

A Generic Review of Web Technology: Django and Flask

Nuruldelmia Idris^a, Cik Feresa Mohd Foozy^{a,b,1,*}, Palaniappan Shamala^{a,b}

^a Faculty of Computer Science and Information Technology, Universiti Tun Hussein Onn Malaysia, Johor, Malaysia

^b Applied Computing Technology, Faculty of Computer Science and Information Technology, Universiti Tun Hussein Onn Malaysia, Johor, Malaysia

¹ feresa@uthm.edu.my

* corresponding author

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ABSTRACT

The research is discussing the relevance of web technology based on its history, current development, future working process, threats, or attacks that are common in web technology, and its solutions to encounter the threats. Nowadays, web services have become one of the most vital components in peoples' daily lifestyle. People are talking how the advancement in the technology leads the world now. The evolution of network has triggered the demands especially in internet connection as everyone around the world are depending on the connection to do their activities especially for communication. It is required to have high speed internet and bandwidth to prevent poor connection. Besides that, due to advance development in computing products and network, people enables to catch up with the current trends which spark the existence of web development that are used to gather information.

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1. Introduction

Web technology is a development of the mechanism that allows two or more people to communicate with each other by using computer languages and connect via network. It is understandable that currently web pages are interacting with centralize platform such as a web server (e.g. Google) to transmit the information for both acknowledgements. In order to make website looks presentable and easy, there are 3 core languages that are commonly used and make up the World Wide Web (WWW) standards which are Hypertext Markup Language 5 (HTML5), Cascading Style Sheet (CSS) and JavaScript. These 3 basic languages that are commonly in web page development and backbone of most pages exists. After web page have been developed, as a developer or user, the pages will direct to internet to have transmission of data. Therefore, internet is essential in web technology. Web technology is interface between central and servers which include the information of Markup Language, programming language, platforms, documentations, and display purpose. The most significant things in web technology is how the web interprets the information to assure its integrity and protect the communication. It is important to have scripting language that are arranged accordingly to interpret the content correctly. The scripting language is a code that is understood by writing platform used such as Notepad++. It is to make the language being recognized by the web browsers or pages.

2. Literature Review

Sir Tim Berners Lee invents web technology. He is a British computer Scientist and worked as contractor at CERN. In 1989, Berners-Lee wrote a proposal about "Information Management: A proposal" but was rejected by the organization. He did specify the proposal to propose the sharing the information via an Internet based hypertext language which specifically HTML platform. He

continues the research despite being rejected, this is the beginning of World Wide Web (WWW) as it was invented, and he was working on the project using a NEXT computer and getting help from his boss, Mike Sendall. In late 1990, Berners succeeds his 3-fundamental technology, which HTML, browsers, and Server. This is the foundation of Web Technology. The first web page was launched on open internet in 1991. The example of other programming language which is Python, the backend of Python is Django and Flask. The front-end is using Bootstrap. The databases that can store data from Python is by using MySQL.

2.1 Python

This section will discuss about Python in terms of history, advantages and features.

2.1.1 History

Python is a general purpose programming language, it was invented in late 1980. The name of Python is from Monty Python. The developer of Python has developed the applications with help by hundreds of existing 3-rd party libraries [1].

Thousands of people have used python to do things such as from testing microchips at Intel to invent the Instagram that are being top of the most popular apps that are being trends nowadays. The inventor has built a video game with the Python Game library [2].

Python is an object-oriented programming language. It is integrated dynamic semantic primarily for web and application development. It is simpler to use and attractive. It is impressive in the field of rapid application development. The aspect that is impressing the user are dynamic typing and dynamic binding options.

2.1.2 Advantage

Python is easy to learn. It is because it just required unique syntax and readability. Python writing language is human-readable that are easier for humans to read and manage the system. Everyone can use it anytime they want and easier to get the information of python in online server [3]

Python can reduce the cost of program maintenance and development that allows the team to work on collaboratively with other people without being discriminate, significant level and experience barrier.

2.1.3 Current

The advantage of current Python is its readability, libraries, and community. Nowadays Python is very close to the English words. Using language human writing such as the words “not” and “in” is an example of language that are used in Python programming language [3].

Python is often can be read in the program or in the script, but it is not being able to read by using computer language. In the script of programming language, there are not curly braces in the code like Java, C++, or C# [4].

Python has its own rules that are known as PEP8. PEP 8 is helps the user by telling a Python developer on how to format their code so that it is being easy for the developer to recognize the mistakes.

Other than that, PEP8 also being able to navigate the developer on where to put the new lines. PEP8 is the rules that are able to acknowledge that the code is written by a beginner or a professional. By the pattern on how the developer writes the code it is easy to detect the small mistakes that create by the beginner compared to the professional level. Among the beginner there are certain code that sometimes are directly from the open source rather professional developer of Python being able to develop and manipulate the code to their preferences. Professional level also will write the code that almost the same to the inventor of Python named Guido van Rossum. He is the creator of Python [5].

2.1.4 Future

Python has been in the programming industry for about 20 years. It has been built for a long time. It is such an advantage to the user nowadays because a lot of code have been built over decades. User can manage and reused the codes for their own respective purposes. Also, the python library can be found freely on the internet such as open source that are widely spread in the internet. Near future, there are only Python 2.7 at maximum but no Python 3.0 this is because the Python is used only up to 3.0 is not a friendly-user. It is hard to use by the user. So, it is compatible when the user just updated the Python until Python 2.7 only [6]. The software can be installed on the system. For example, Python production can be managed by doing the project such as a script with command line. Then, by installing the Python, a user can easier to access to and from the open source and use it anytime [6].

Besides that, in future, Python will be implementing its image manipulation scientific calculation and server automotive. Future Python has been taking care the community of the Python around the world very well. As aged, Python has many users around the world. It might come with the version that are vast and growing. Python can be utilized by the likes of Nokia, Google, and even NASA that equivalent to the easy syntax. Other than that, it is supported by a huge community of Operating system developers that are increasing by now [7]. Python also supports multiple programming that called as paradigms. It is included in the object-oriented Python programming. Function of Python programming is acts like a parallel programming models that highly adaptive choice.

2.1.5 Standard

The standard of python it is support for multiple platform that are vital component of innovation during first personal computers. It can communicate with libraries. In addition, it can differ the formats in the codes [7].

2.1.6 Features

It can serve as a central role in van Rossum's Computer Programming for everybody initiative. Then, the make programming is more accessible to the layperson. It also encourages a basic level of coding literacy as an equal essential knowledge alongside English literacy and math skills. Lastly, the features of Python are focusing on clean syntax and accessibility [8].

2.2 Frontend – Bootstrap

Bootstrap is one of the method for estimate the distribution of test statistic by resampling the data or one of the model from the data itself. The bootstrap in programming provides the approximation calculations of statistical data and analysis. It will cover the confidence intervals from data. Bootstrap is a Python library that allows to build the intervals. It is including during test analysis and useful in a variety of contexts. Figure 1 shows how the Bootstrap works.



Figure 1. Bootstrap

The method of bootstrap is by measuring the improvement to conduct the test to the new version of data from the old version. Bootstrap is used to understand how to make things pretty for the interface, to improve responses and giving zero errors deduct from the tests. [9]

The benefits of using Bootstrap are as below [10]:

1. Efficient computation of confidence interval
2. Functions to handle single populations and tests
3. Functions on understanding the statistical power
4. Multiple threads support to speed up the bootstrap computations
5. Dense the array support

The requirements of bootstrap are its requires numpy. The power analysis functions require matplotlib and pandas. Bootstrap works by providing empirical based on confidence intervals and based on bootstrap re-sampling with replacement. The percentile method is available to make things changed [11].

2.3 Flask and Django

Flask and Django are frameworks that being used to create web applications in Python. There are multiple frameworks to create RESTful APIs in programming [12].

Django provides full MVC Framework that includes the whole things. While Django alone could be used to make a RESTful API, it is one of the framework that sows fantastical creations. It feature-filled extension towards Django framework[12]. Figure 2 shows the logo of Django.



Figure 2. Django

Flask is one of the micro-framework that follows rules do it one task at one time and do it properly. It provided very little upfront, but u=it sets to have large set of extensions that also match with Django feature set. Figure 3 is the logo of Flask web development application.



Figure 3. Flask

Both frameworks might have taken different approaches to design the web development, but they will support a lot of the same capabilities when it comes to REST API design. The approach might be included such as:

1. User Authorization – Django framework might support using Django built-in model for API authentication and authorization. While flask, might used built-in tools for basic authorization or using third-party plugin.
2. Rate Limiting – Django supports both anonymous and registered users while flask support similar feature set. Both of it keep support in memory, cache or backends for store rate limitation data.
3. Relational Database Mapping – Django provides direct method of mapping models to API endpoints and Flask provides almost the same capabilities. Both of it provides simple path to create the interface for an existing data store.

2.3.1 Advantages Django

Versioning – it is flexible, making the task less critical. The versions support multiple URL formats and passed in as a request parameter to be in view.Browsable API – generates HTML pages to browse and execute all the endpoints. Users or developers can execute quickly and easily in the browsers. Regular releases – it is always release the news version for twice a year for users to keep in track and updated with the latest release.

2.3.2 Advantages Flask

Speed – flask is generally fast in performance compared to Django. This is might be because Flask is less in design. It can provide support by several hundred queries per second without slows down the operation. NoSQL support – Flask freely able to integrate with NoSQL databases like MongoDB and DynamoDB.

2.4 MySQL

MySQL in Python enable Python programs to access into the databases by using an API that is compatible with the Python Database API Specification. It is specifically for Python and do not depending on the libraries [14]. The features provided by MySQL server up to and included MySQL server for any compatible version. The parameter values back and forth between Python and MySQL data types. For example, Python datetime and MySQL DATETIME. It can be turn on automatically for convenience or off for performance preferences [15]. All MySQL extensions are being a standard SQL syntax. It is one of the protocol compression, which enables compressing the data stream between the client and server. The connections might be using TCP/IP and it must have secure session using SSL. MySQL might have self-contained driver that do not require the MySQL libraries to get involved [16].



Figure 4. MySQL

Figure 4 shows the MySQL logo and the MySQL is an open source databased management system that widely used by the software and database developer.

3. Methodology

There are five (5) steps to do this application review. The methodology used for this paper review are as Figure 5 below:

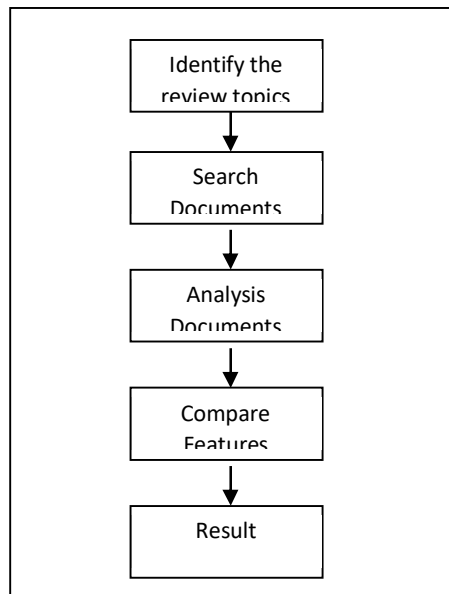


Figure 5. Comparison Process

The first steps are to identify the suitable application to compare. In this study Django and Flask web application is chosen. Second step is to search documents from Mendeley References Management to find related Journal and proceedings about Django and Flask. The third phase, the documents is being analyzed by identifying the features, advantages and disadvantages of Django and Flask. The fourth, the parameter has been compared in a table. Finally is the result and conclusion.

4. Result Comparison Table Django and Flask

Table 1 is the comparison table for Django and Flask. Both are web application technology that has been used by most developer.

Table 1. Comparison Django and Flask

| Function | Django | Flask |
|-------------------|-----------------|-------------------|
| Language | Python | Python |
| Database | MySQL | MongoDB, DynamoDB |
| Template | Django Template | Jinja 2 Template |
| Speed | Slow than Flask | Faster |
| Authorization API | Django | Third party |

According to Table 1 it is shows that Django and Flask have their own advantages. It is deepens to the developer which is they preferred.

5. Conclusion

The python has been used in the development of web nearly 20 years. It provides beneficial language to the users. Currently many software being used by many applications and programs. There are comparatively has many programs that are using the beneficial language other than Python but there are many demands of Python because it is easy to learn and speed up the operation of the program. Python 2.0 released by the BeOpen Python Labs Team. It is granting to write access to its CVS people. Python also easy to way to report bugs and submit the patches. It is also easy to maintain the software. Django and Flask might be challenging in pirate. However, focusing on to the needs of the API when choosing the frameworks. Django and Flask will have different ways in designing. Django might have versioning support, a fantastic design while flask keep it simple and minimalist to focus on content instead.

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