

Solidity Variables

Variable Types:

1. State variables

- Declared at contract level;
- Permanently stored in **contract storage**;
- Can be set as **constants**;
- Expensive to use, they cost gas;
- Initialized at declaration, using a constructor or after contract deployment by calling **setters**;

2. Local variables

- Declared inside functions;
- If using the **memory** keyword and are arrays or struct, they are allocated at runtime.
Memory keyword can't be used at contract level

Where does EVM save data?

1. Storage

- Holds state variables;
- **Persistent and expensive** (it costs gas);
- Like a computer HDD;

2. Stack

- Holds local variables defined inside functions if they are not reference types (ex: int);
- **Free to be used** (it doesn't cost gas);

3. Memory

- Holds local variables defined inside functions if they are reference types but declared with the **memory** keyword;
- Holds function arguments;
- Like a computer RAM;
- **Free to be used** (it doesn't cost gas);

Reference Types: string, array, struct and mapping