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Jul 31 · 13 tweets · [SalomonCrypto/status/1553804814508642304](https://twitter.com/SalomonCrypto/status/1553804814508642304)

(1/12) Computer Science Fundamentals: APIs

How do computer programs communicate with each other?

How do developers use the concept of abstraction in practice?

How can they effectively collaborate across space and time?

Read on to learn about Application Programming Interfaces.

(2/12) We've discussed the concept of abstraction and how developers use it to manage complexity and collaborate effectively.

Tl;dr abstraction works by separating interaction with functionality. Interaction can be simplified and streamlined for usability and composability.



(3/12) One of the more common ways abstraction manifests in the real world is in Application Programming Interfaces (APIs).

An API is set of defined rules that explain how programs/applications communicate with each other.

en.wikipedia.org/wiki/API

(4/12) Let's go back to our example from our discussion on abstraction. We imagined an e-commerce website that has a price bot; the user gives the price bot fruit characteristics and the bot returns a price.



(5/12) In order to integrate with price bot, you need to give it object (fruit) information and receive a price. So first, let's package all our object information:

```
fruit_a = [apple, red, 200g, harvested 3 days ago]
```

(6/12) Now, we need to feed it to price bot. First, we will call it by name (price_bot). Then we will tell price_bot to give us a price by asking it to use the calculate_price function for fruit_a.

```
price_bot.calculate_price(fruit_a)
```

(7/12) price_bot will do whatever it does to calculate the price. As the user, we are both unaware and unconcerned with what is happening behind the scenes. All we know is that in the end, price_bot will give us a single price.

```
price_bot.calculate_price(fruit_a) = price_fruit_a
```



(8/12) This is the API for price bot - a list of the functions price bot supports and instructions on how to use them. It is the schematic by which developers can integrate the application without mastering it.

If this example were real, the API docs would look like this:

Price Bot API

Price Bot is an application that provides real-time pricing data for an arbitrary object.

Functions:

`calculate_price(attributes=[])`

Return a single price for an object. Requires a list of attributes that include object type, weight and time since manufacturing. Optional attributes are accepted; price bot will use as many attributes as it can process.

(9/12) On its face, API development may not seem like programming; developing and documenting APIs looks a lot more like writing essays than it looks like writing code.

But don't be fooled, API development is crucial as coding... honestly it's probably way more important.

(10/12) In the words of [@pmarca](#) "software is eating the world." But the world is a huge place, and at the end of the day software is just code written by one human at a time.

How is one human at a time going to build something to eat the whole huge world?

Composability.



Haym Salomon
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Replying to @SalomonCrypto
(17/17) The killer feature of **@ethereum**: composability.

The reason why we have composability: abstraction.

The purpose of abstraction: to manage complexity.

The point of managing complexity?

To change the world.

2:57 PM · Jul 31, 2022

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(11/12) Composability is the design principal that every component of a system should be able to be combined with other components to build something new. That the output of one can be the input of another.

Think like a Lego: every piece can be connected to every other piece.

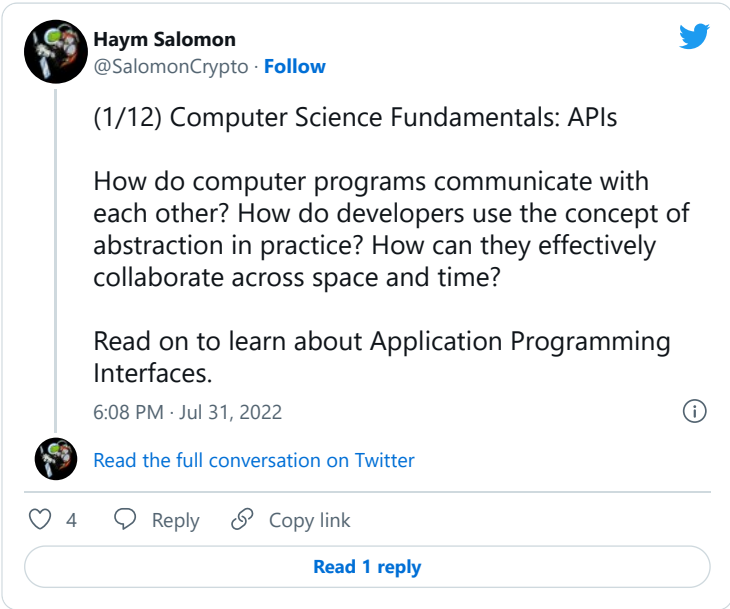
(12/12) Composability is the goal; it's the sorcery that allows $1+1 = 3$. The magic that allows developers to deploy and watch as the world grows atop their work.

But how does composability actually manifest? Very simply:

Application Programming Interfaces (APIs)

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A screenshot of a Twitter post by Haym Salomon (@SalomonCrypto). The tweet is part of a thread, labeled as (1/12) Computer Science Fundamentals: APIs. The text of the tweet asks: "How do computer programs communicate with each other? How do developers use the concept of abstraction in practice? How can they effectively collaborate across space and time?" It then says "Read on to learn about Application Programming Interfaces." The tweet is dated 6:08 PM · Jul 31, 2022. Below the tweet, there are icons for likes (4), replies, and a "Copy link" button. A "Read 1 reply" button is also visible.

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