



Desire to be proud of what we do

SOFTWARE CRAFTSMANSHIP



W H A T C O M E S T O Y O U R M I N D

WHEN YOU THINK OF A CRAFTSMAN

He who works with his hand is a laborer

He who works with his hand

and

and

is a CRAFTSMAN



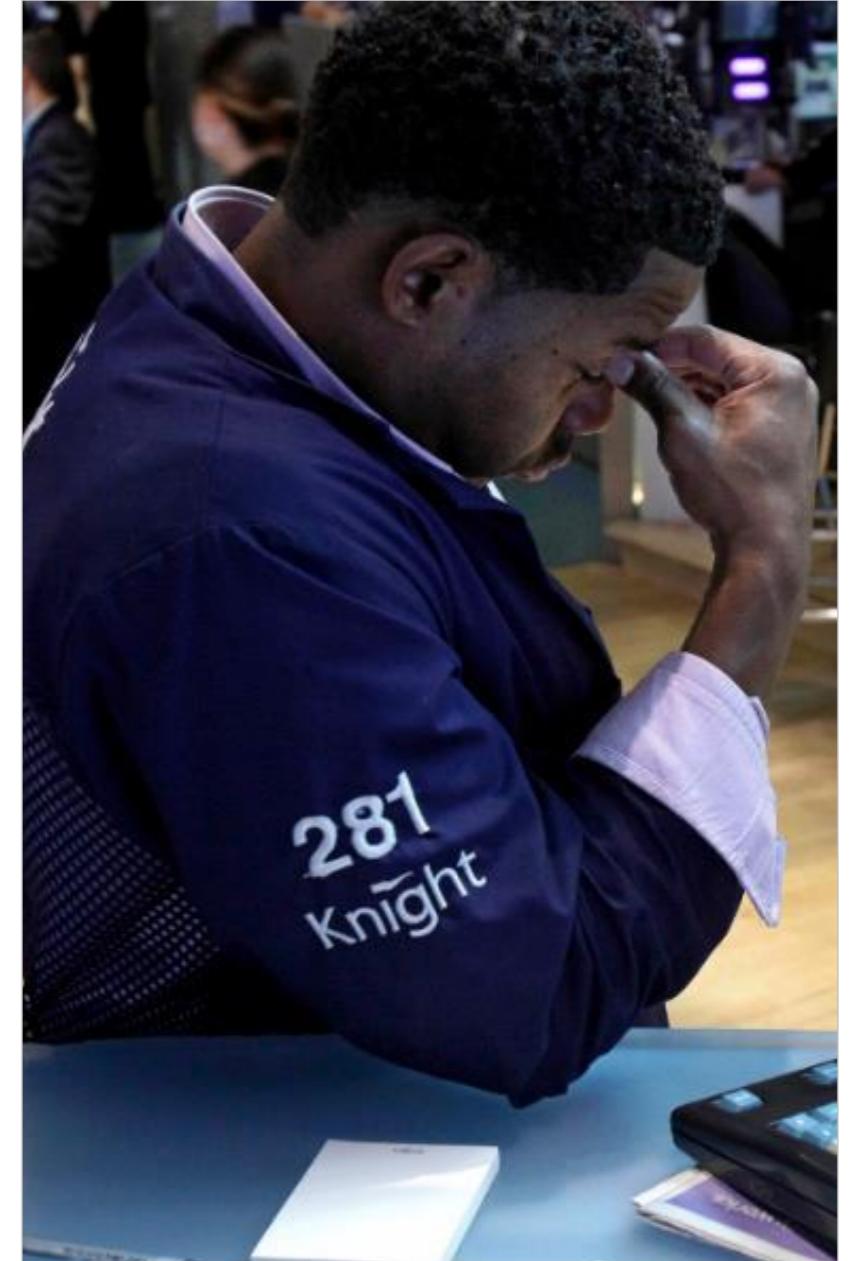
ARE WE?



STAKE



WHAT WENT WRONG



WWIII

Soviet early warning system Oko, reported that the US had fired off a missile against the Soviet Union.

FAILURE TO FILTER FALSE ALARMS

THERAC-25

It was a radiation therapy machine. In layman's terms it was a "cancer zapper"

COPY PASTE WITHOUT TEST

Can you hear me now? No.

On January 15, 1990, over 50 percent of AT&T's network crashed. In nine hours, 75 million calls went unanswered.

SINGLE BREAK STATEMENT

NASA'S MARS ORBITER

NASA's Mars Climate Orbiter burned up in the Martian atmosphere because engineers failed to convert units from English to metric.

ASSUMPTIONS

POWER PEG

In 2012 Knight Capital was the largest trader in U.S. equities. It purchased stocks at a total cost of around \$7 billion.

DEAD CODE



WE ARE **DOUBLING** NEARLY
EVERY **FIVE YEARS**



What do we
need?

MINDSET





We want to be
PROUD
the way
we work.



We want the **PEOPLE**
to be **PROUD**
the way we work

We want people
to be **STRUCK** by
the **Discipline**,
& the **Orderliness**,
& the **Care**,
& the **CRAFTSMANSHIP**





What happens
when we **STRIVE**
for such a discipline?



It builds the
TRUST



The reason he promoted extreme programming

...to **HEAL** the **DIVIDE** between
programmers and business

--Kent Beck

How do we get
there?





Bunch of
PROMISES
&
DISCIPLINES

PROMISES

Just like doctors, lawyers, and others here is one way that we, as a society of programmers could agree on, is a set of standards for ourselves.





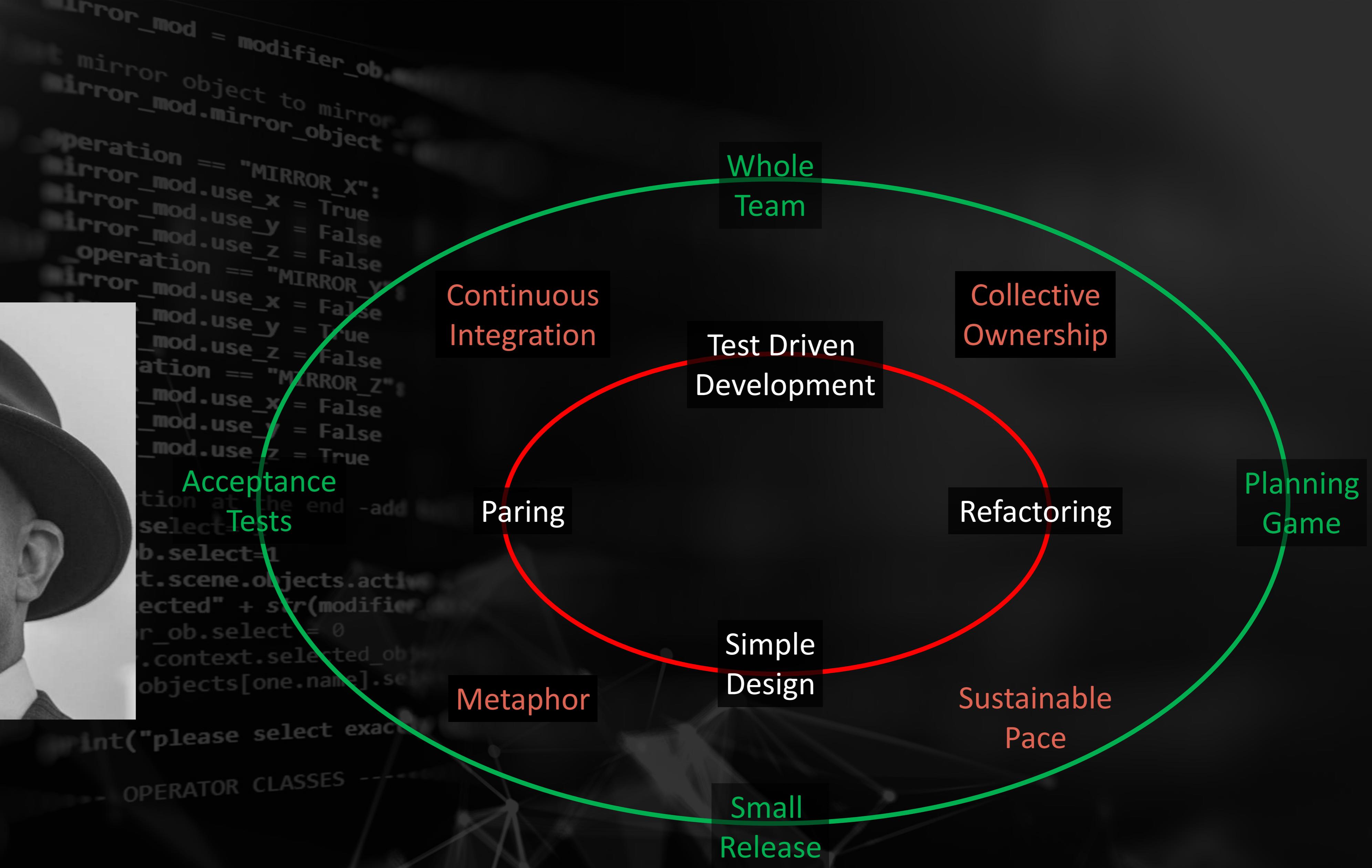
Promises that are made to
OURSELVES

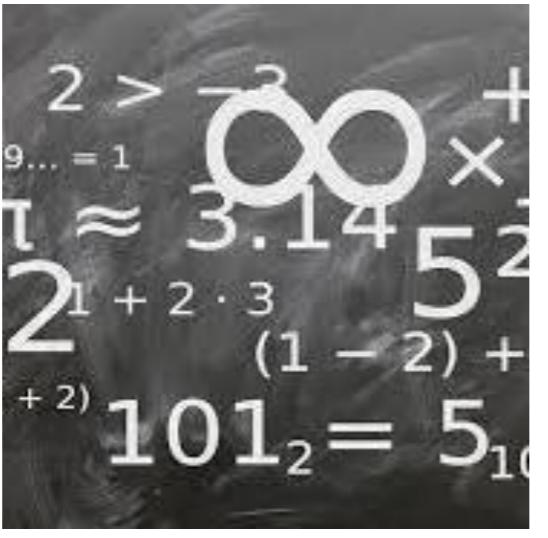
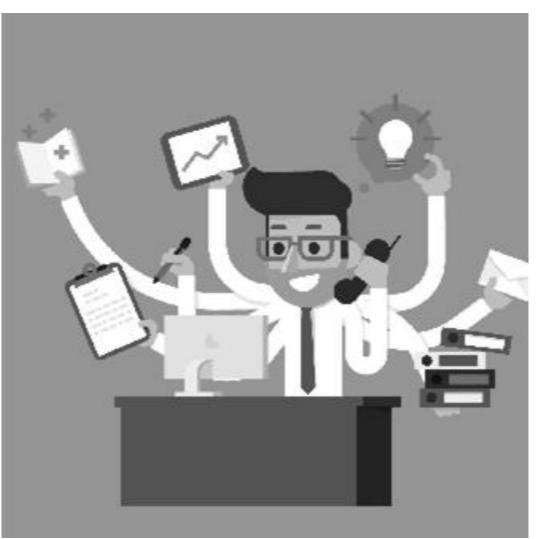
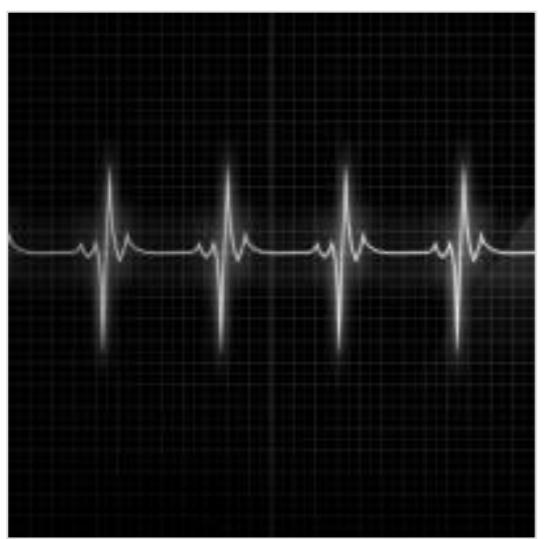
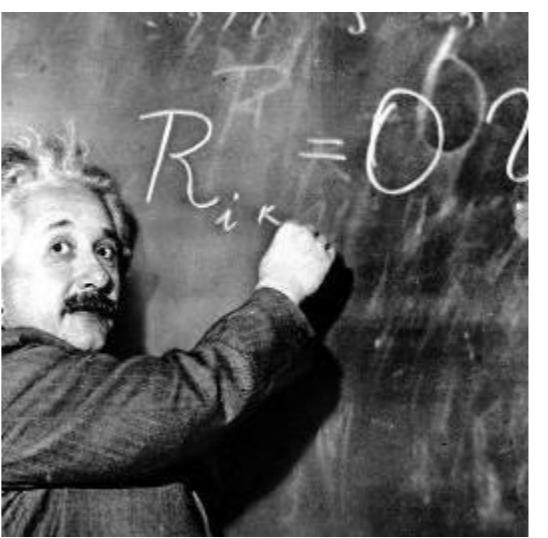


Promises that are made
to the **COMMUNITY**
that we are part of



KENT BECK





TO MYSELF

PROMISES

Just like doctors, lawyers, and others here is one way that we, as a society of programmers could agree on, is a set of standards for ourselves.

1
''



```
mirror_mod.use_x = True  
mirror_mod.use_z = False  
elif _operation == "MIRROR_Z":  
    mirror_mod.use_x = False  
    mirror_mod.use_y = False  
    mirror_mod.use_z = True
```

```
#selection at the end - add back the deselected mirror  
mirror_ob.select= 1  
modifier_ob.select=1  
bpy.context.scene.objects.active = modifier_ob  
print("Selected" + str(modifier_ob)) # modifier ob is the active object
```

I will not produce
harmful code

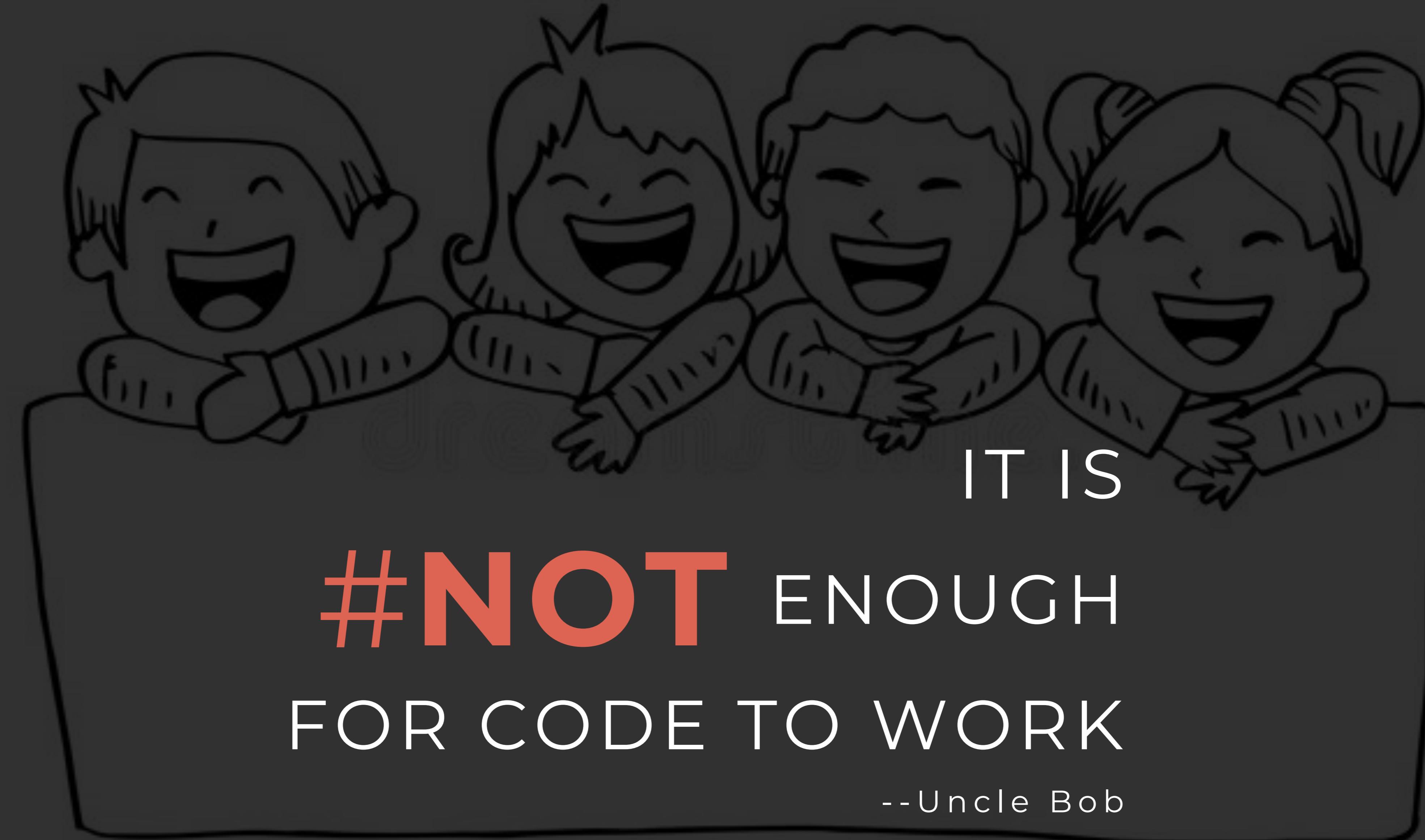
soft + ware

```
mirror_mod = modifier_ob
Set mirror object to mirror
mirror_mod.mirror_object

operation == "MIRROR_X":
    mirror_mod.use_x = True
    mirror_mod.use_y = False
    mirror_mod.use_z = False
operation == "MIRROR_Y":
    mirror_mod.use_x = False
    mirror_mod.use_y = True
    mirror_mod.use_z = False
operation == "MIRROR_Z":
    mirror_mod.use_x = False
    mirror_mod.use_y = False
    mirror_mod.use_z = True

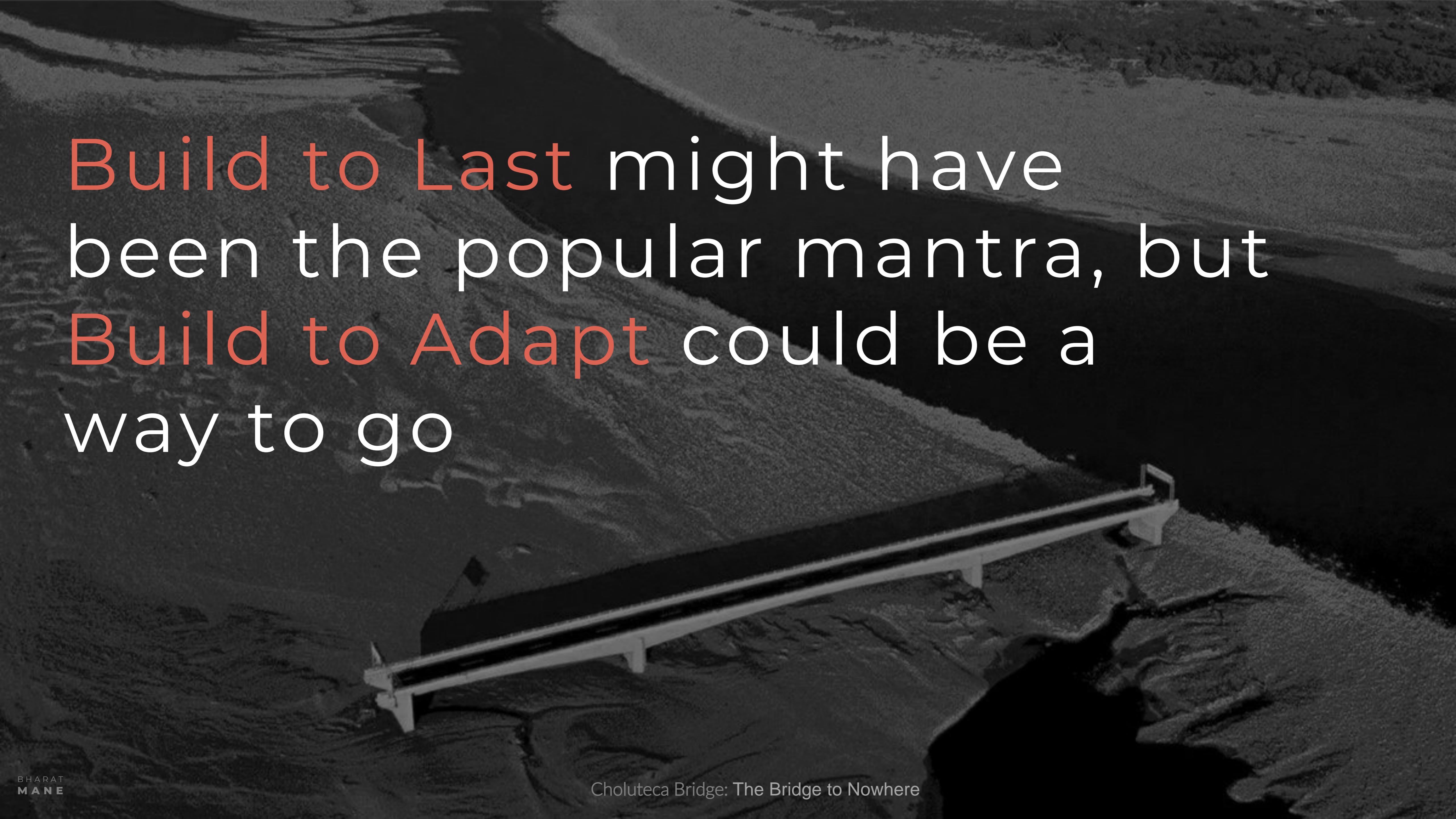
selection at the end -add
modifier_ob.select= 1
mirror_ob.select=1
context.scene.objects.active = bpy.context.selected_objects[-1]
("Selected" + str(modifier))
mirror_ob.select = 0
bpy.context.selected_objects[-1].select = 1
data.objects[one.name].select = 1

int("please select exactly one object")
- OPERATOR CLASSES -
types.Operator:
    X mirror to the selected object
    select.mirror_mirror_x"
```



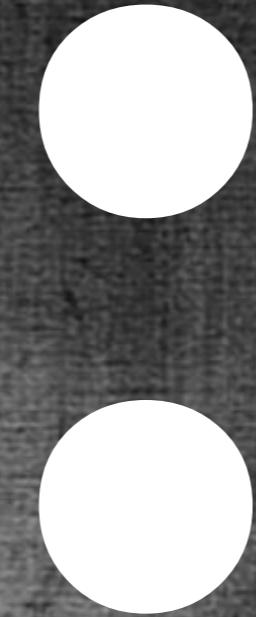
IT IS
#NOT ENOUGH
FOR CODE TO WORK

--Uncle Bob



Build to Last might have
been the popular mantra, but
Build to Adapt could be a
way to go

Choluteca Bridge: The Bridge to Nowhere



The **ratio** of time spent reading (code) versus writing is well over **10 to 1** ...

MAKING IT EASY TO READ MAKES IT EASIER
TO WRITE

Any fool can
write code that a
computer can
understand.
Good programmers
write code that
humans can
understand.



Martin Fowler



Harold Abelson

Programs must
be written for
people to read,
and only
incidentally for
machines to
execute

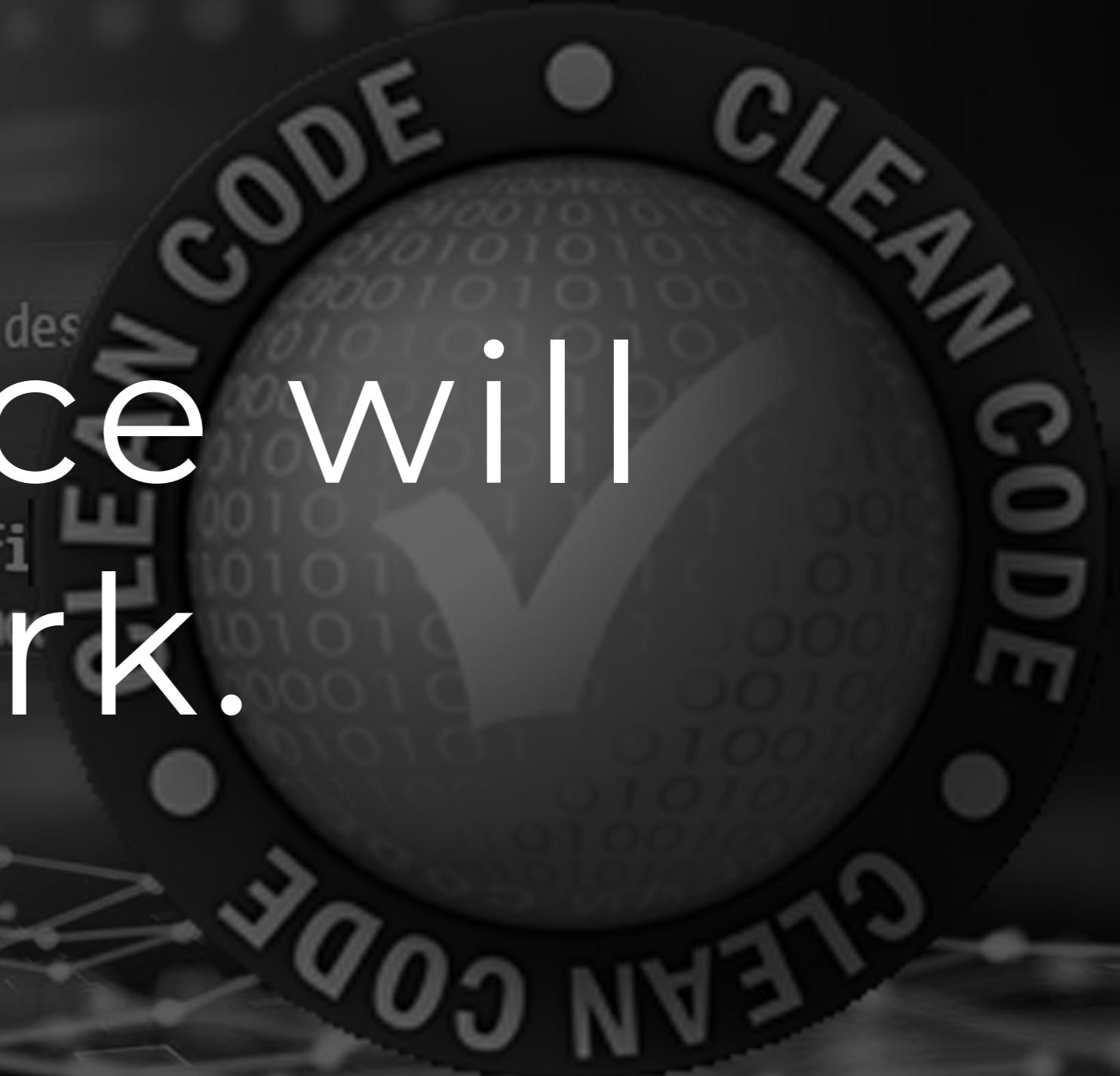
PARROT SAT ON A TABLE
AND TABLE BROKE



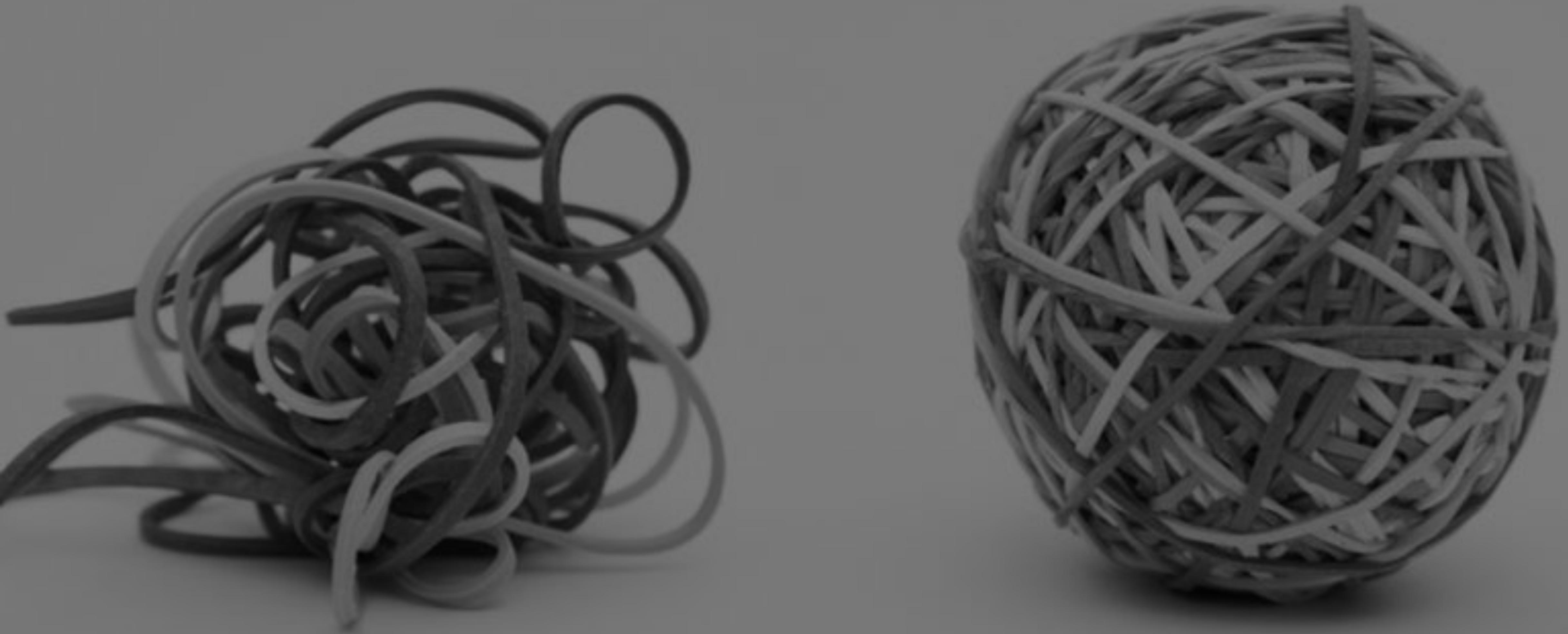
HIS NAME
WAS PARROT

“
2

The code that I produce will
always be my best work.



REFACTORING



I will NOT knowingly allow
code that is defective either
in behaviours or structure to
accumulate.





The only way to make the deadline...
The only way to go fast...
...is to keep the code
as clean as possible at all times

Later



N
E
V
E
R

''

I will produce, with each release, a quick, sure, and repeatable proof that every element of the code works as it should.



Don't you think your
Manager, Unit head, or
CEO should get a zero test
failed receipt of your code?

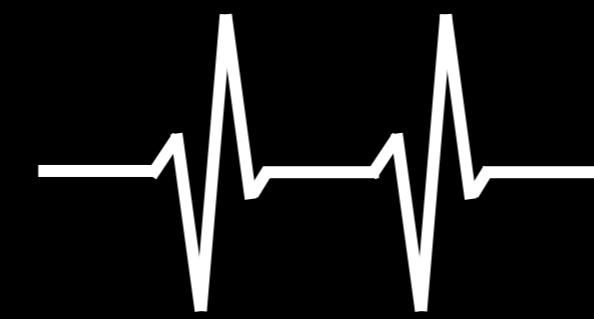
“
4

I will make frequent,
small, releases so that
I do not impede the
progress of others

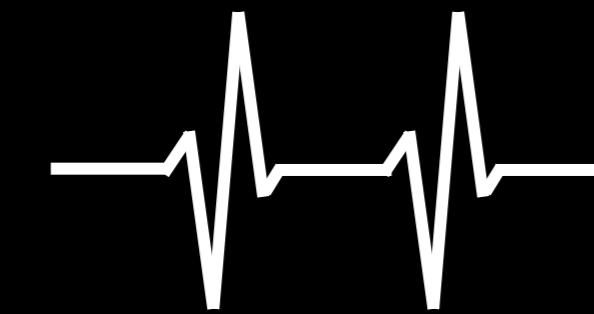


ITS MORE THAN THE CODE

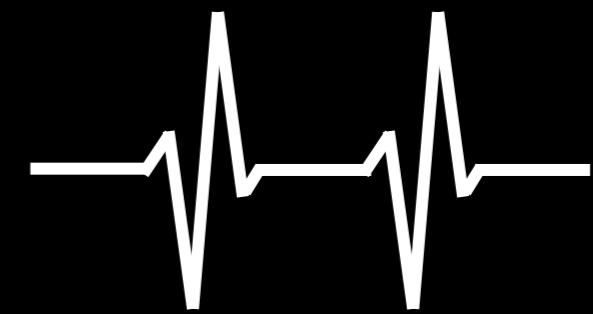
Requirements



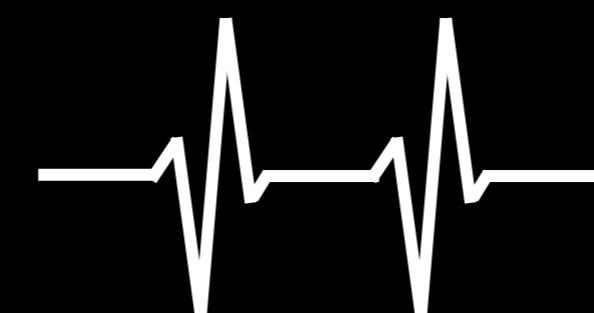
Designs/Code reviews



Refactoring cycles



Check-Ins



User acceptance

ITS SHORTER FEEDBACK LOOP



Feedback loop (From XP)
is like a well-designed
shower

''

I will fearlessly and
relentlessly improve our
work at every
opportunity



A black and white close-up photograph of a young child's face. The child has short hair and is looking upwards with a wide-eyed, open-mouthed expression of surprise or excitement. The background is dark and out of focus.

RIGIDITY

FRAGILITY

NON-REUSABLE CODE

READABILITY

Do software
degrade?



Neglect
accelerates the rot
faster than any other factor.

I will do all that I can to keep
the productivity of myself, and
others, as high as possible.

I will do nothing that
decreases the productivity



- Omit a test case
- Check-in something that will brake the pipeline
- Work on a branch for a long time
- Write a module that is complex enough only you understand
- Write test cases after the production code
- ...

7

7

I will continuously ensure that others can cover for me, and that I can cover for them



ALL THE
BEST THINGS
COMES IN PAIRS
DRIVER NAVIGATOR

“

I will produce estimates that
are honest both in magnitude
and precision.

I will **not** make promises
without certainty.





THE
FINE ART
OF GUESSING

”

I will never stop
learning and
improving my craft”



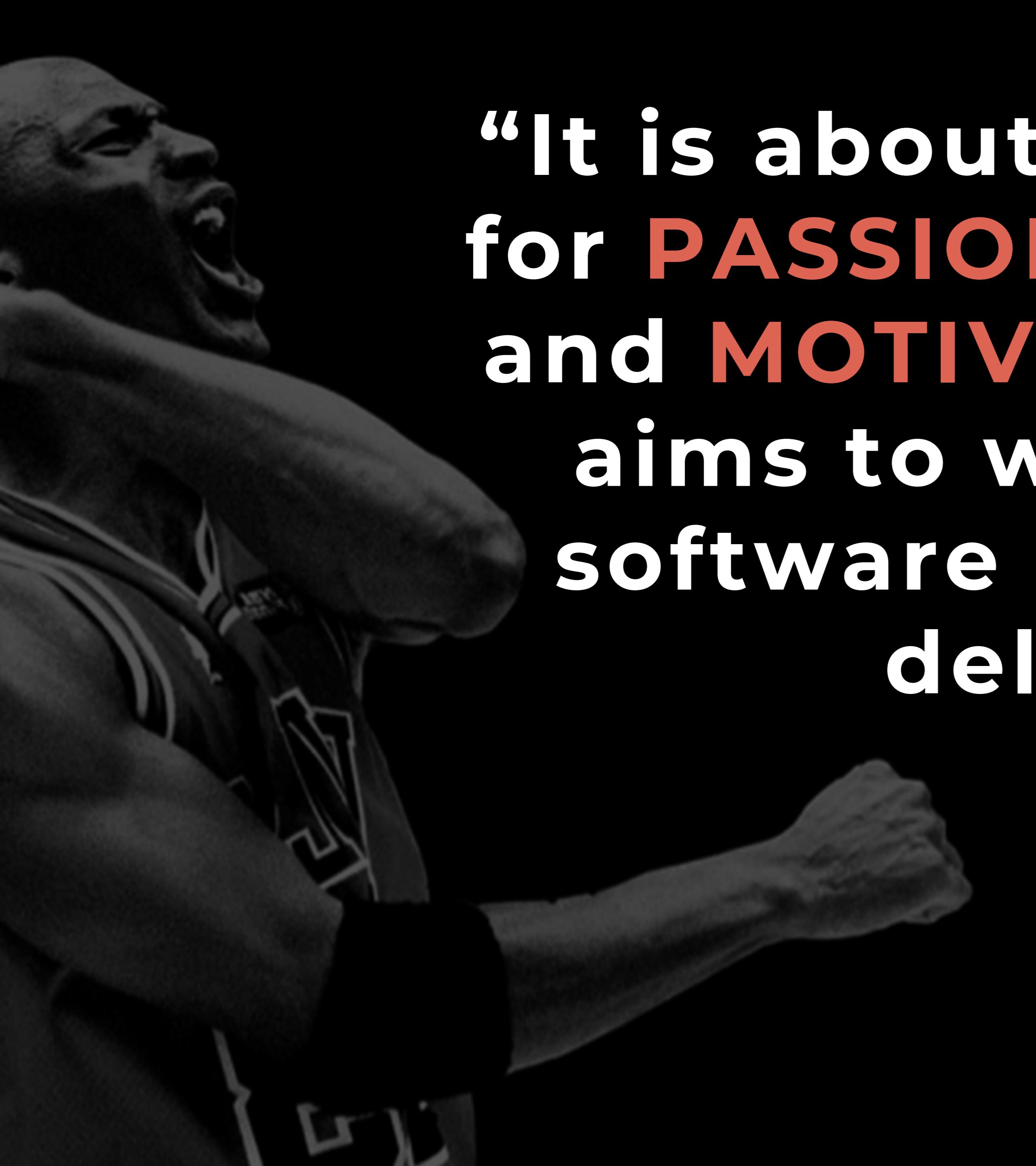
```
mirror_mod.use_y = True
mirror_mod.use_z = False
elif _operation == "MIRROR_Z":
    mirror_mod.use_x = False
    mirror_mod.use_y = False
    mirror_mod.use_z = True
```

```
#selection at the end -add back the deselected mirror
mirror_ob.select= 1
modifier_ob.select=1
bpy.context.scene.objects.active = modifier_ob
print("Selected" + str(modifier_ob)) # modifier ob is the active
```

A black and white photograph of a classroom scene. A female teacher stands in the center, smiling and pointing upwards with her right hand. She is holding an open book or notebook in her left hand. Several students are visible in the foreground, with their hands raised towards the teacher. In the background, a chalkboard displays simple mathematical equations like "1+1=2", "2+2=4", "3x3=9", and "4x4=16".

BEST WAY TO LEARN IS
TEACH IT

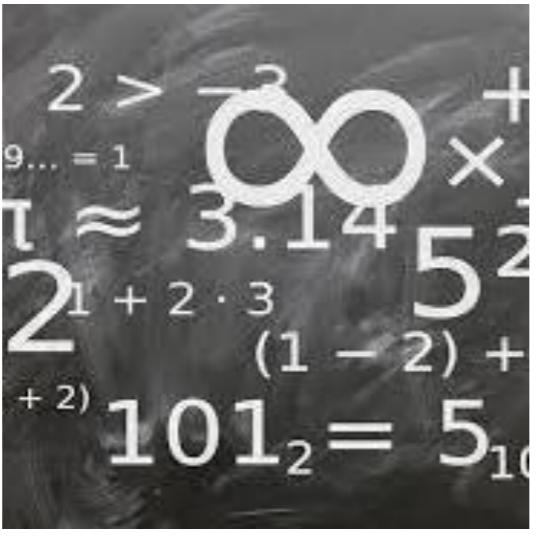
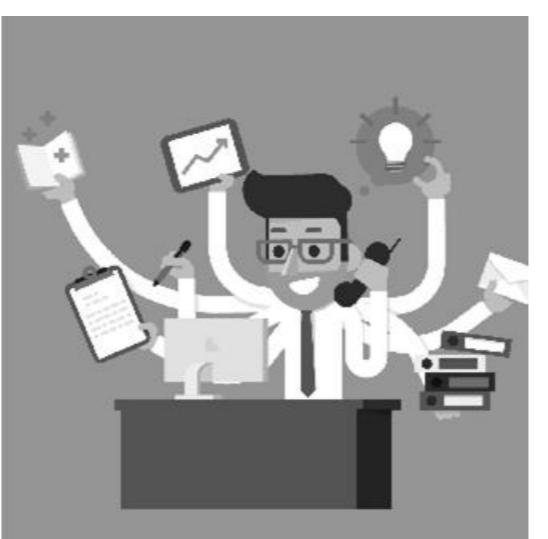
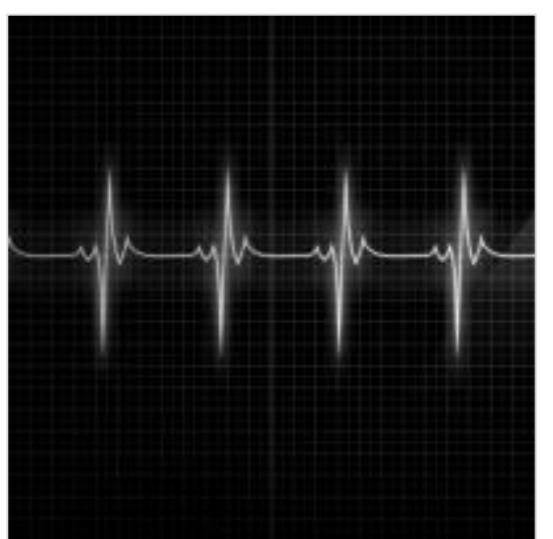
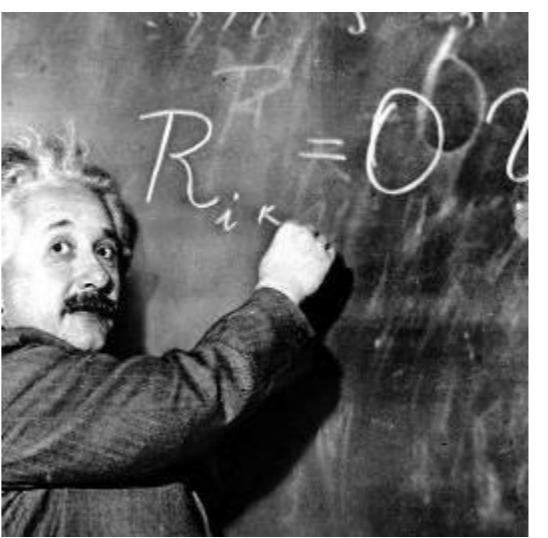




**“It is about building a culture
for **PASSIONATE**, **DISCIPLINED**
and **MOTIVATED PEOPLE** who
aims to write well-crafted
software and continuously
deliver value”**



“Software Craftsmanship is all about putting **RESPONSIBILITY**, **PROFESSIONALISM**, **PRAGMATISM** and **PRIDE** back into software development”

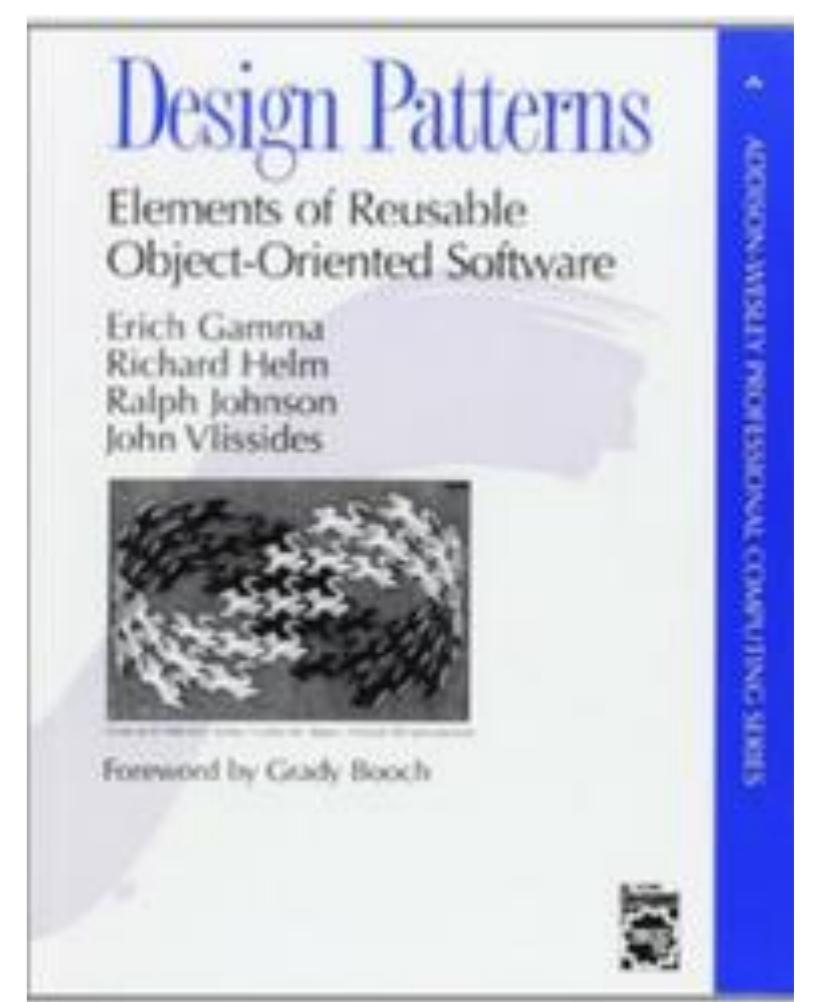
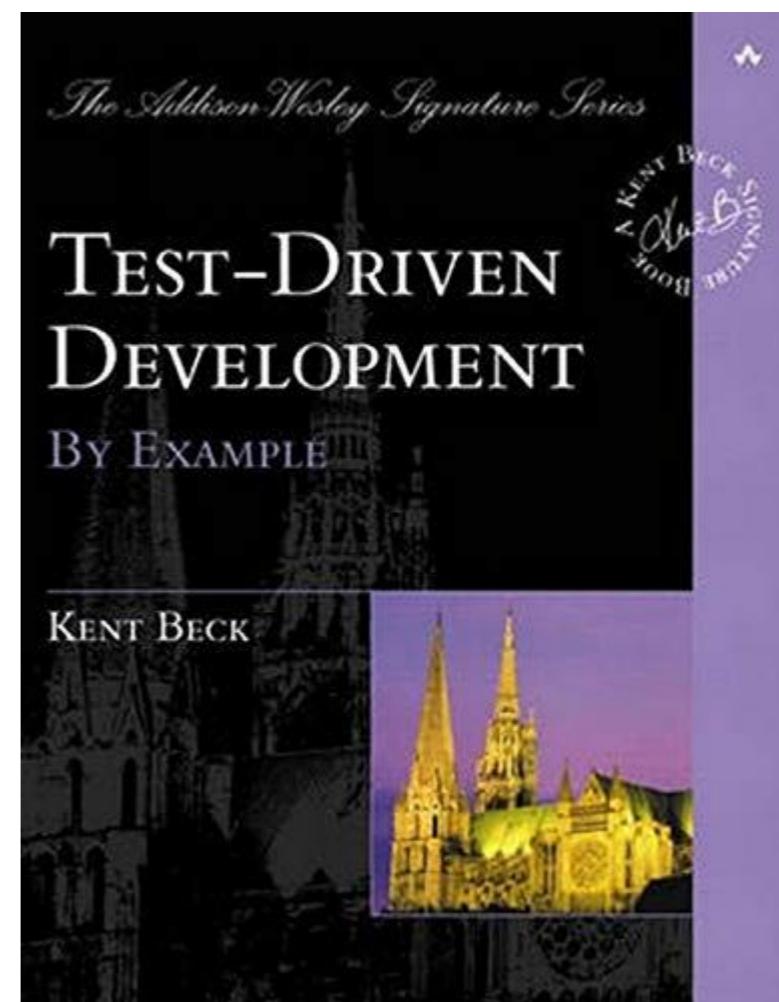
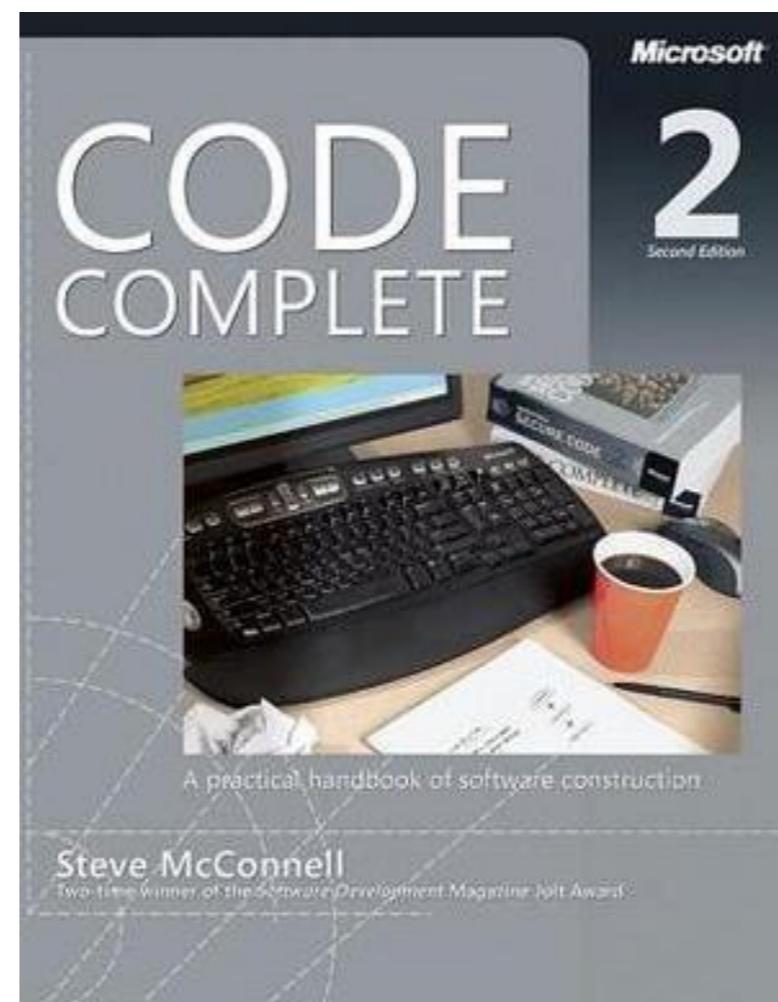
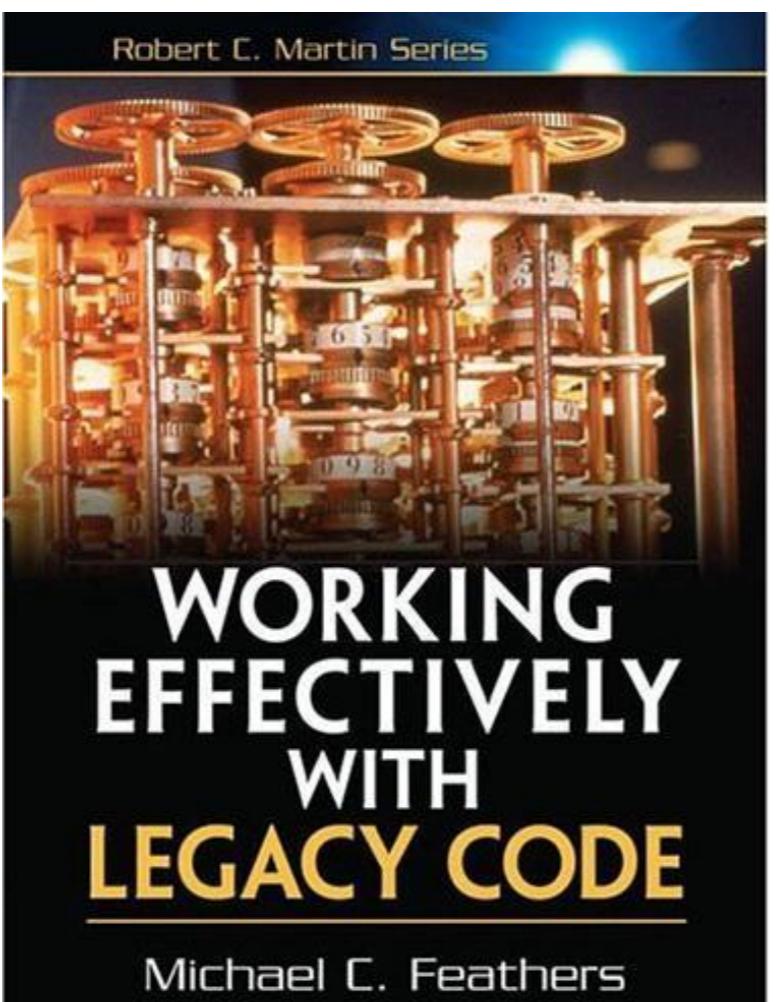
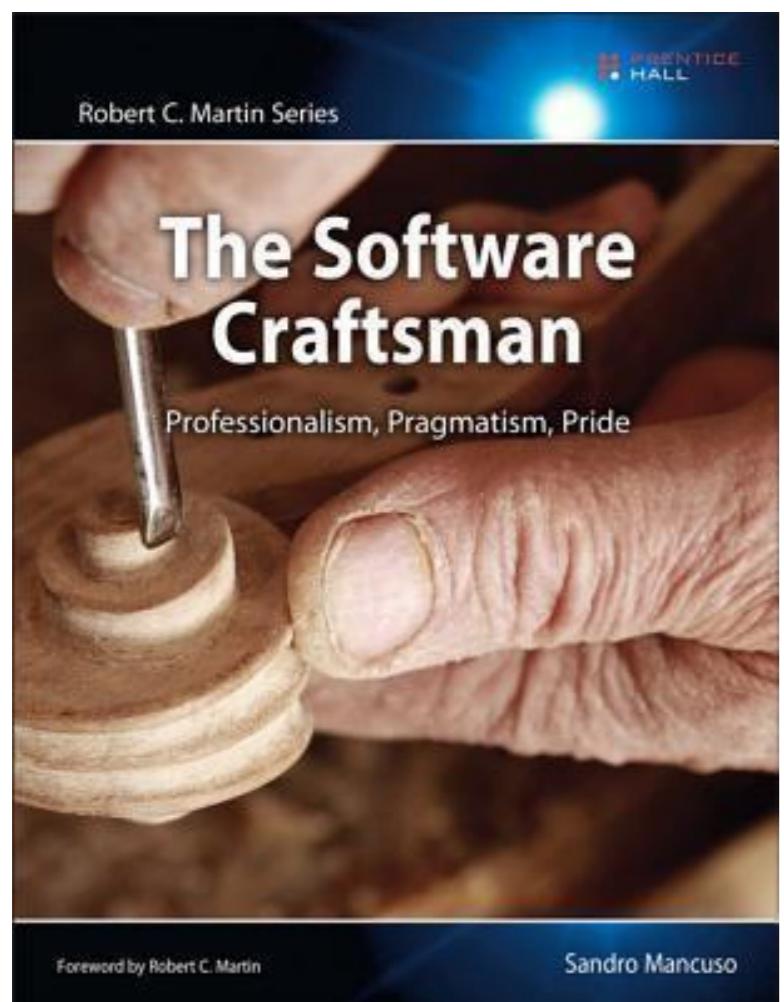
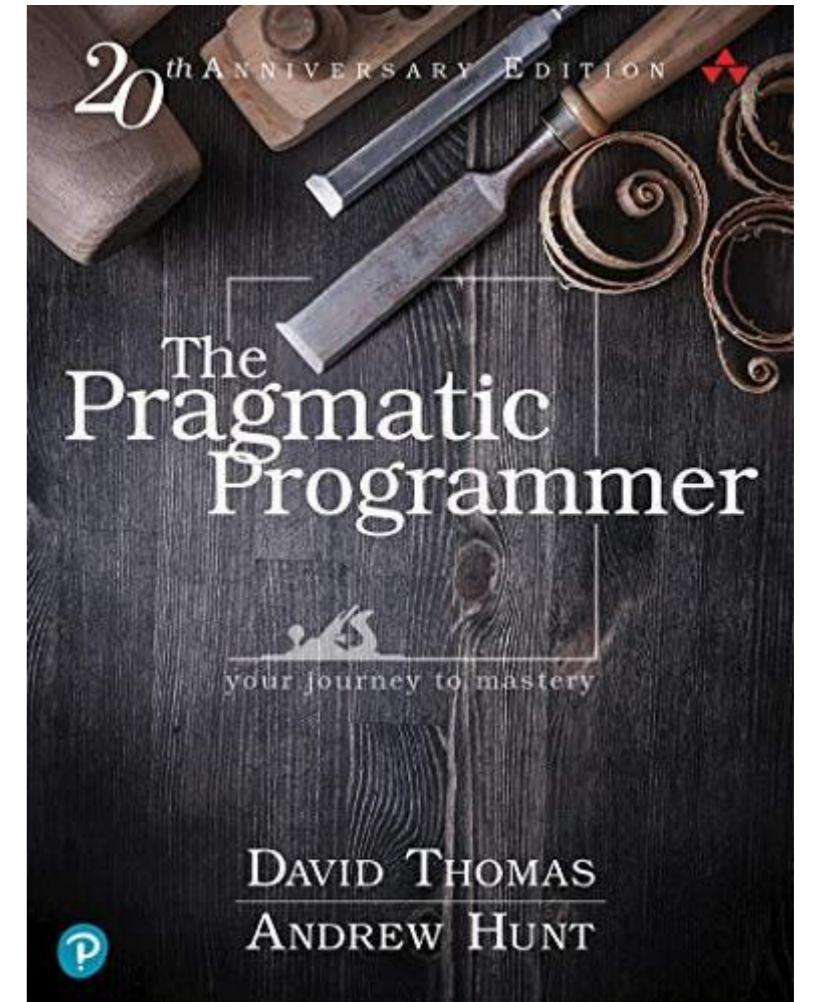
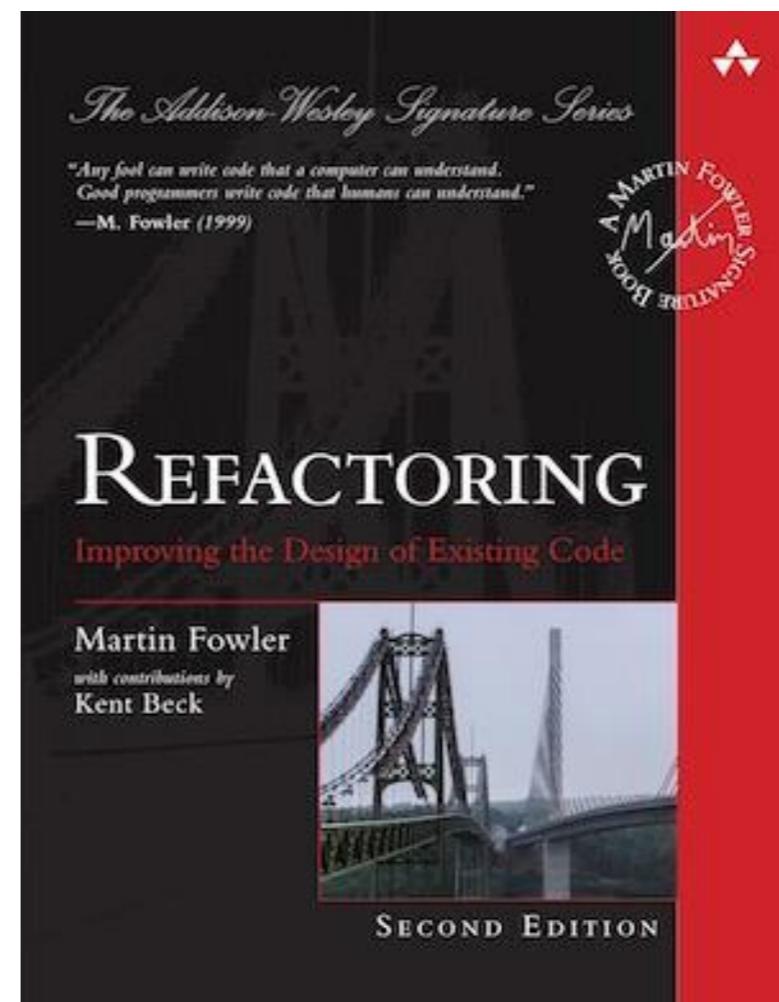
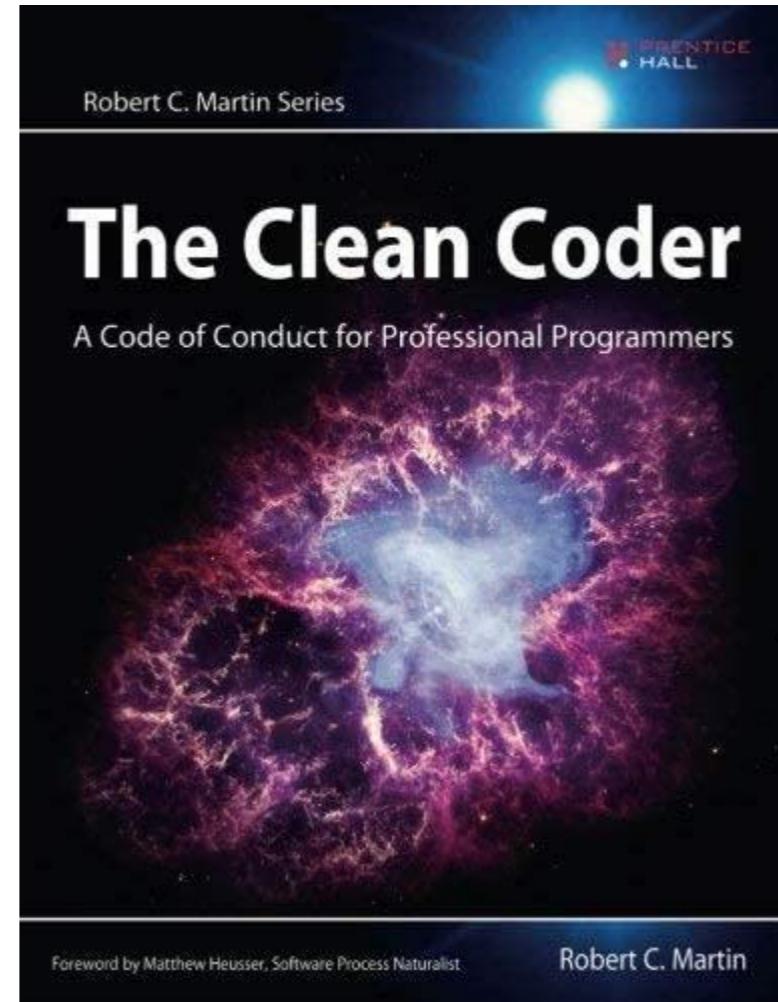
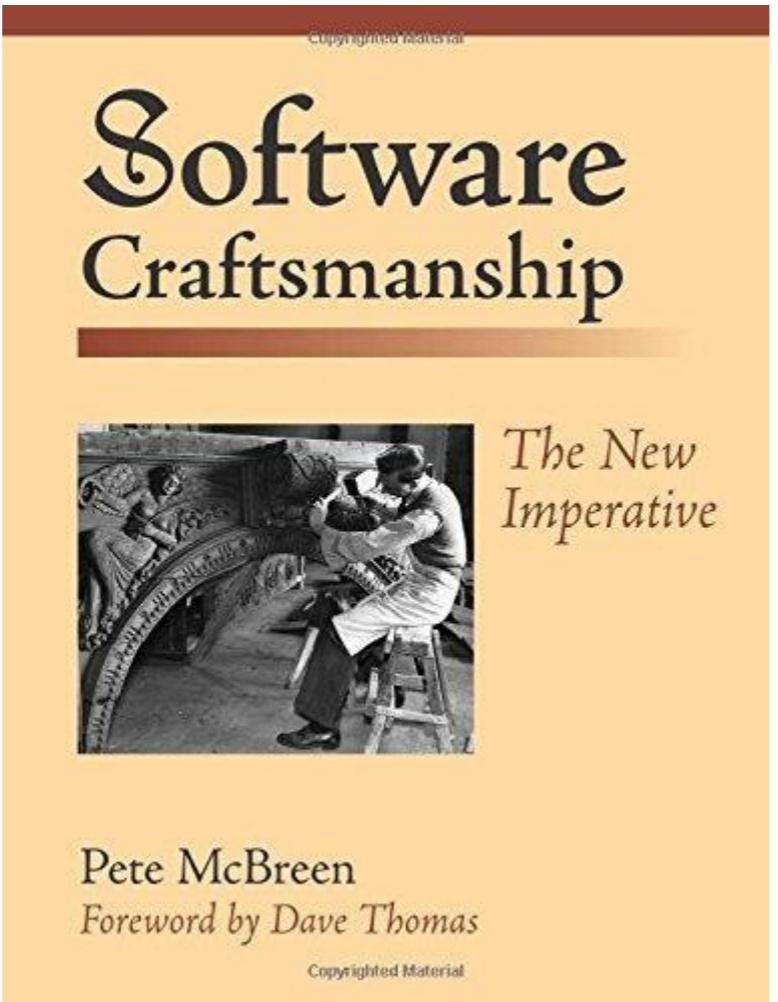
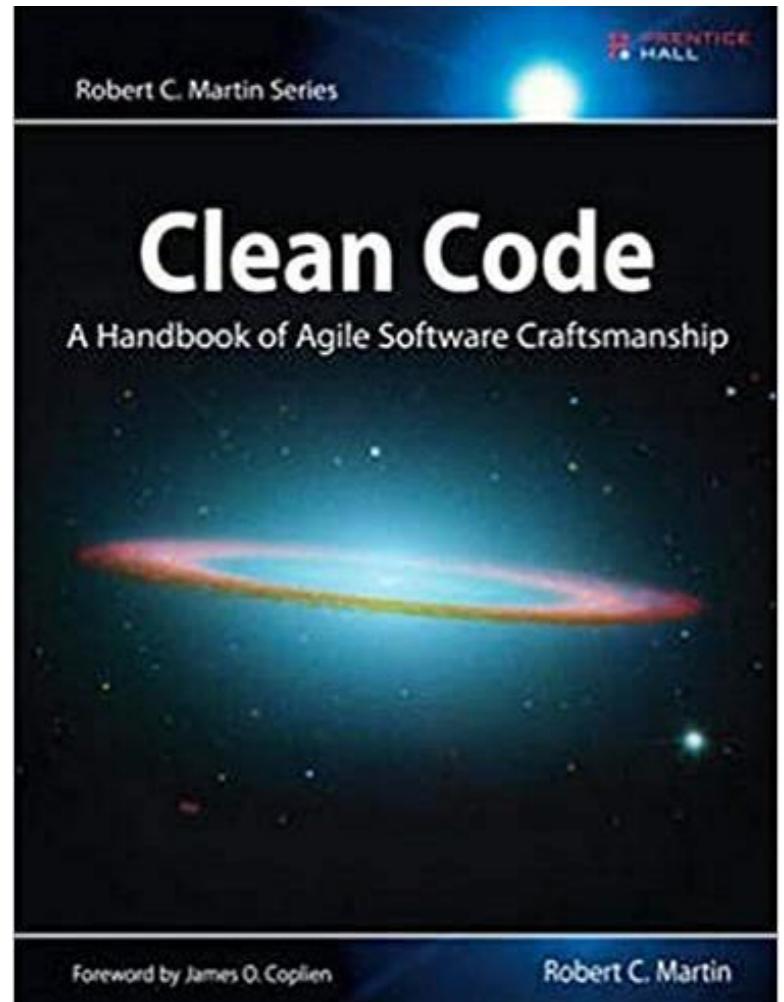


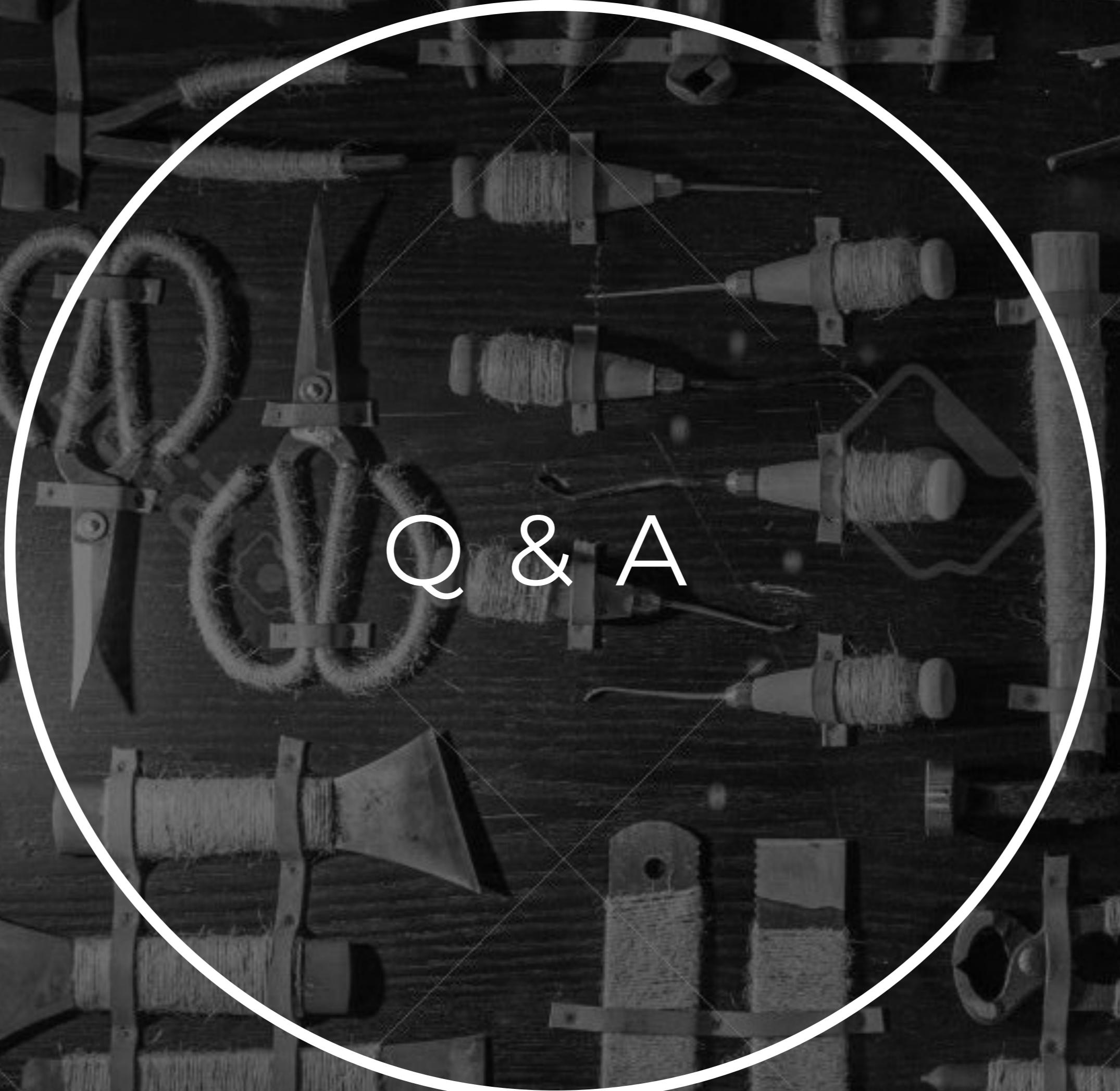
TO MYSELF

PROMISES

Just like doctors, lawyers, and others here is one way that we, as a society of programmers could agree on, is a set of standards for ourselves.

GOOD READS





Q & A

ANNEXURE

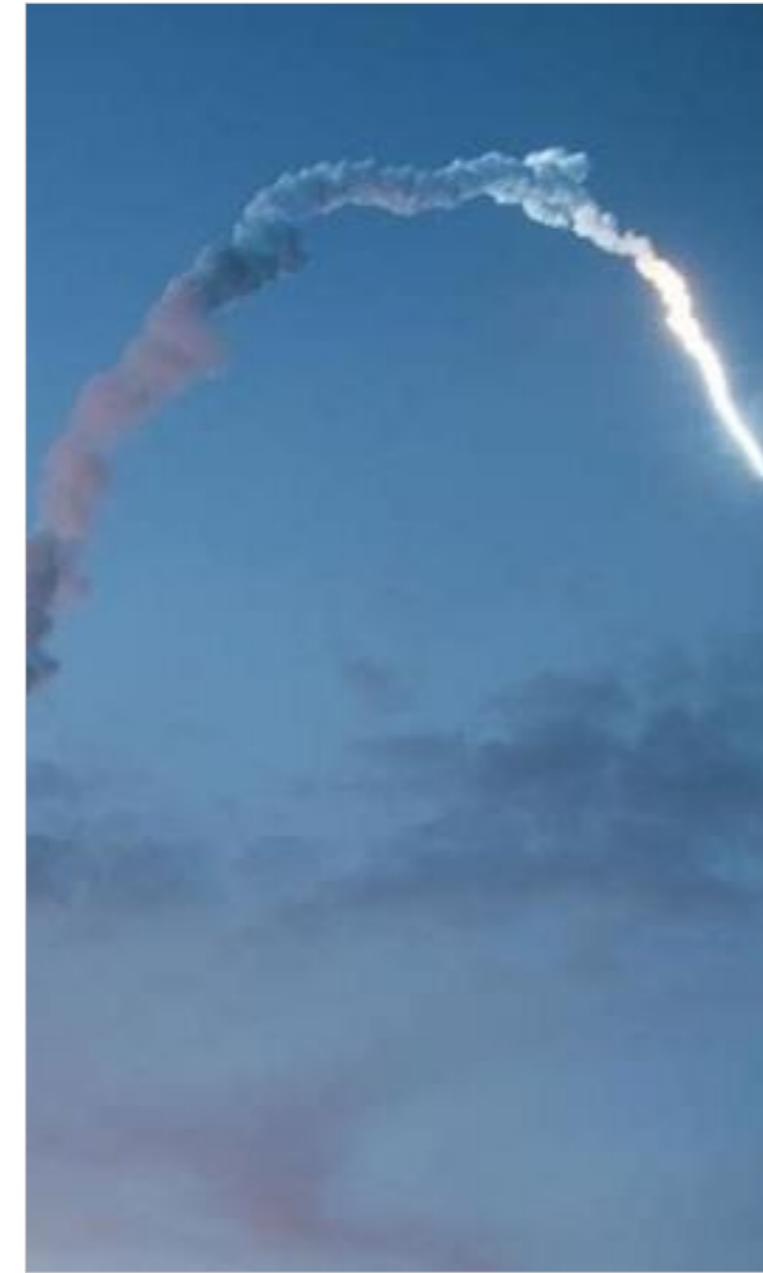
WHAT WENT WRONG



HEARTBLEED BUG

Dangerous security vulnerability
This bug allows virtually anyone on the internet to read memory on machines running affected iterations of OpenSSL

MISSING BOUNDS CHECK



ARIANE 5 FLIGHT

Thirty-six seconds into its maiden, after multiple failures it triggered a controlled self-destruction

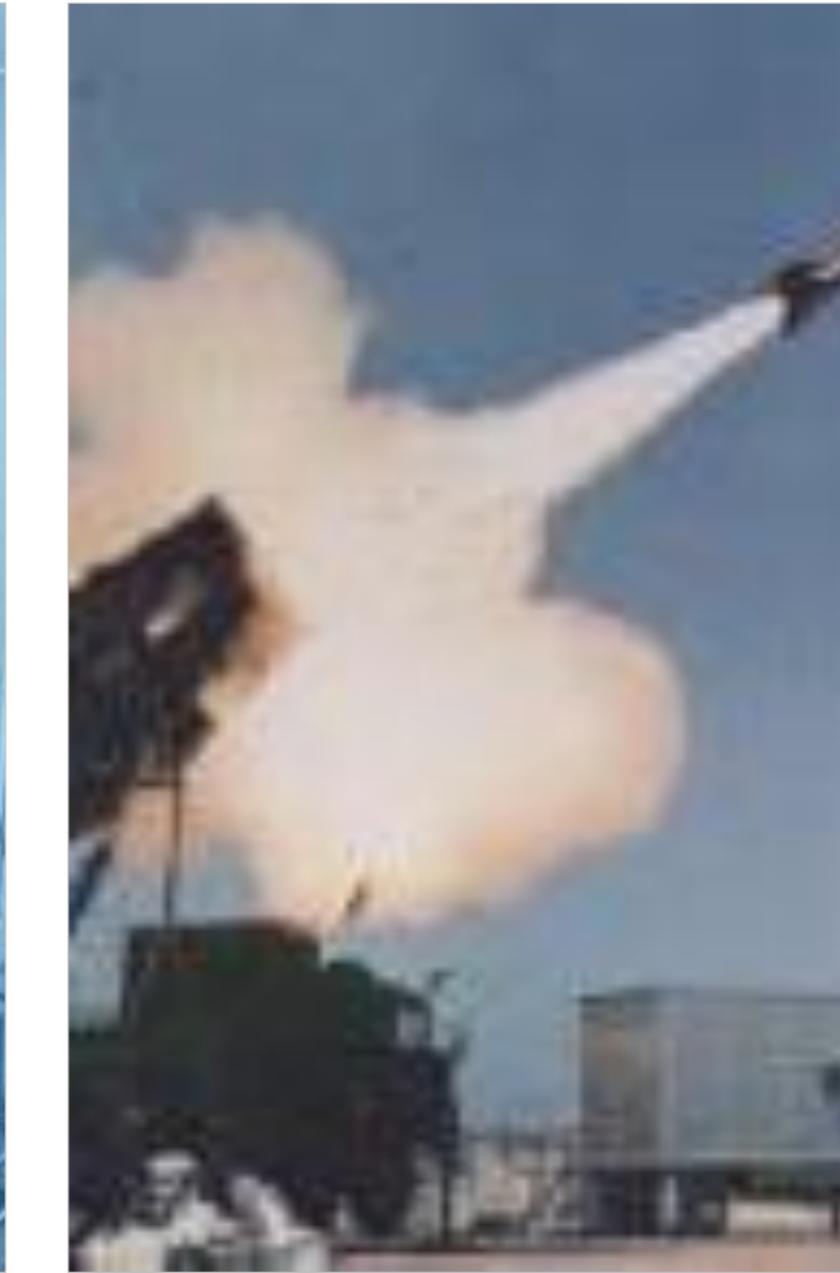
DATA OVERFLOW
64BIT - 16 BIT



DAY OF THE LIVING DEAD

In 2003 a software glitch incorrectly "killed" 8,500 people

MAPPING ERROR
CODE 20
INSTEAD OF 01



PATRIOT FAILS SOLDIERS

1991, During the gulf war system failed to interpret an incoming missile

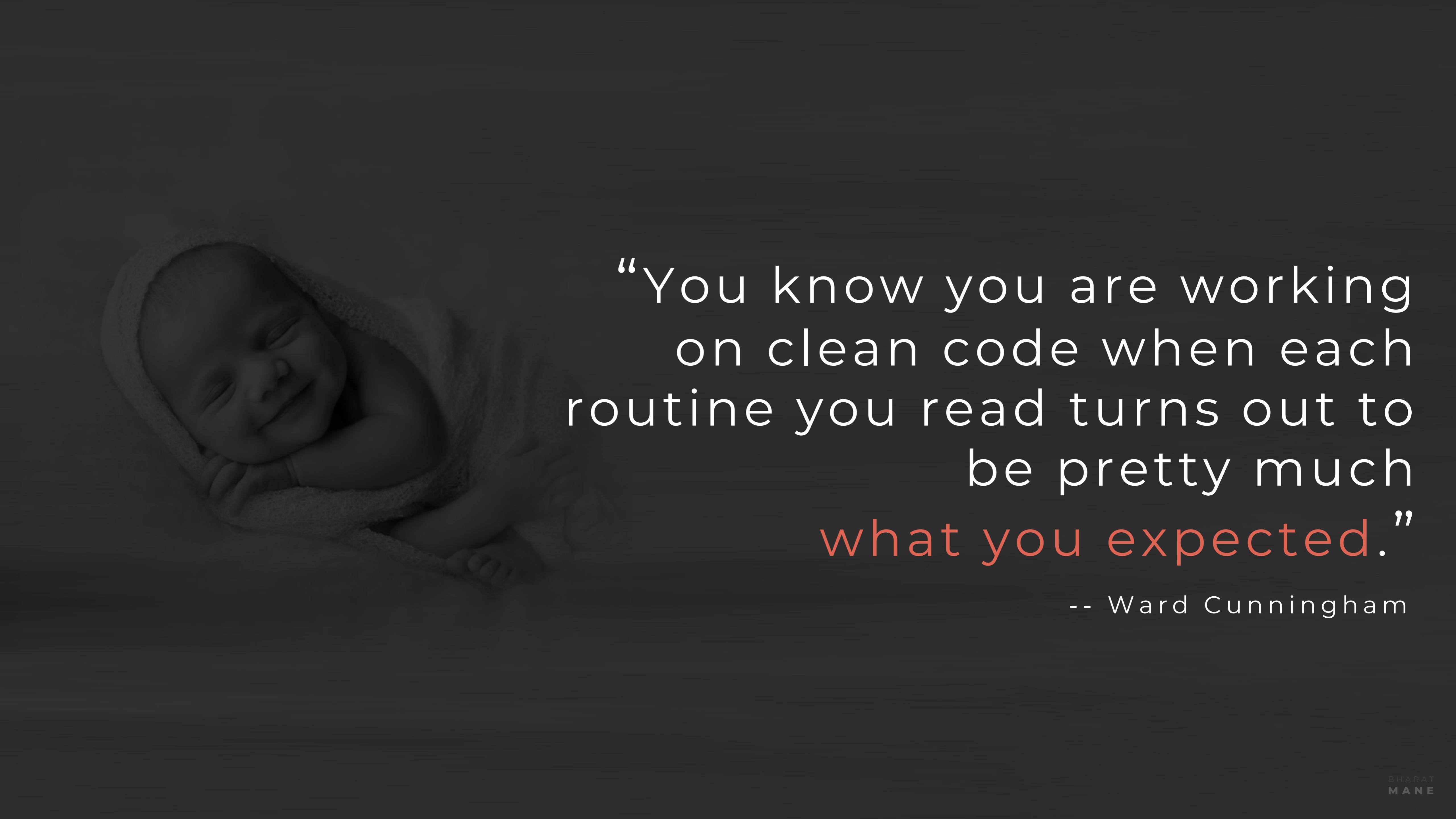
ROUNDING ERROR



INSURANCE FOR ₹1

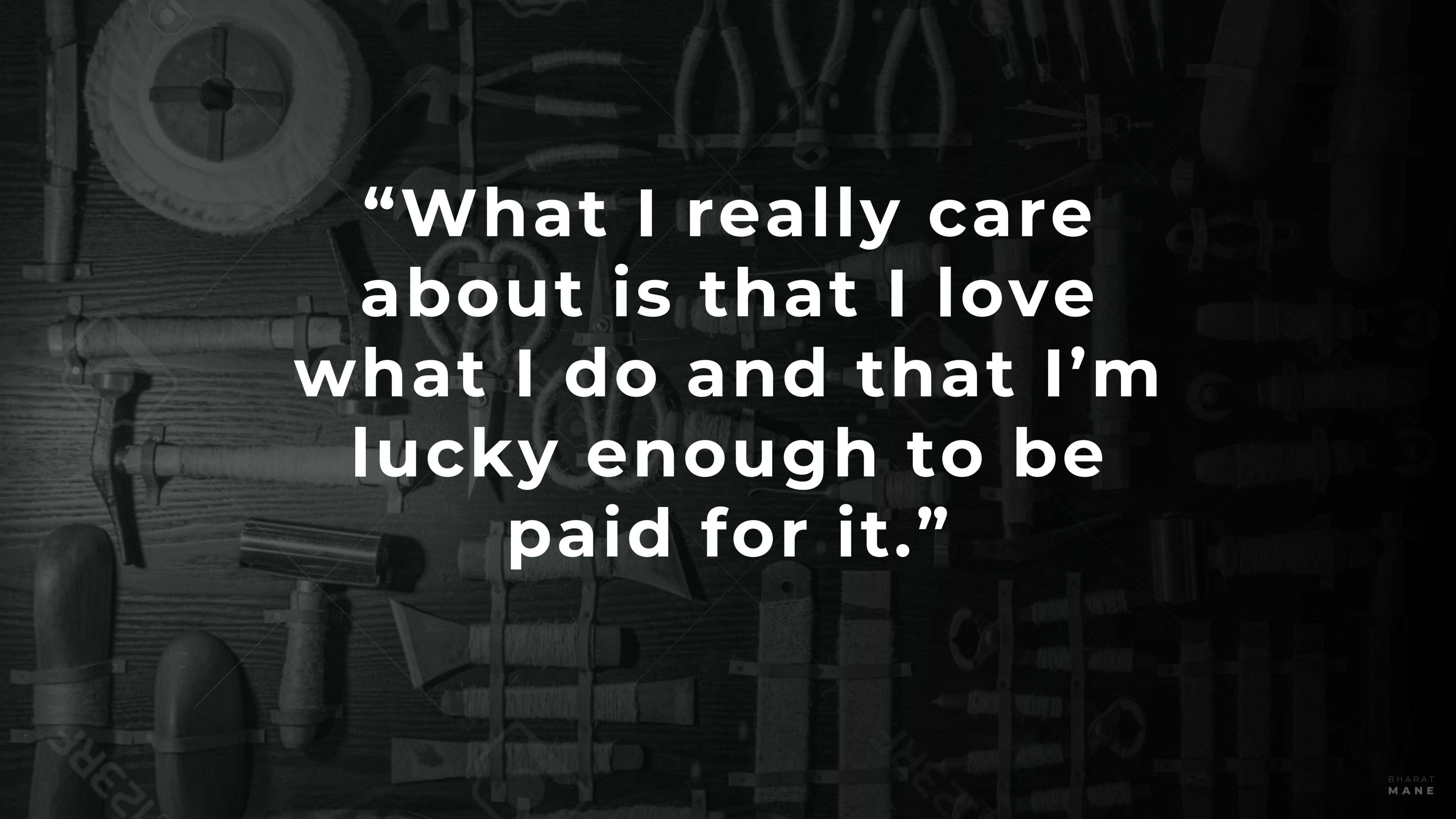
Just after the release users purchased insurances for just 1 rupee

HARD CODED VALUE FOR TESTING

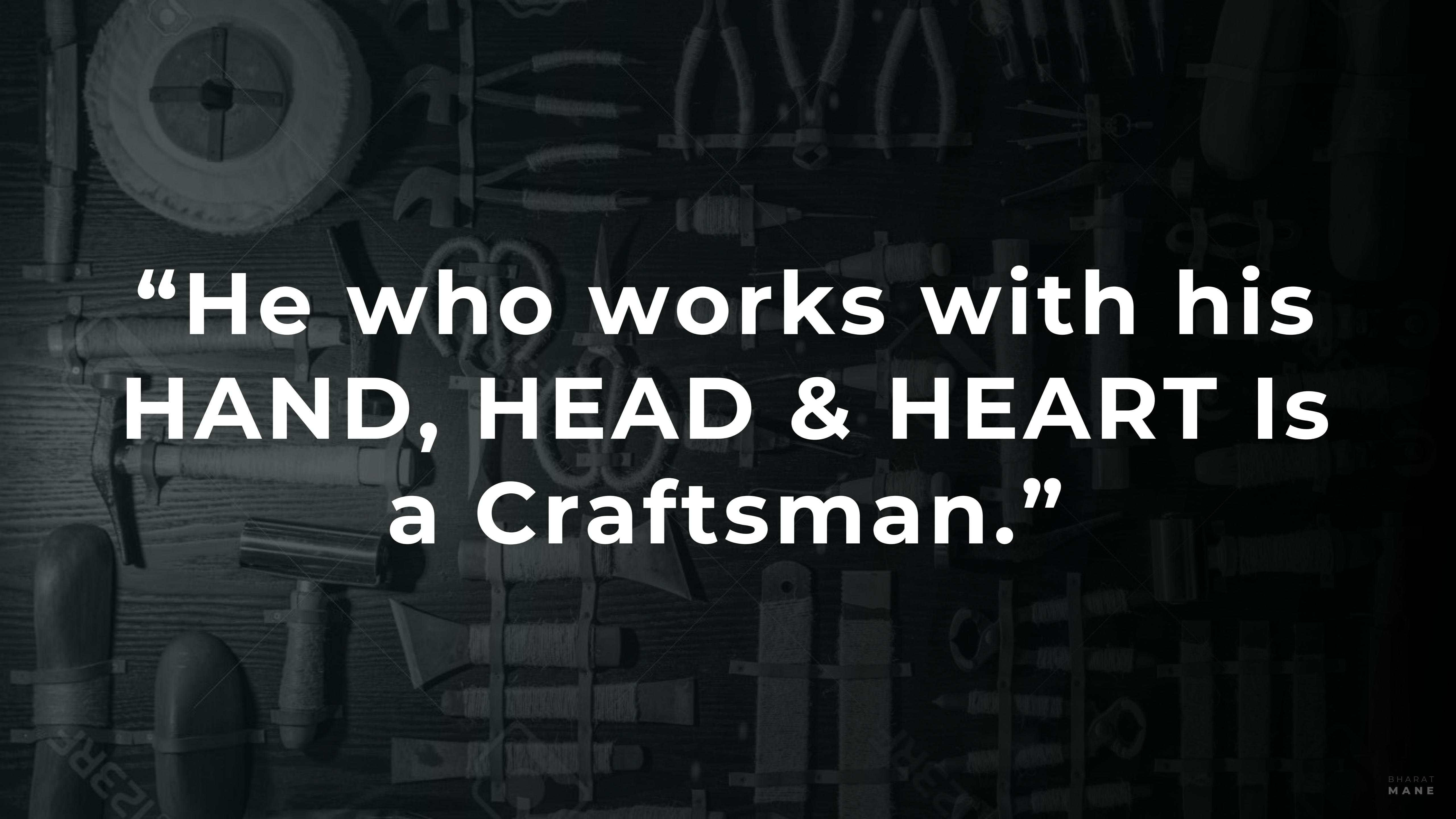


“You know you are working
on clean code when each
routine you read turns out to
be pretty much
what you expected.”

-- Ward Cunningham



“What I really care about is that I love what I do and that I’m lucky enough to be paid for it.”



“He who works with his
HAND, HEAD & HEART is
a Craftsman.”

Manifesto for Software Craftsmanship

Raising the bar.

Aspiring Software Craftsmen we are raising the bar of professional software development by practicing it and helping others learn the craft. Through this work we have come to value:

Not only working software,
but also **well-crafted software**

Not only responding to change,
but also **steadily adding value**

Not only individuals and interactions,
but also **a community of professionals**

Not only customer collaboration,
but also **productive partnerships**

That is, in pursuit of the items on the left we have found the items on the right to be indispensable.

© 2009, the undersigned.
This statement may be freely copied in any form,
but only in its entirety, without abridgment.

MANIFESTO FOR SOFTWARE CRAFTSMANSHIP

EXTREME PROGRAMMING PRACTICES

Group	Practices
Feedback	<ul style="list-style-type: none">✓ Test-Driven Development✓ The Planning Game✓ On-site Customer✓ Pair Programming
Continual Process	<ul style="list-style-type: none">✓ Continuous Integration✓ Code Refactoring✓ Small Releases
Code understanding	<ul style="list-style-type: none">✓ Simple Design✓ Collective Code Ownership✓ System Metaphor✓ Coding Standards
Work conditions	<ul style="list-style-type: none">✓ 40-Hour Week

XP has simple rules that are based on **5 values**

COMMUNICATION

Everyone on a team works jointly at every stage of the project

SIMPLICITY

Developers strive to write simple code bringing more value to a product, as it saves time and efforts.

FEEDBACK

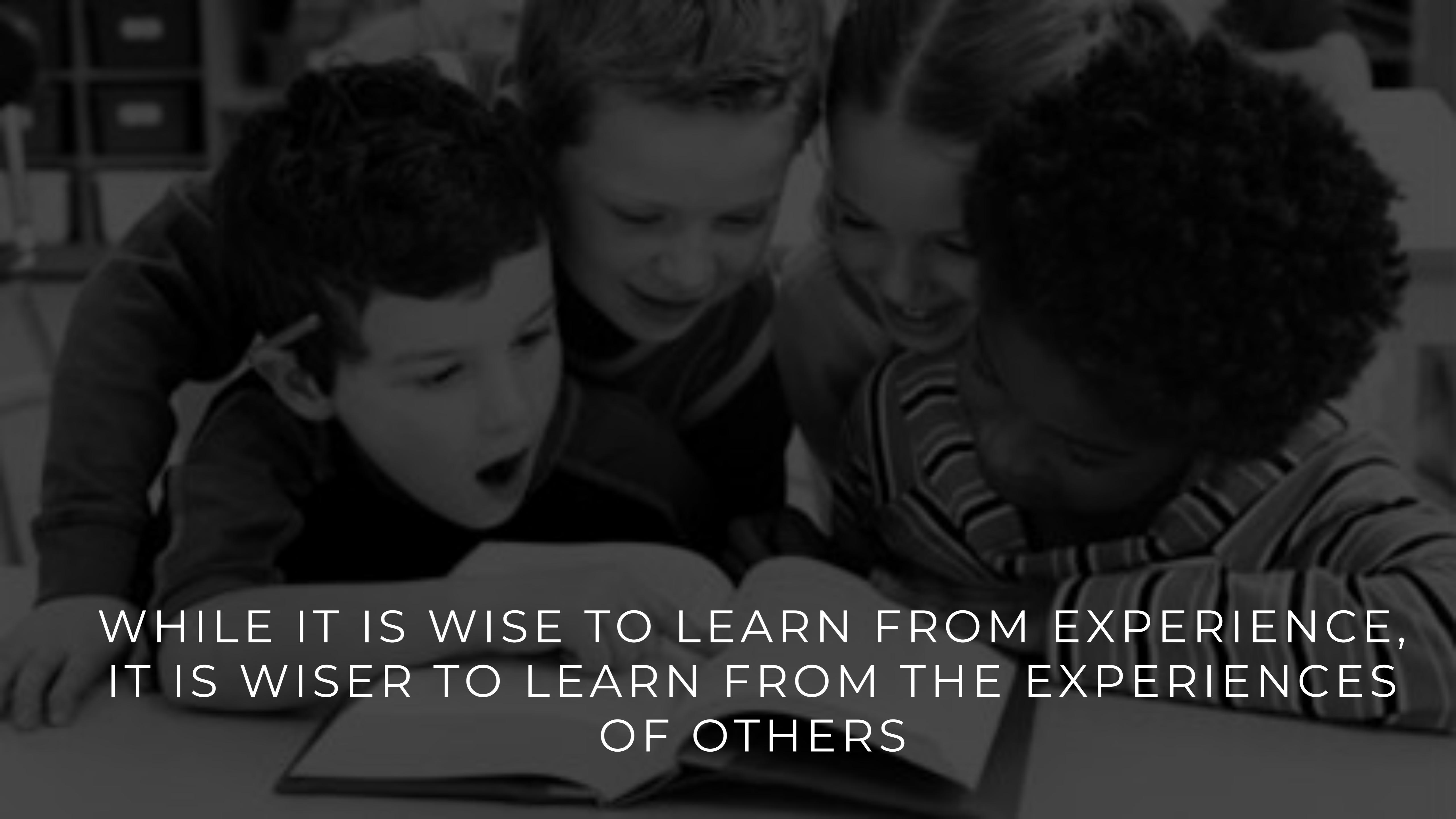
Team members deliver software frequently, get feedback about it, and improve a product according to the new requirements.

RESPECT

Every person assigned to a project contributes to a common goal.

COURAGE

Programmers objectively evaluate their own results without making excuses and are always ready to respond to changes.

A black and white photograph showing two people from the chest up. They are both looking down at a book or document they are holding together. The person on the left has short, dark hair and is wearing a dark t-shirt. The person on the right has long, dark hair tied back and is wearing a light-colored zip-up hoodie. The background is slightly blurred, suggesting an indoor setting.

WHILE IT IS WISE TO LEARN FROM EXPERIENCE,
IT IS WISER TO LEARN FROM THE EXPERIENCES
OF OTHERS