

5 things you should know about Speculative Execution?

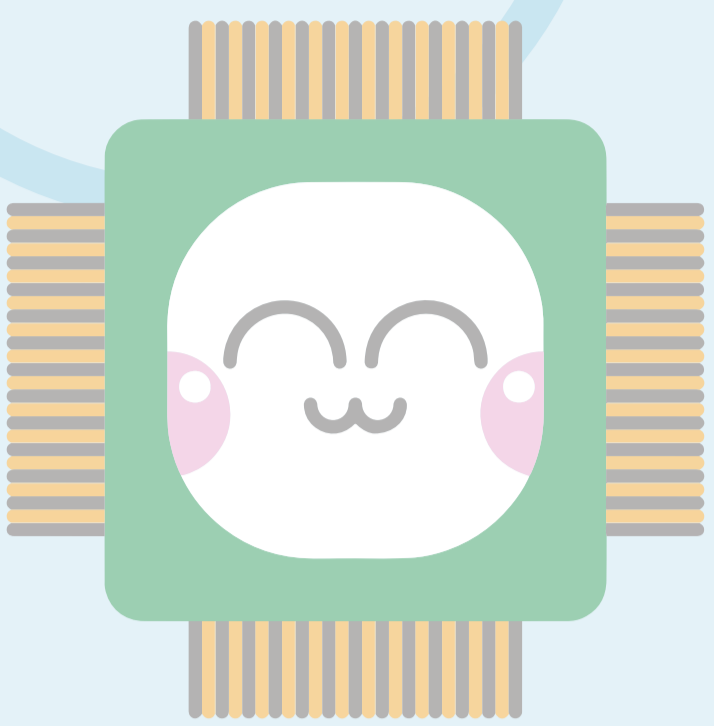
1

Well lets start at the very beginning

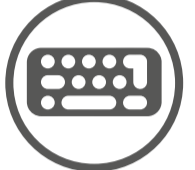
This is a CPU, it's a friendly and helpful little fellow. It's essentially the brain of any smartphone, tablet or computer.

It takes the input data from every action in a computer and outputs the appropriate subsequence for the user.

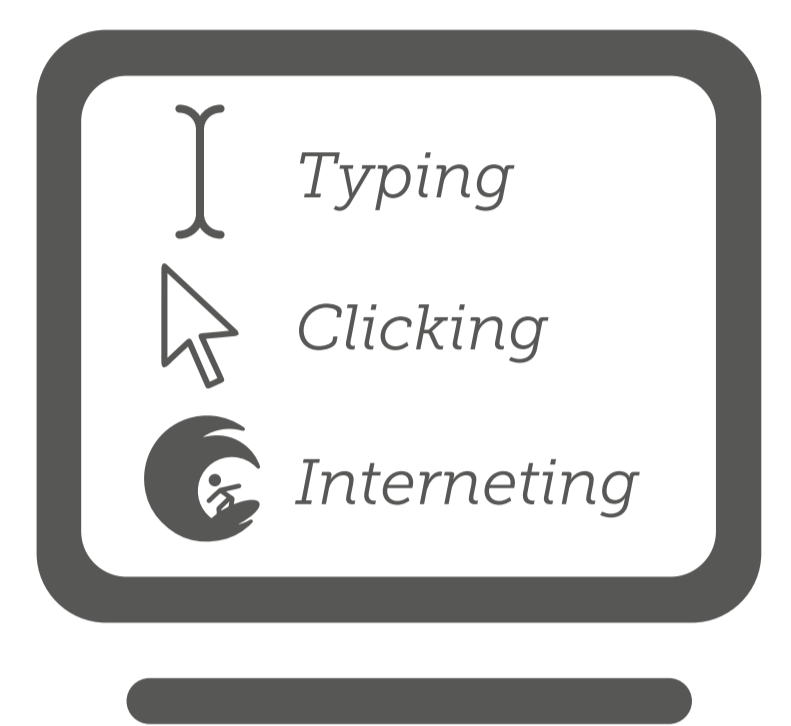
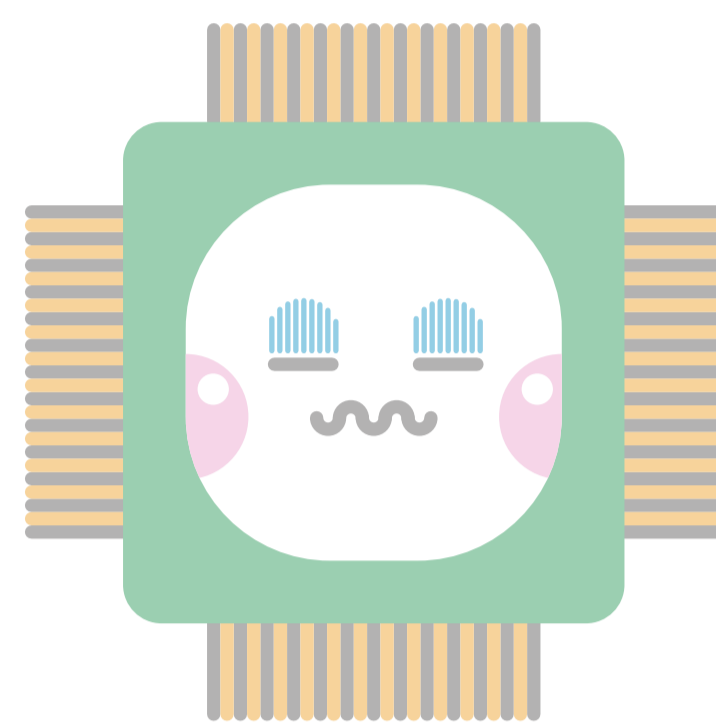
Depending on the speed of the cycle that the CPU is set to they can run several billion computations per second. To speed this up even more, the CPU caches or 'stores' regularly used input data so it doesn't even need to think about it in the future.



****Tippety Tappety****



****90's modem sounds****



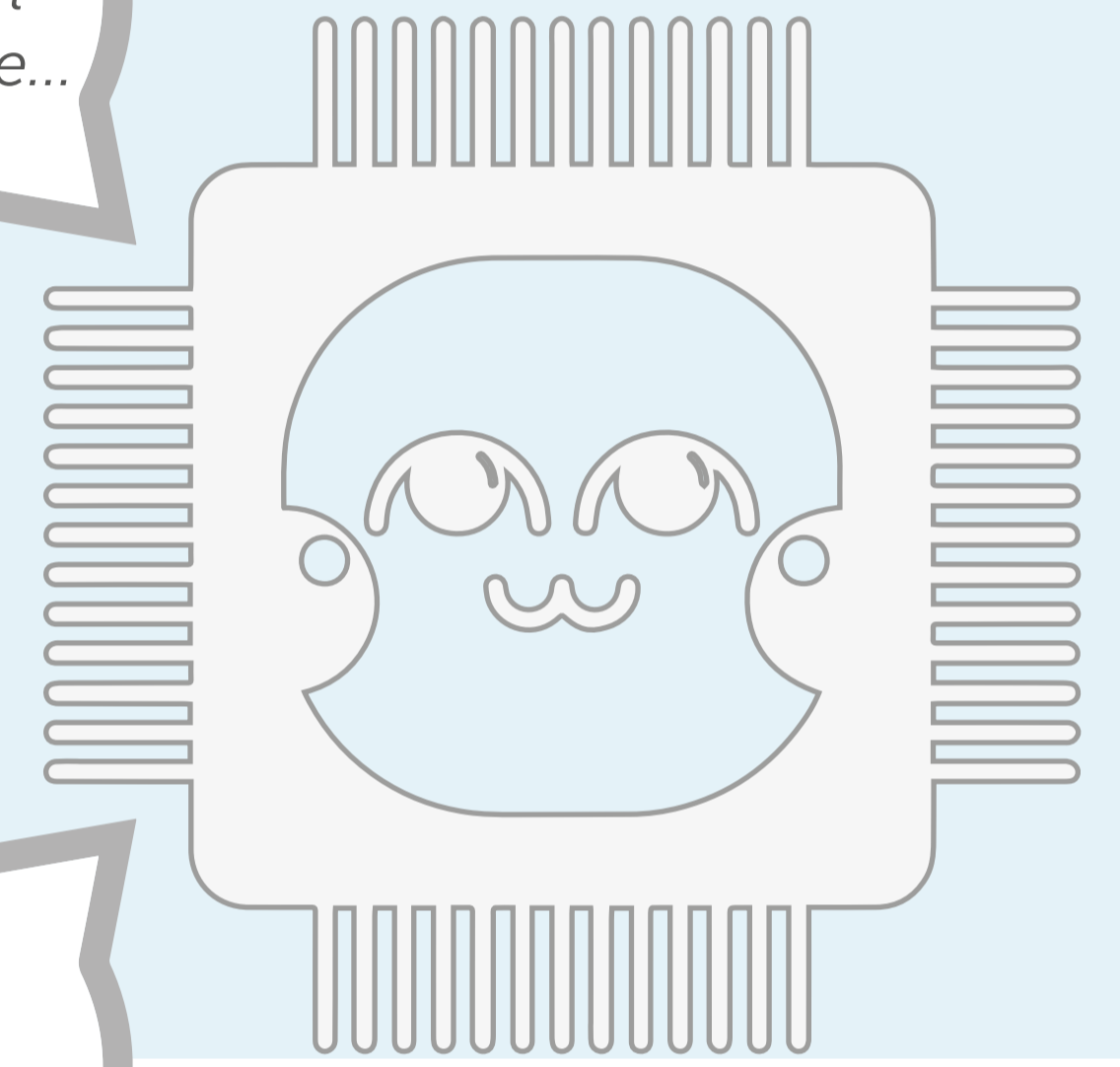
2

Speculative execution is a little bit like predictive text on your phone. Like a chain reaction, if the CPU thinks it recognises what you're trying to do, it will line up a necessary reaction by drawing on its cached resources.

If the CPU mis-predicted what to do then the speculative execution is rolled back and what the user wants to happen, happens.

Wait....
I've seen
this before...

I know
what to do!

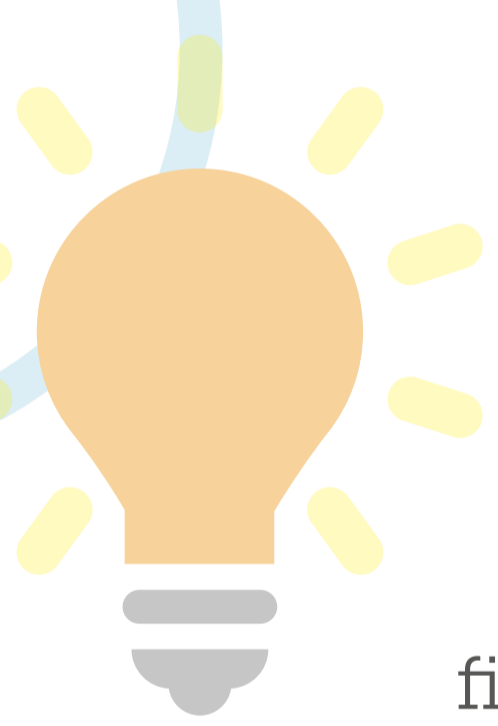


3

Speculative execution is therefore a great idea however recently a vulnerability has been found.

Helping the CPU work faster, there has to be a repository of little bits of information being stored and thrown back and forth between the CPU and RAM.

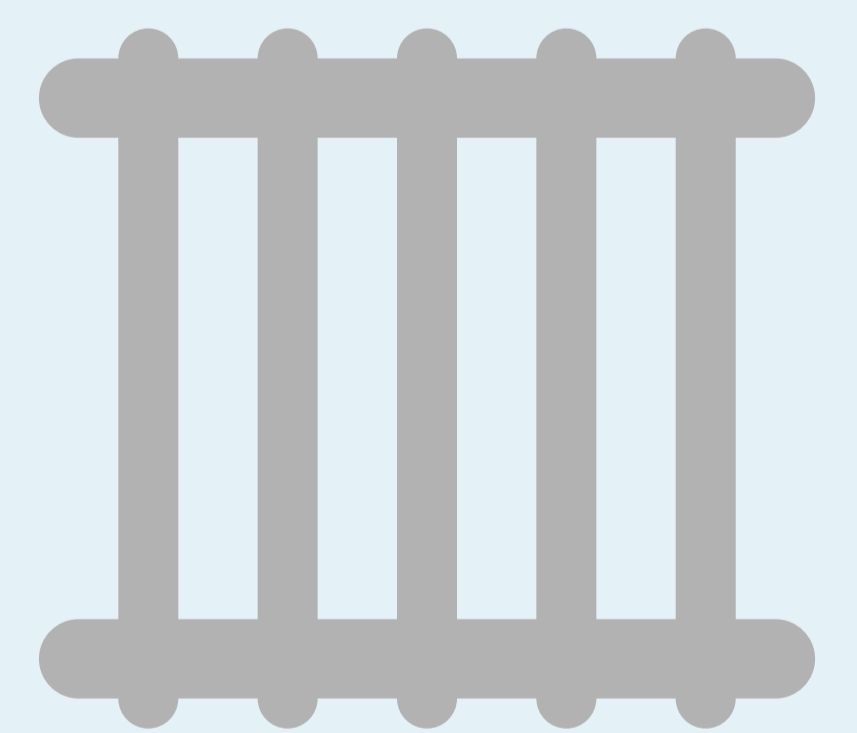
Using the information stored in these caches, it's now possible to work out what the CPU has been doing in the background. From this data people may be able to find personal information.



4

But it's not all doom and gloom, it's not like many things would have access to this information. For example, an internet advert would **not** be able to access this information otherwise a single ad could share your information with the world...but it can't.

Using programming and CPU features the number of things that can read this data is heavily restricted to keep your data safe.

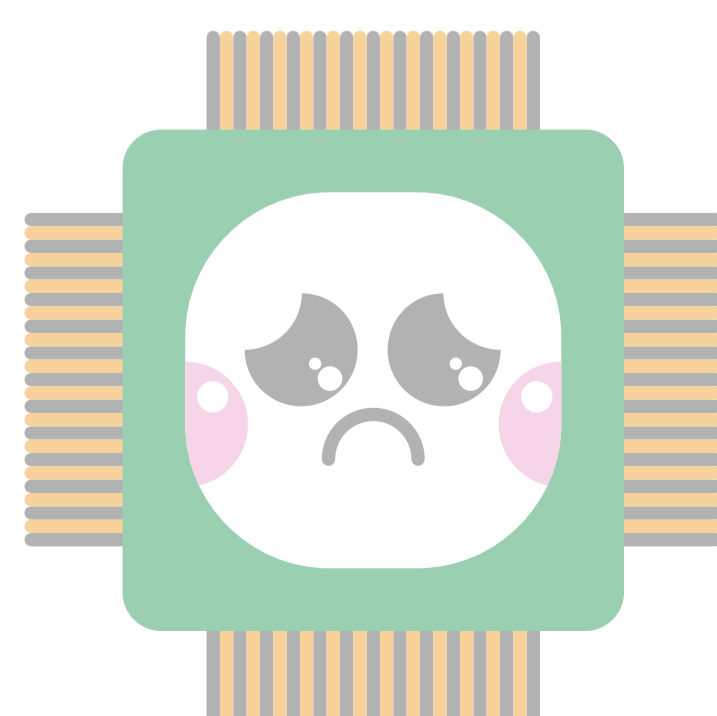
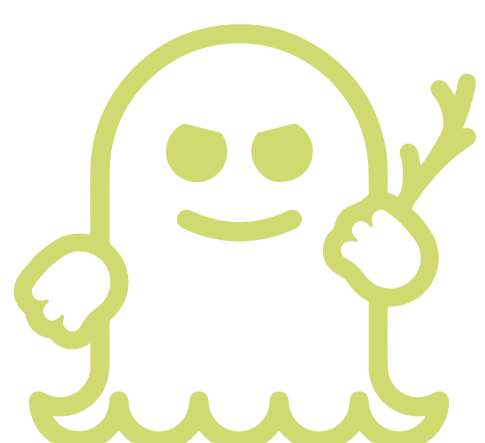


5

Unfortunately, our little friend the CPU has come under attack as people have found out about its treasure trove of cached data.

To find out more about these recent bugs, what they are and how to fix them please click on the links below.

What is the **Spectre** bug?



What is the **Meltdown** bug?