

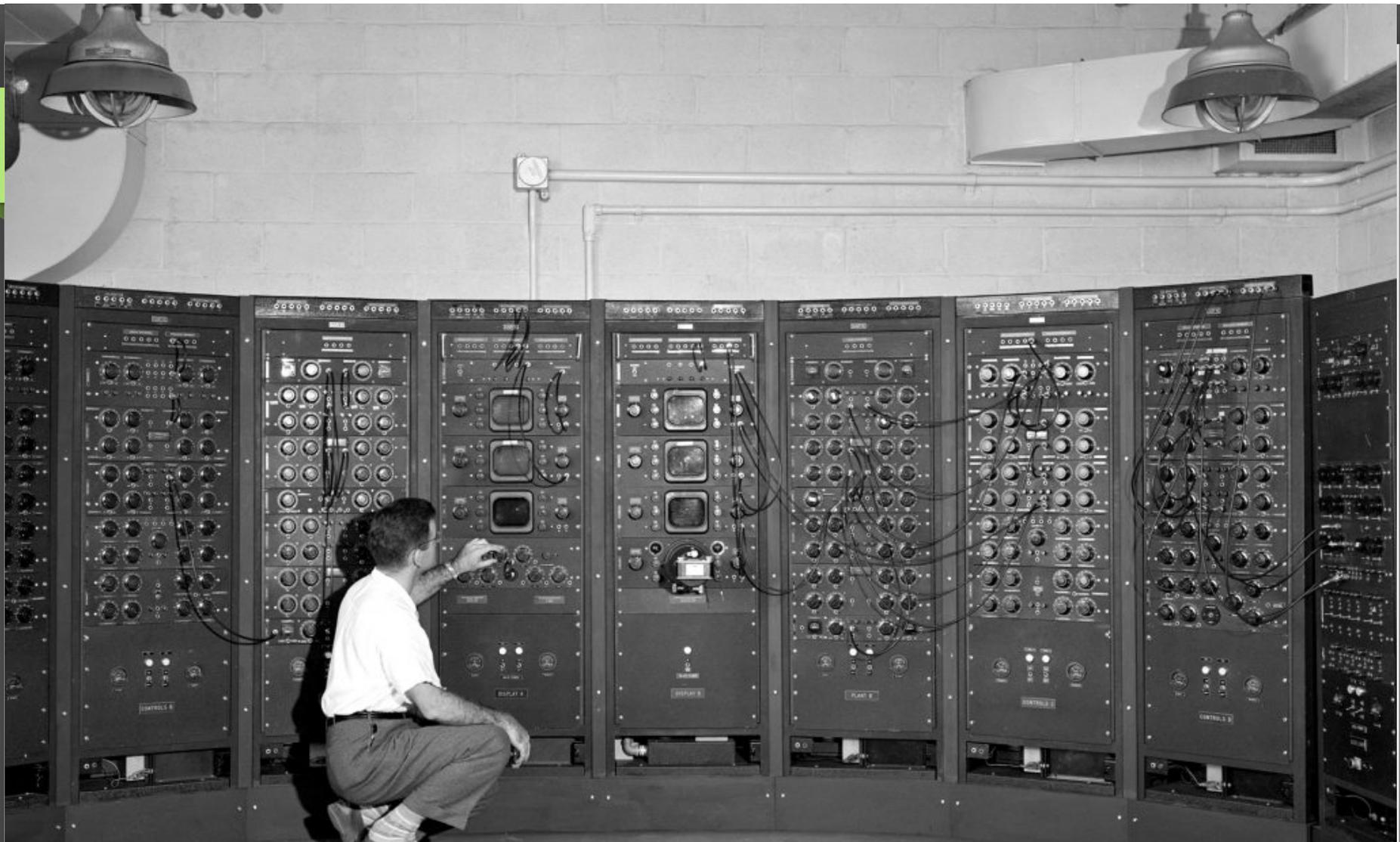
History and Basics

Computers originated from telephone switches in the early 1900's.

Engineers realized switches could be used for performing calculations, with a switch's on position meaning 1 and the off position 0.



animated gif is taken from: <https://gifer.com/en/7ico>



The first computers, built in the 1940s, had thousands of switches and occupied entire rooms.

Early computers were largely used for military purposes, like codebreaking in World War II, and calculating the paths of bombs.

C-24357

The picture is taken from: <http://e2btek.com/crucial-events-erp-bomp-saas-beyond/>

History and Basics

Shrinking switches led to single-chip computers.

Today, that room-sized computer fits on a chip the size of a pinhead.

Example:

Intel 7th Gen Intel Core
Desktop Processor i7-7700K

dimensions:

1.9 x 4.1 x 4.6 in



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Computer Programs

Computer program consists of *instructions* that a computer executes (or runs), like multiplying numbers or printing a number to a screen.

A computer program is like a recipe!



Orange Madeleines

Makes about 18

Ingredients

2 eggs
80g self-raising flour
80g caster sugar
80g salted butter, melted
2 tbsp fresh orange juice
1 tsp orange blossom water
zest of 1/2 orange

you will also need a Madeleine baking mold.

Instructions

Preheat oven to 240C / 475F
In a bowl, mix together flour and sugar.
Separate the egg yolks from the whites. Add the yolks to the flour-sugar mix and stir with a wooden spoon until combined.
Whisk the egg whites with a fork and add to the mix.
Add the melted butter to the mix and whisk until combined.
Add the zest, orange juice and orange blossom water and mix well.

Butter the Madeleine mold.
Pour about one tbsp of batter into each cavity on the mold.

Bake for 4 minutes at 240C then drop the oven temperature to 180C/350F and bake for a further 4 minutes.

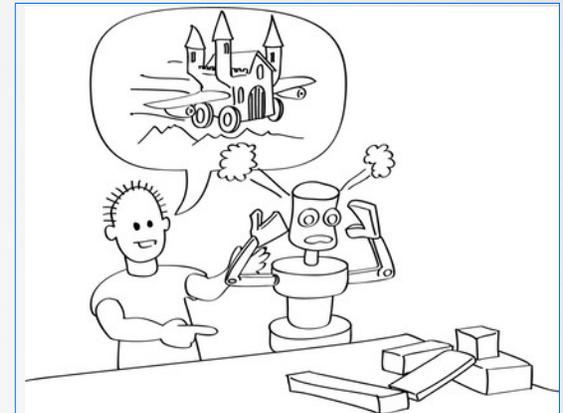
Computer Programs

In-class activity: Harold the Robot

Let's play a game:

I am a robot who can understand simple (very simple!) commands like “pick up a brick”, “put a brick”, etc.

Our goal is to make a tower out of the blocks we have.



Computers all around us

Computers in the 1940s and 1950s were large expensive machines used for government and business purposes.

Initially just a few existed worldwide, costing millions of dollars (in today's dollar), weighing over a ton, and occupying entire rooms.

Check out this video about 10 amazing robots that really exist (by Mad Lab, May 2, 2017, ~10 minutes):

https://youtu.be/sZ_-yb-TN9M

Hardware and Software

Every computer is just a machine for *executing* (carrying out) programs.

Software (programs) rules the *hardware* (the physical machine).

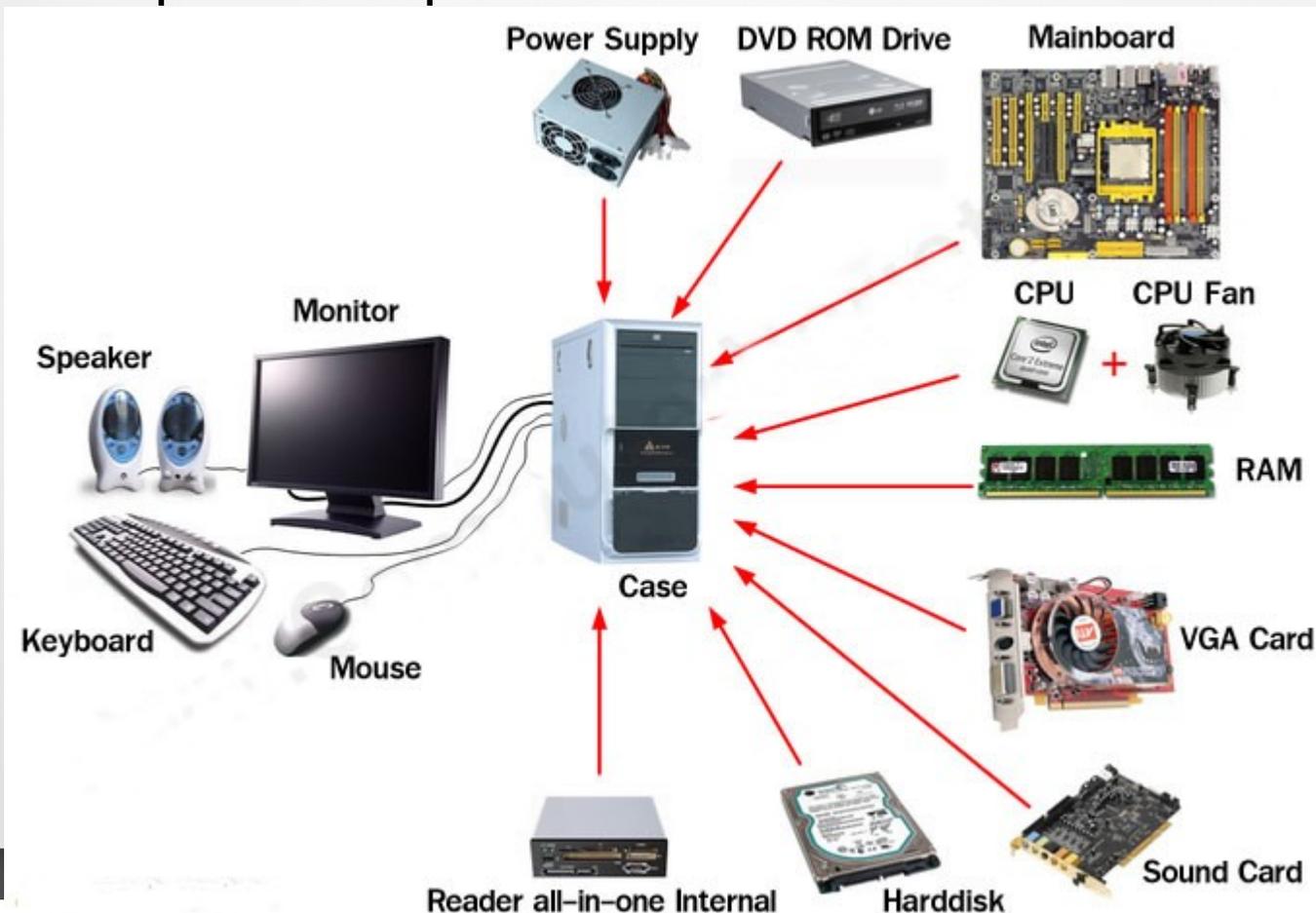
Without software, computers would be just expensive paperweights.



Hardware

Computer Hardware can be classified into two categories:

- 1) CPU (Central Processing Unit)
- 2) Computer Peripherals



Hardware

You can check out a 30-minute video on how disassemble and assemble back a desktop:

<https://youtu.be/ctAVC2JwEwI>