

Wybe

**Making formal  
verification  
accessible to all**

# What is formal verification?

- Mathematical formulas are universally true

$$2 + 2 = 4$$

# Programs can be mathematical formulas

```
if ¬true then A else B
↳ { applying ¬ }
if false then A else B
↳ { semantics of the if statement }
B
```

**Zero program errors, but no 100% security**

# How can it be done





```
1 +1-length :  $\forall \{ \mathcal{Q} \} \{ A : \text{Set } \mathcal{Q} \} (h : A) (t : \mathbb{L} A) \rightarrow \text{length } (h :: t) \equiv \text{length } t + 1$   
2 +1-length h [] = refl  
3 +1-length h t = refl
```

# Wybe, an accessible and powerful tool

```
1 proof {  
2   theorem "double negation" (!(!x) == x)  
3   !(!x) == x  
4   ``==`` { ``GS 3.11`` }  
5   !x == !x  
6   ``==`` { ``== ident`` }  
7   True  
8 }
```

# Post interactions X

**Luis**   
@lamg\_dev


Promote  


#fsharp now we have a proof checker embedded in F#'s computation expressions WIP

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```
1 let ``double negation`` =  
2   proof () {  
3     Theorem("double negation", !(!x) == x)  
4     WithLaws [ trueTheorem ]  
5     !(!x) == x  
6     ``==`` { ``GS 3.11`` }  
7     !x == !x  
8     ``==`` { ``== ident`` }  
9     True  
10  }
```

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 2


 2

 2




Guillaume Claret · 1st

Security Researcher @Formal Land - Formal verification for Web3 - Solidity, Rust, OCaml




Jonas Lara · 1st

Full Stack Developer




Vinícius Gajo Marques Oliveira · 1st

Software & Infrastructure Engineer | Open-source contributor | DevOps/DevSecOps | Mechatronics Engineer




Don Syme · 1st

Principal Researcher, Visiting Professor



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# The team

- 10 years ago

“Llegué a este estilo por mi preocupación de escribir los programas bien, pues los errores se me escapaban al escribir un programa y notaba que estaban ahí cuando los ejecutaba”, afirma.



*Luis Ángel Méndez, un bicho raro entre sus colegas. Foto: Eduardo González Martínez*

El método Dijkstra se opone a la práctica imperante de escribir un programa primero y someterlo después a una corrección matemática. Con su propuesta, aunque más demorada, se obtiene un programa listo para ejecutarse, correcto desde su construcción.