

# Medical Imaging

## Medical Imaging Devices

Computed Tomography Scanner

- Xray Scanner
- Magnetic Resonance Impedance Scanner (MRI)

PET Scanner

Ultrasound devices

---

## X-Rays

- Short wavelength electromagnetic waves
- Wavelength is between  $10^{-6}$  to  $10^{-8}$  nm
- Xray photons have a lot of energy
- It is ionizing → can produce chemical damage on molecules  
↳ knock particles out of atoms

High freq → high energy → heat

Image is produced based on absorption of x-rays to different tissues / bones of the body.

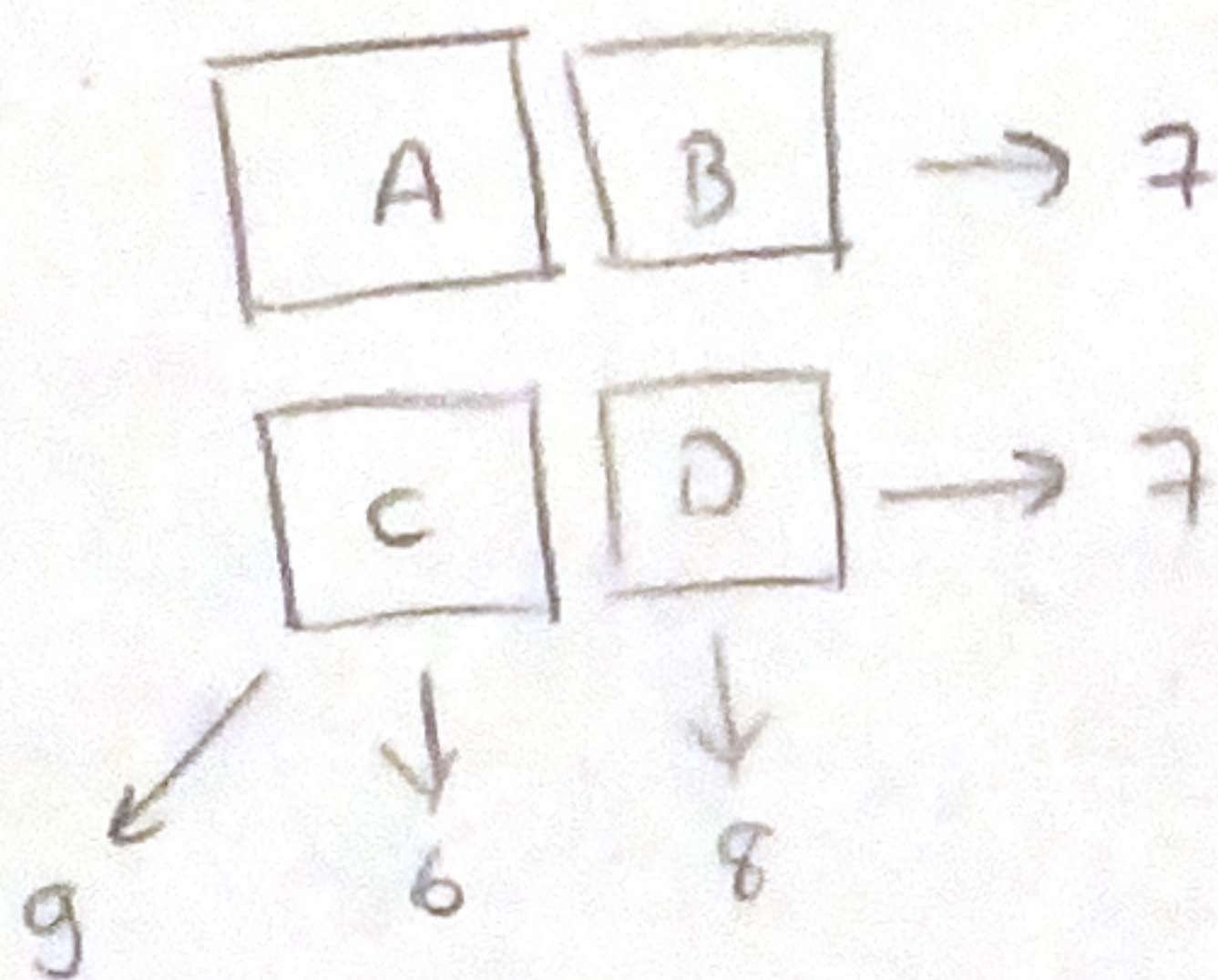
## Computed Tomography

Allows us to see what's inside of human body without dissecting it.

It allows us to produce 2D cross sections of an object using X-rays.

→ How the image is produced by multiple projections!

We have horizontal, vertical & diagonal sums of following image



$$A + B = 7$$

$$A + C = 6$$

...

Sums simulate x-ray absorptions of the image.