

## MT001 SMMVC: Stack Machine Model View Controller

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本文连接 Link to this article :

- <https://github.com/udexon/flippio/blob/main/metaprogramming/MT001%20SMMVC%20Stack%20Machine%20Model%20View%20Controller.pdf>

1. MVC (Model View Controller) has become a well established architecture and framework for software development.

Here, we shall demonstrate that how a stack machine based MVC framework (SMMVC), derived from the Forth programming language, implemented with less than 10MB of source code in total, written in JavaScript and PHP, can deliver the equivalent functionalities of most (if not ALL) other MVC frameworks, which have much bigger footprint (>100MB, front end plus back end).

We will prefix the series of Metaprogramming Tutorials with MT.

Further we demonstrate that with Phoscript, a derivative of Forth, even non-programmer can start to understand and programming with MVC, as we believe this is a first step of the journey of a thousand miles, towards a future where “Everyone Can Program”, which is an essential foundation to achieving a “Star Trek” civilization.

The example in this tutorial consists of a simple example to save a URL to a graph database, using the command, written in Reverse Polish Notation, where the parameter precedes the function word:

- *URL* id\_url

2. The first example that we wish to demonstrate consist of the following:

- a. My nickname is ‘donald’.
- b. I wish to save the following URL in a graph database:
  - <https://www.instagram.com/realdonaldtrump/>
- c. I use Linux bash shell to navigate into a Duniix SMMVC directory:
  - hongwu@hongwu-Precision-M6600:~/devel/2021/Duniix/auth\$

I then execute the following commands:

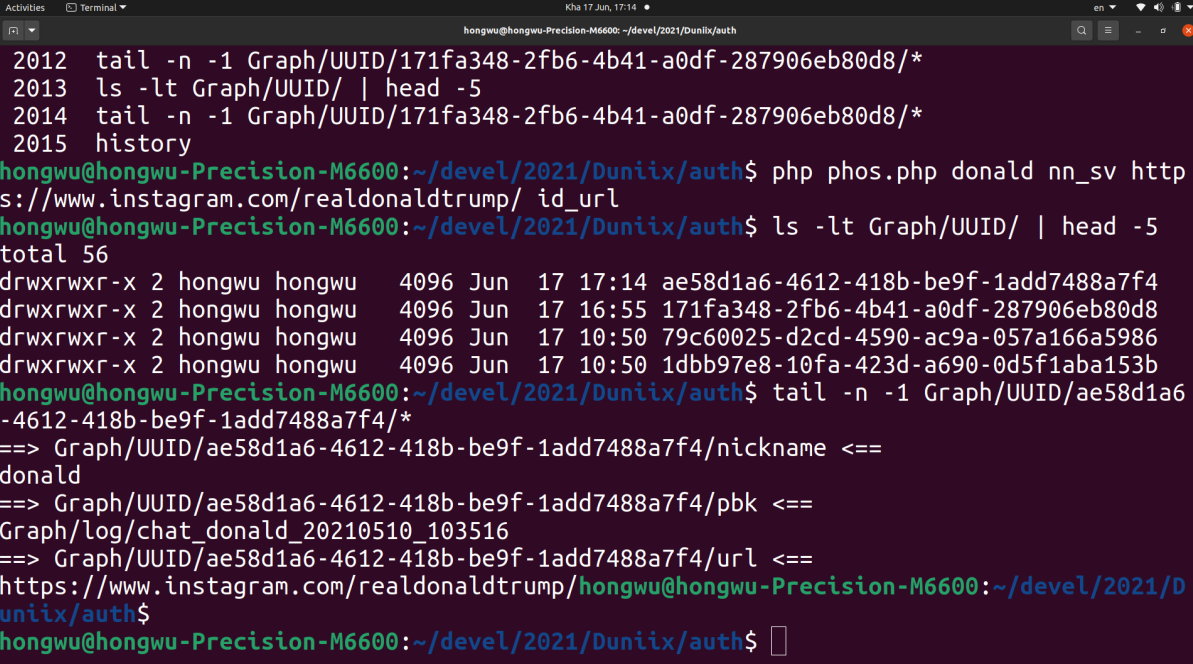
- `php phos.php donald nn_sv https://www.instagram.com/realdonaldtrump/ id_url`
- `ls -lt Graph/UUID/ | head -5`
- `tail -n -1 Graph/UUID/ae58d1a6-4612-418b-be9f-1add7488a7f4/*`

The results are shown in figure 1.

From the results shown in figure 1, the URL entered by user with nickname 'donald' is saved in the following file:

- `Graph/UUID/ae58d1a6-4612-418b-be9f-1add7488a7f4/url`

Figure 1



```
2012 tail -n -1 Graph/UUID/171fa348-2fb6-4b41-a0df-287906eb80d8/*
2013 ls -lt Graph/UUID/ | head -5
2014 tail -n -1 Graph/UUID/171fa348-2fb6-4b41-a0df-287906eb80d8/*
2015 history
hongwu@hongwu-Precision-M6600:~/devel/2021/Duniix/auth$ php phos.php donald nn_sv http
s://www.instagram.com/realdonaldtrump/ id_url
hongwu@hongwu-Precision-M6600:~/devel/2021/Duniix/auth$ ls -lt Graph/UUID/ | head -5
total 56
drwxrwxr-x 2 hongwu hongwu 4096 Jun 17 17:14 ae58d1a6-4612-418b-be9f-1add7488a7f4
drwxrwxr-x 2 hongwu hongwu 4096 Jun 17 16:55 171fa348-2fb6-4b41-a0df-287906eb80d8
drwxrwxr-x 2 hongwu hongwu 4096 Jun 17 10:50 79c60025-d2cd-4590-ac9a-057a166a5986
drwxrwxr-x 2 hongwu hongwu 4096 Jun 17 10:50 1dbb97e8-10fa-423d-a690-0d5f1aba153b
hongwu@hongwu-Precision-M6600:~/devel/2021/Duniix/auth$ tail -n -1 Graph/UUID/ae58d1a6
-4612-418b-be9f-1add7488a7f4/*
==> Graph/UUID/ae58d1a6-4612-418b-be9f-1add7488a7f4/nickname <==
donald
==> Graph/UUID/ae58d1a6-4612-418b-be9f-1add7488a7f4/pbk <==
Graph/log/chat_donald_20210510_103516
==> Graph/UUID/ae58d1a6-4612-418b-be9f-1add7488a7f4/url <==
https://www.instagram.com/realdonaldtrump/hongwu@hongwu-Precision-M6600:~/devel/2021/D
uniix/auth$
hongwu@hongwu-Precision-M6600:~/devel/2021/Duniix/auth$
```

3. The Duniix project gets its name from the first two letters, where D stands for “decentralized” and U stands for “user centric” and is aimed at introducing metaprogramming to EVERYONE, from non-programmers to expert and senior programmers.

We shall discuss other deeper and more abstract issues in the series of articles with prefix M (Metaprogramming), e.g.

- Is metaprogramming meant to be learned by the masses or just the immortal LISP programmers?

Our aim is that even if you are a non-programmer, you should be able to debate with immortal LISP programmers after only ONE MONTH of following our tutorials.

4. The only command that readers (programmers or non-programmers alike) need to learn from this tutorial is:

- `php phos.php donald nn_sv https://www.instagram.com/realdonaldtrump/ id_url`

It consists of 3 parts:

- a. 'php phos.php' executes phos.php script, which then processes the remaining of the command.
- b. 'donald nn\_sv' sets 'nickname' to 'donald'. As with the Forth programming language, our variant is called Phoscript and it also uses reverse polish notation, where the 'function word' nn\_sv comes after the 'data word' 'donald'.
- c. '<https://www.instagram.com/realdonaldtrump/> id\_url' executes the function id\_url to store the given URL in a graph database.

5. In one line of command in (4), we wish to challenge 3 major paradigms in today's computer programming:

- a. *Programming languages should be incomprehensible to non-programmers, junior programmers or even senior programmers using other programming languages. There is simply no mechanism to simplify programming languages.*

Phoscript is here to prove otherwise.

- b. *A database system must be at least 100mb when installed to be taken seriously.*

What we have demonstrated above is called FSGDB (Filesystem Graph Database), that is to say, we are using the native Linux filesystem to implement our graph database.

- c. *A MVC system must use a centralized database for user authentication.*

We have demonstrated a Decentralized User Authentication System based on public key cryptography.

6. Let us elaborate each point listed in (5):

- a. In November 1961, Dijkstra published his legendary "shunting yard algorithm", which became the common ancestor of almost all other subsequent programming languages:
  - [https://en.wikipedia.org/wiki/Shunting-yard\\_algorithm](https://en.wikipedia.org/wiki/Shunting-yard_algorithm)
  - <https://www.cs.utexas.edu/~EWD/MCReps/MR35.PDF>

The inventor of the Forth programming language (first published in 1968), Charles H. Moore, recalled working with Algol briefly.

Although never formally named as “inverse shunting yard algorithm”, Forth and derivatives, in various forms of “hard Forth” (directly bare metal compiled to assembly) or “soft Forth” (Forth implemented on top of other “third generation” programming languages, including Phoscript) are essentially an inverse implementation of the shunting yard algorithm.

As such, Forth derivatives or Generalized Reverse Polish Notation (GRPN), for convenience, can be implemented in any known programming language, with around 50 lines of JavaScript or equivalent, essentially a loop to do the following:

1. parse space delimited string;
2. push data words on to the stack; and
3. call eval() or equivalent to execute function words

Therefore Forth derivatives or GRPN become a form of metaprogramming script that can be implemented within any known programming language, in order to simplify the host programming language, besides other purposes.

- b. Any programmer familiar with SQL databases would know database, table, rows, fields etc.

They would also know that json is pretty much a universal format to exchange and store data.

So the question is:

Can we save a json with the key as filename and values as file contents?

If we do so, then each row of a table in a database is essentially a json object.

Then each directory is a table containing rows which are in turn json objects.

Then a database is simply the parent directory of table directories.

The only problem with this solution seems to be too simple, too good to be true.

Or, from the business perspective, would any programmer or boss be ready to use this FSGDB as solutions for customers?

Or, would any established academic be willing to advocate FSGDB?

- c. SQL databases inextricably lead centralized user authentication systems, as no one would bother to challenge this paradigm, until we proved otherwise using Duniix.

In the example shown above, the nickname is mapped to a public key file, which can be used to encrypt secret phrases (strings) to challenge the user, to decrypt it with a corresponding private key. Duniix uses the built in `subtle.crypto` RSA functions for these purposes.

- Command to display nickname and pbk:  
`tail -n -1 Graph/UUID/ae58d1a6-4612-418b-be9f-1add7488a7f4/*`
- Full path of nickname and contents:  
`==> Graph/UUID/ae58d1a6-4612-418b-be9f-1add7488a7f4/nickname <==`  
`donald`
- Full path of pbk key and the full path of the actual file that contains the public key  
`==> Graph/UUID/ae58d1a6-4612-418b-be9f-1add7488a7f4/pbk <==`  
`Graph/log/chat_donald_20210510_103516`

## 7. Long Term Plans

Also in a previous article, we described how metaprogramming using Phoscript allows a user to create a dialog box with a very simple string expression:

- `nickname dlb:`

This example may look trivial, but it is the first crucial step in a journey of a thousand miles.

While metaprogramming may be perceived to have different goals by different groups of programmers, we consider "simplifying programming languages" as the most important. This, in turn, will bring the following benefits:

1. Specialization of junior and senior developers, allowing senior developers to focus on developing low level host programming language API, while junior developers use Phoscript or an equivalent high level metaprogramming script to call the host programming language API;
2. Smoother transition of older programmers to new frameworks using different programming languages;
3. Migration of legacy code to new framework using different programming languages;
4. A unified metaprogramming script for beginners to learn programming and mathematics.

Besides simplifying programming languages, there are two other crucial subsystems in a network or web based system which require a fundamental paradigm shift to realize a "decentralized and user centric" "cloud computing" system: user authentication and graph database.

These subsystems have been implemented in Duniix with less than 10 mb of JavaScript and PHP source code (uncompressed). The name Duniix is coined based on "decentralized" and "user centric" for the first two letters, and \*nix is used to avoid confusion with Unix

- <https://finance.yahoo.com/quote/DUNIX/>  
DUNDAS International Equity Growth Fund Institutional Class (DUNIX)

besides 'ii' signifying the "next generation" (2 in Roman numerals).

Some readers may ask:

- Why would anyone want a decentralized user centric cloud computing system while we are happy with the current MAGAtron systems?

However, if we change the perspective of the question:

- Would you like to earn 1% of the total revenues earned by MAGAtron annually?
- What about the costs?

Nothing. Just YOUR time to learn something new. Literally one "word" (function name) at a time.

Heliocentrism, the theory that the earth revolves around the sun, has initiated revolutions that transformed the role of individuals from being a subject (literally "sheep" and "herd") of Catholic Kingdoms to citizens of modern nation states. In a previous article, we argued that metaprogramming could be like heliocentrism, something that may initiate a new scientific revolution.

We believe the metaprogramming revolution would lead to the following major achievements:

1. Science and Education: Metaprogramming will become the fundamental syllabus in programming and mathematics, elevating the intellect of the next generation of students to the next level, much like how programmers in 2021 compare to the ignoratis prior to the invention of the personal computer in the 1970s.
2. Metatron: a global computer network built using metaprogramming.
3. Governance: Metatron introduces decentralized cryptography features to ensure accountability and transparency in public institutions of governments around the world.

## References and Links

### 1. Phoscript Tutorials

[https://github.com/udexon/Multiweb/blob/master/Phoscript\\_Tutorials.md](https://github.com/udexon/Multiweb/blob/master/Phoscript_Tutorials.md)

### 2. Duniix Phoshell

[https://github.com/udexon/DUNIIX/blob/main/DU001\\_Phoshell.md](https://github.com/udexon/DUNIIX/blob/main/DU001_Phoshell.md)

### 3. Phoscript Overview

<https://youtu.be/5Fm8e4LC5vo>

<https://youtu.be/orfg9ZFw4zs>

- Flippio combines Flipped Classroom with video editing and social media, “群动视频制作教学法” 将“翻转课堂”方法 应用于 视频制作 及 社交网络 , providing a method to bypass “the first 1000 subscribers” barrier of entry 助您跨越 “首 1000 粉丝” 的门槛 , to be an influencer, with a Fibonacci type membership growth mechanism. 成为网红 , 并使群粉丝人数以斐波那契数列增长。
- 脸书群: <https://www.facebook.com/groups/flippio>
- 微信群



- GitHub: <https://github.com/udexon/flippio>
- WhatsApp: <https://chat.whatsapp.com/LSwxtXEFBeWFqNkxGviVIU>