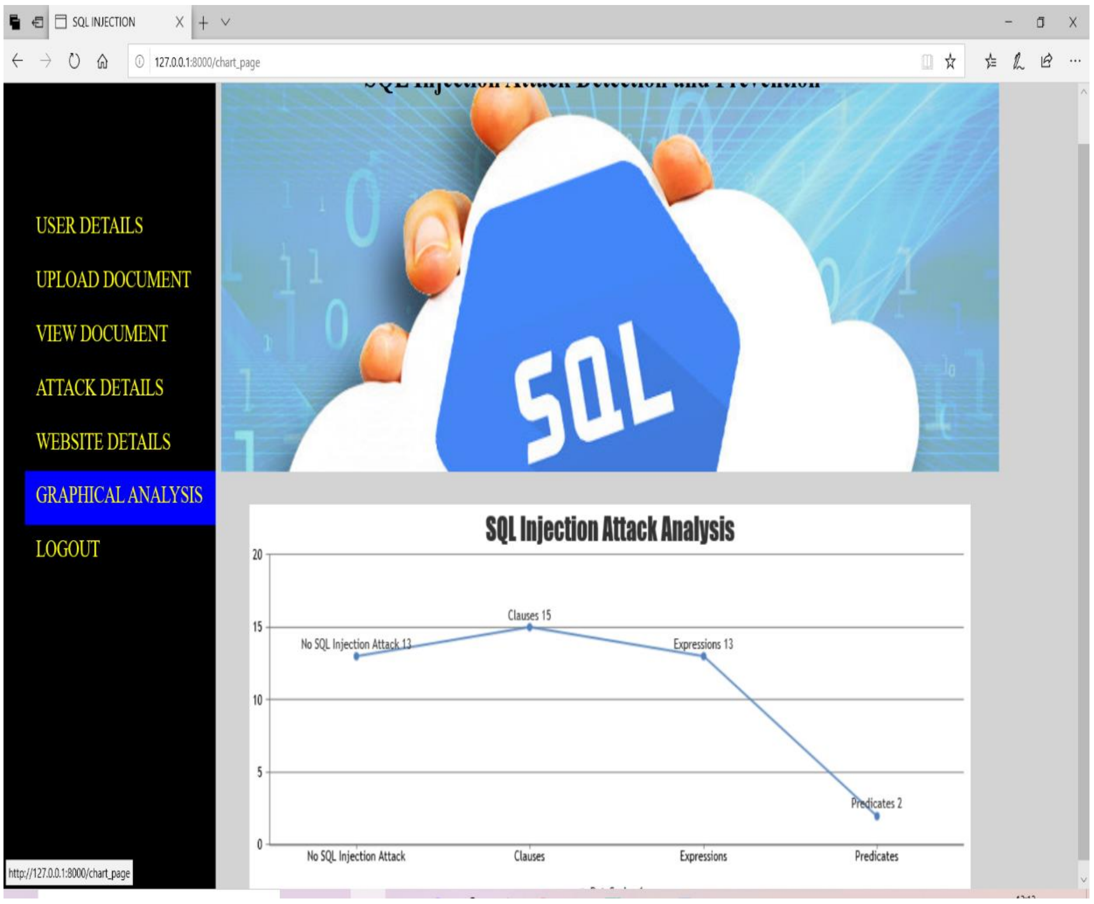
Here admin can view the attacks that was done on user page and he can see what type of key words the attacker used.



Update	Injection Attack
as	No SQL Injection Attack
update	Clauses
select	Clauses
select	Clauses
and	No SQL Injection Attack
OR	Expressions
? or 1 = 1 --,1	Expressions
select	Clauses

Screen 12: Graphical Analysis

Here we can see the graphical anlysis of the attacks happened



CONCLUSION

SQL injection attack is a serious problem of web applications. Finding the efficient solution of this problem is essential. Researchers have developed many techniques to detect and prevent this vulnerability. There is no appropriate solution that can prevent all types of SQL injection attacks.

So we demonstrated this project to SQLIA detection and prevention and it will cope with new SQLIA attacks.

In benchmarking this paper against existing works, the methodology proposed here is functional in a big data context which is lacking in existing works before now on SQLIA to our knowledge. Future work involves employing multi-class classifier to identify and group the different SQLIA types as they are predicted.

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