Solidity Variables

Types:

1. **State variables**

- Permanently stored in contract storage. Storage is not dynamically allocated
- Declared at contract level
- Initialized at declaration, using a constructor or after contract deployment by calling setters
- Expensive to use, they cost gas

1. **Local variables**

- Declared at function level
- If using the memory keyword and are arrays or struct, they are allocated at run time. Memory keyword can’t be used at contract level

Where does EVM save data?

1. **Storage**

- Persistent and expensive (it costs gas)
- Like a computer HDD

1. **Memory**

- Holds temporary values, free to be used (it doesn’t cost gas)
- Like a computer RAM

1. **Stack**

- Holds function local variables, free to be used

Where does EVM save data?

Conclusion:

1. State variables are saved in storage
2. Function arguments are local and are stored in memory
3. Variables defined inside functions:

- If they are **struct**, **array (fixed or dynamic)** or **mappings** they **reference storage** by default
- If they are of any other type (ex: int), they are saved on the stack