

SOLIDITY – HOMEWORK 1 : Open Source and Solidity fundamentals

Exercise 1 - Open Source Communities (4 + 2 + 4 points)

Part A - GitHub Contributions (3 + 1 points)

Press the "Check MetaMask Balance" button with your Metamask connected. How much Wei does it say you have and is this correct? Give a short reason for your belief.

Wei is the smallest denomination of ETH, where 1 ETH equals 10^{18} Wei, or 1,000,000,000,000,000,000 Wei. Checking my MetaMask balance, I have 0.0812 SepoliaETH. When converted to Wei, my balance appears accurate, as 0.0812 SepoliaETH multiplied by 10^{18} gives approximately the correct Wei value.

dauphine-digital-economics.github.io indique

Success! Your current Balance is 81183438049943090 Wei



Part B - Open Source Licensing (1 + 1 points)

The SPDX is an initiative maintained by the Linux Foundation, write a short paragraph explaining what this initiative is. (1 point)

SPDX is an open-source project dedicated to creating a universal standard for documenting software bill of materials (SBOM) information. This includes critical details like provenance, licensing, security, and other related data. By providing a common framework, SPDX promotes greater transparency and collaboration across the software ecosystem, making it easier for developers and organizations to share and manage software information effectively.

For the below two scenarios, state which type of license you would use from the [SPDX list](#) and a short justification why. (1 point)

1. *You are starting a new DeFi project which uses a novel way of rewarding investors who lock their tokens in your staking contract.*

Since the project introduces a novel approach to rewarding investors, using the GPL or AGPL ensures that any derivative works or modifications of the code must also be open-source.

2. *Google Cloud Web3 is developing an enterprise grade software which allows other companies to build their own custom blockchain. Google would like to open source certain libraries for the community to maintain while keeping the core technology proprietary.*

The Apache License 2.0 is a permissive license that allows companies to use, modify, and distribute the software while maintaining proprietary rights over their customizations.

Part C - Open Source Community Metrics (1 + 3 points)

Write a short response, around 300 words, which :

- 1) explains what a VM is (1 point)
- 2) Compares the communities developing on the EVM vs SVM stack. (3 points)

A Virtual Machine (VM) is a software-based emulation of a physical computer that enables the execution of programs in an isolated environment. It abstracts the underlying hardware, allowing applications to run consistently across different systems. In blockchain, VMs like the Ethereum Virtual Machine (EVM) and Solana Virtual Machine (SVM) are critical for executing smart contracts. These VMs ensure that smart contracts run predictably and securely across decentralized networks. The communities developing on the EVM and SVM stacks differ significantly in focus, culture, and priorities. The EVM ecosystem, centered around Ethereum, is one of the oldest and most established in blockchain. Its community is vast and diverse, with a strong emphasis on decentralization, security, and interoperability. Developers in the EVM space often prioritize building decentralized applications (dApps) that integrate with other Ethereum-based projects, leveraging its robust tooling and extensive developer resources. In contrast, the SVM ecosystem, built around Solana, is relatively newer and focuses on high throughput and low transaction costs. The SVM community is highly performance-oriented, attracting developers who prioritize scalability and speed for applications like decentralized finance (DeFi), gaming, and NFTs. While the EVM community values decentralization and a broad, collaborative ecosystem, the SVM community is more focused on performance and scalability. Both communities, however, are driving innovation in blockchain, each with its unique strengths and challenges.

Check out the [Developer Report](#) by Electric Capital and list a few metrics presented in class or any that you find interesting. Compare and contrast these metrics and draw a conclusion on the health of these communities.

The EVM community is an established community. In fact, the community has almost 4 000 full time developers and 10 000 monthly active developers who participate in diverse projects, indicating a strong and stable developer base. On top of that, the community has seen a rise of 76% in terms of established developers (defines as developers who have worked more than two years on crypto). With 177,000 repositories dedicated to EVM, it's clear that the ecosystem has a massive reach and popularity. This large amount of open-source code is a positive indicator of the health of the community, as it suggests active development and widespread collaboration across many projects. On the other hand, SVM community is a young but attractive community who is seeing

rapid growth. In fact, Solana was the number one ecosystem for new developers in 2024. However, currently, there are only 600 full-time developers and 3,300 monthly active developers, which, while promising, is still small compared to the EVM community. To sum up, while the EVM community is more mature and established with a larger, highly engaged, and experienced developer base, the SVM community is rising, showing strong growth and attracting new talent. Both communities are healthy, but EVM is more established, while SVM is in a growth phase with exciting prospects ahead.