
Git & GitHub

for a newbie software developer !

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Introduction



DO NOT Take Notes!
DO NOT Take Photos!



Just Listen!



Ask Questions!



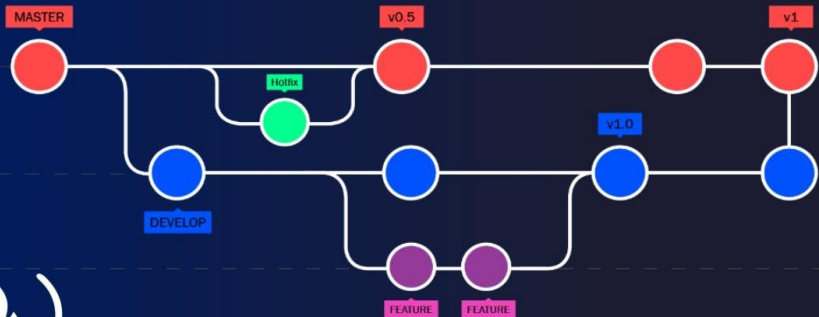
Any Questions So Far?



**There Are A LOT of
Resources to Learn Git!**



Git for Professionals



Chapter 0

An Introduction to

ADVANCED Programming

(An Adaption of Professor R.Khosravi 1st AP Course Session)

I never thought that I would stop dreaming about you – Michael Jackson



Advanced?! How??



What Could Have Been Implemented?

- More Complex Code
- Code Readability
- Faster Development
- Better Use of Resources
- Usability (From User Point of View)
- Safety



So It's Mostly About Quality!



Quality of CODE



Quality of DEVELOPMENT



Software Development

Software Craftsmanship



Software Quality – An Example



New chat

Today

New chat

New chat

New chat

(function() { console.log("Loa

This is a script to download vie

How to use PiP mode on YouTube

cannot install apk created by An

Yesterday

how to download google sheets i

A video is playing as a segment

Get App **NEW**



My Profile

Hi



Thought for 0 seconds ^

The server is busy. Please try again later.

Fix DeepSeek Server is Busy



hi



Thought for 0 seconds ^

The server is busy. Please try again later.



New chat

Message DeepSeek

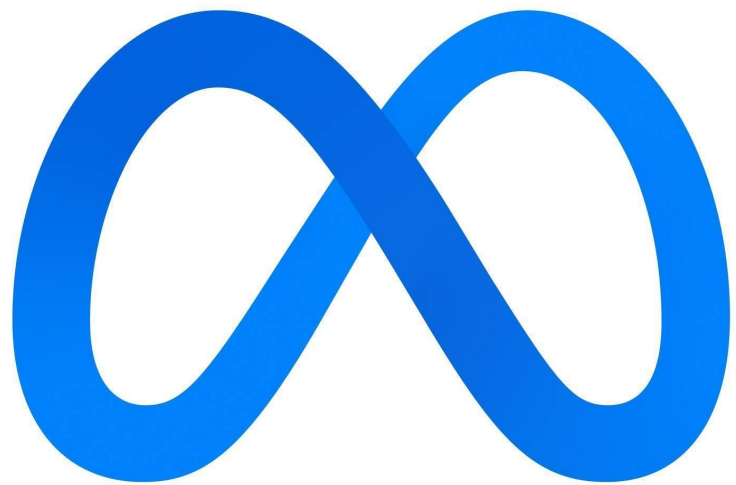
DeepThink (R1)

Search





Another Example





Meta Confirms WhatsApp Hack—Act Now To Stay Safe

Davey Winder Senior Contributor @

*Davey Winder is a veteran cybersecurity writer,
hacker and analyst.*

Follow

[Link](#) to the original article





Ahoora Niazi

Youtuber, Technology Blogger



Back to Our Topic!

-
- More Complex Code
 - Code Readability
 - Faster Development
 - Better Use of Resources
 - Usability (From User Point of View)
 - Safety

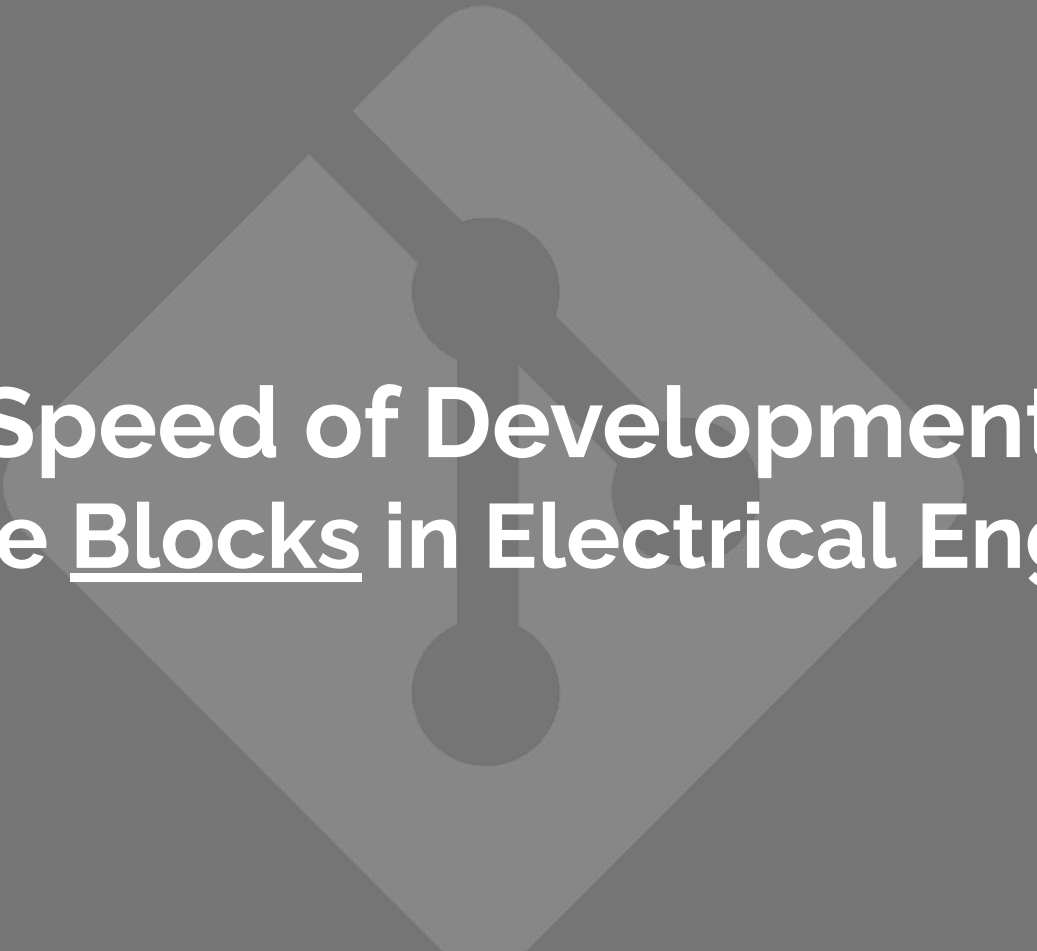
- More Complex Code → Faster Data Structures!
- Code Readability → Where the Course Focuses
- Faster Development → Our Main Focus!
- Better Use of Resources → Operating Systems
- Usability (From User Point of View) → ...
- Safety → Security (Network, Software, ...)



Speed of Development



Speed of Development **Interacting with Other Programmers**



Speed of Development Kinda Like Blocks in Electrical Engineering



Speed of Development We **NEED** Tools



Any Questions So Far?



There's More to Talk About!

(Resources will be provided)

Chapter 1

A Quick Intro to Version Control

What makes you different makes you strong – Vi



Imagine a Situation: Designing a Small Piece of Software

MANAGING THE DEVELOPMENT OF LARGE SOFTWARE SYSTEMS

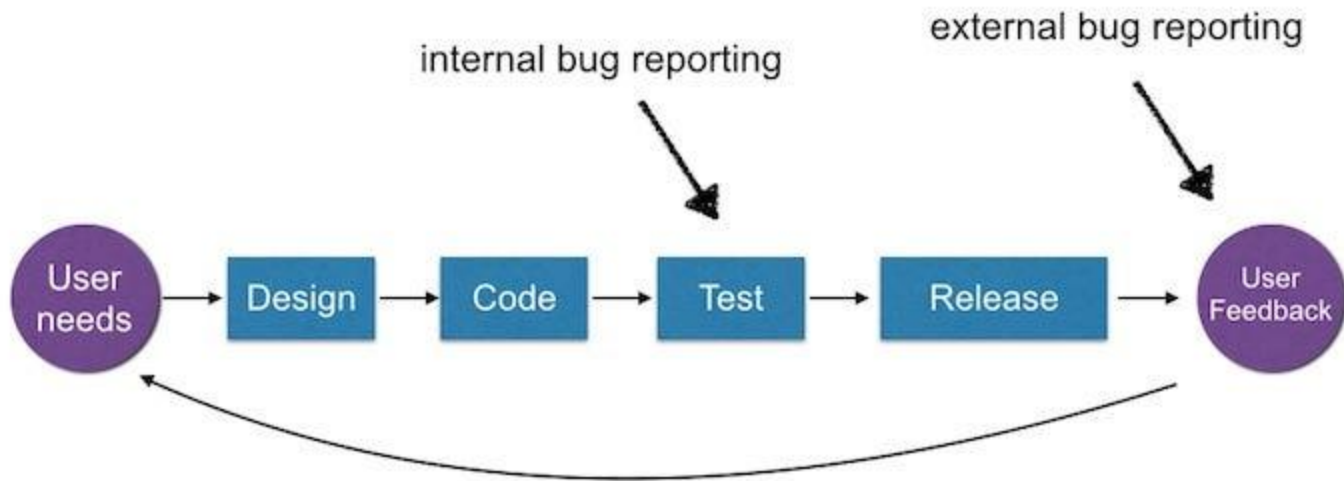
Dr. Winston W. Royce

INTRODUCTION

I am going to describe my personal views about managing large software developments. I have had various assignments during the past nine years, mostly concerned with the development of software packages for spacecraft mission planning, commanding and post-flight analysis. In these assignments I have experienced different degrees of success with respect to arriving at an operational state, on-time, and within costs. I have become prejudiced by my experiences and I am going to relate some of these prejudices in this presentation.

COMPUTER PROGRAM DEVELOPMENT FUNCTIONS

There are two essential steps common to all computer program developments, regardless of size or complexity. There is first an analysis step, followed second by a coding step as depicted in Figure 1. This sort





How About Keeping Track of The Development Process?



myProject-2015-01
-01



myProject-2015-01
-01-final



myProject-2015-01
-01-final2



myProject-2015-01
-02



myProject-2015-01
-03



myProject-2015-01
-03-final2



myProject-2015-01
-05



myProject-2015-01
-07



myProject-2015-01
-09



myProject-2015-01
-10



myProject-2015-01
-14



myProject-2015-01
-18



myProject-2015-01
-19



myProject-2015-01
-23



myProject-2015-01
-24



myProject-2015-01
-28



myProject-final



myProject-latest



myProject-super-
final



myProject-super-
latest



Or a Real Example!

<input type="checkbox"/>	Shayan Shahrabi	☆ final-23		1/25/2023
<input type="checkbox"/>	● Shayan Shahrabi	☆ final-22		1/25/2023
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<input type="checkbox"/>	● Shayan Shahrabi	☆ load function		1/24/2023
<input type="checkbox"/>	● Shayan Shahrabi	☆ final-20		1/24/2023
<input type="checkbox"/>	● Shayan Shahrabi	☆ final-19 On Tue, Jan 24, 2023, 6:23 PM farid karimi <fkarimi8320@gmail.com> wrote:		1/24/2023
<input type="checkbox"/>	● Shayan Shahrabi	☆ final-18		1/24/2023
<input type="checkbox"/>	● Shayan Shahrabi	☆ final-16		1/24/2023
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<input type="checkbox"/>	● Shayan Shahrabi	☆ final-4		1/22/2023
<input type="checkbox"/>	● Shayan Shahrabi	☆ final-1		1/22/2023
<input type="checkbox"/>	Shayan Shahrabi	☆ Menu-5		1/22/2023
<input type="checkbox"/>	Shayan Shahrabi	☆ Menu-3 مشکل مرتب سازی رفع شد		1/19/2023
<input type="checkbox"/>	● Shayan Shahrabi	☆ Menu-2 مشکل سیو کردن در وسط بازه حل شده؛ ولی اگر بالاترین امتیاز ثبت شده باشد غلط کار میکند.		1/19/2023
<input type="checkbox"/>	● Shayan Shahrabi	☆ Menu-1 در آپدیت کردن مشکل دارد. ----- صدا دارد سه گزینه ی آخر منو کار میکنند		1/19/2023



Source Control

Version Control

(Distributed Version Control)

(a system for keeping track of changes across a set of files)



Any Questions So Far?



The Urge For a Version Control!



Chapter 2

Let's Git it!

Going outside is highly overrated – Anorak's Almanac



So What is Git?

Git (/ɡɪt/)^[8] is a **distributed version control system**^[9] that tracks versions of **files**. It is often used to control **source code** by **programmers** who are **developing** software collaboratively.

Design goals of Git include speed, **data integrity**, and support for **distributed**, non-linear workflows — thousands of parallel **branches** running on different computers.
^{[10][11][12]}

As with most other distributed version control systems, and unlike most **client–server** systems, Git maintains a local copy of the entire **repository**, also known as "repo", with history and version-tracking abilities, independent of **network** access or a central **server**. A repository is stored on each computer in a standard **directory** with additional, **hidden files** to provide version control capabilities.^[13] Git provides features to **synchronize** changes between repositories that share history; copied (cloned) from each other. For collaboration, Git supports synchronizing with repositories on **remote machines**. Although all repositories (with the same history) are peers, developers

Git



```
$ git init
Initialized empty Git repository in /tmp/tmp.IMBYS7R8Y/.git/
$ cat > README << 'EOF'
> Git is a distributed revision control system.
> EOF
$ git add README
$ git commit
[master (root-commit) e4dcc69] You can edit locally and push
to any remote.
1 file changed, 1 insertion(+)
 create mode 100644 README
$ git remote add origin git@github.com:cdown/thats.git
$ git push -u origin master
```

A command-line session showing repository creation, addition of a file, and remote synchronization

Original author(s) **Linus Torvalds**^[1]

Developer(s) Junio Hamano and others^[2]

It took god 6 days to create earth

Also

It took Linus Torvalds 10 days to create git!



So We Know What Git is Theoretically!



Let's Get Practical!



Questions?



Some Keywords

Repository / Repo



Local / Remote Repository



Even within a Single Project

- Local Repo
- Remote Repo



Even within a Single Project

- Local Repo
- Remote Repo



Chapter 3

How to Use Git?

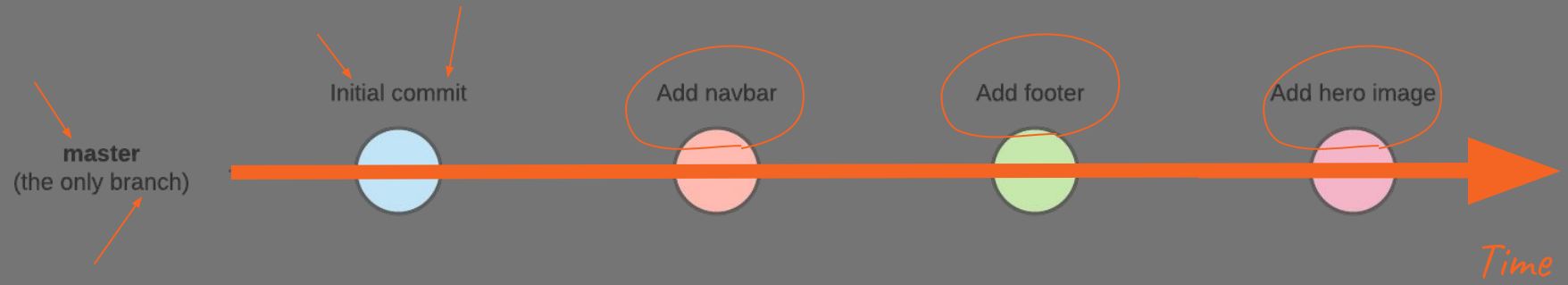
(We're talking about local repos)

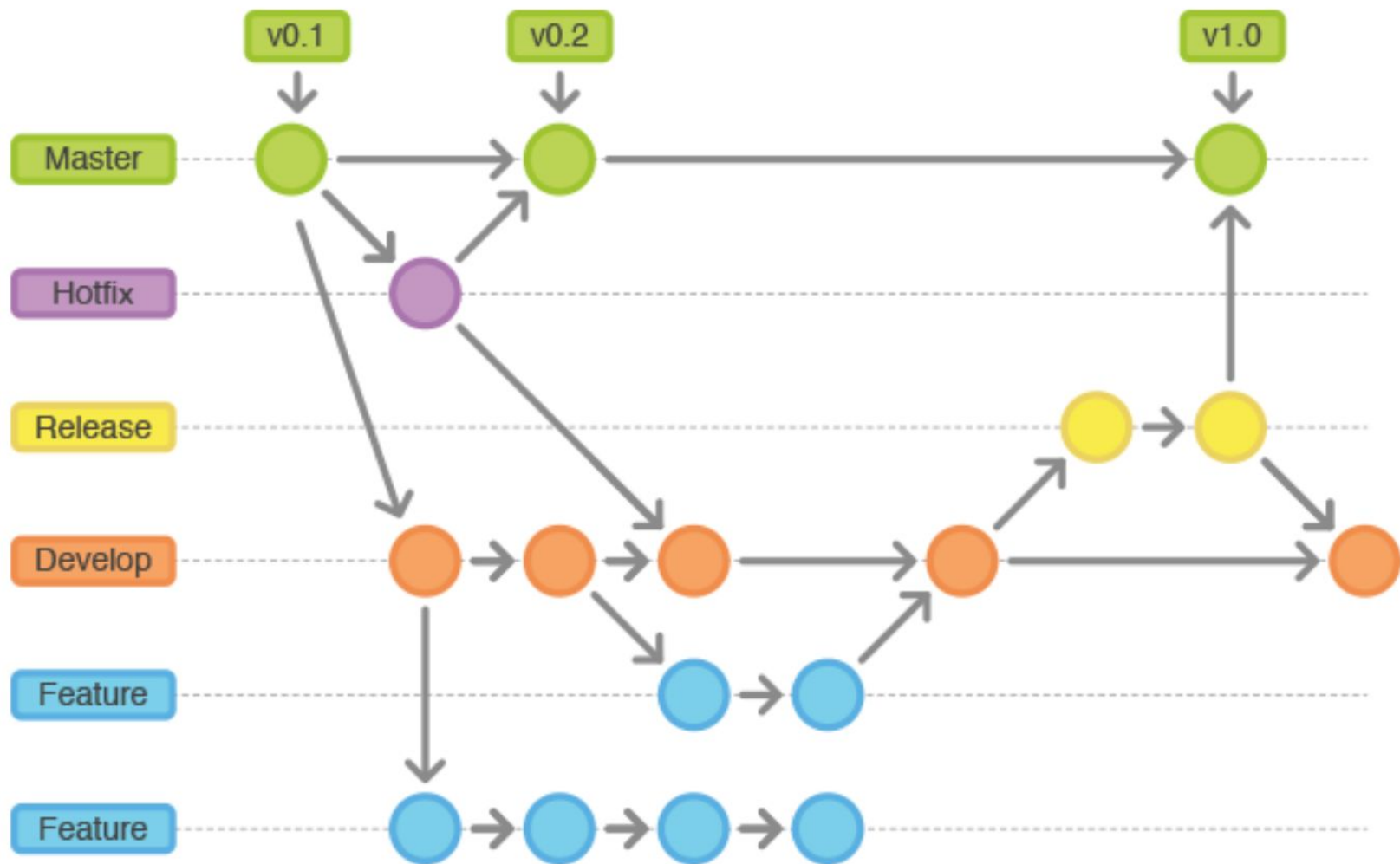
"You are my only moon" – R.R

C1

C2

SnapShots (= commit)







Keywords



commit



branch



root / root commit



Any Questions ?



Your Homework for Next Session



1. Install Git (NOT GitHub!)

(links will be provided)



2. Config Your Git Locally



3. Create a GitHub Account

(Just Create One! DO NOT do Anything Else!)



**4. Read About Open Source
Software! We WILL Talk About It**



Link to Lecture Repo :)



Take Care !