ID: 21061

Name: Dusenabera William

Multimedia Assignment

DIGITAL CAMERA

Introduction

A ***digital camera*** is a camera that stores pictures in electronic memory instead of film. The digital camera was not so long ago, the poor relation when compared to chemical-based film.

How Digital camera works?

There is no film in a digital camera. Instead, there is a piece of electronic equipment that captures the incoming light rays and turns them into electrical signals. This light detector is one of two types, either a **charge-coupled device (CCD)** or a **CMOS image sensor**.

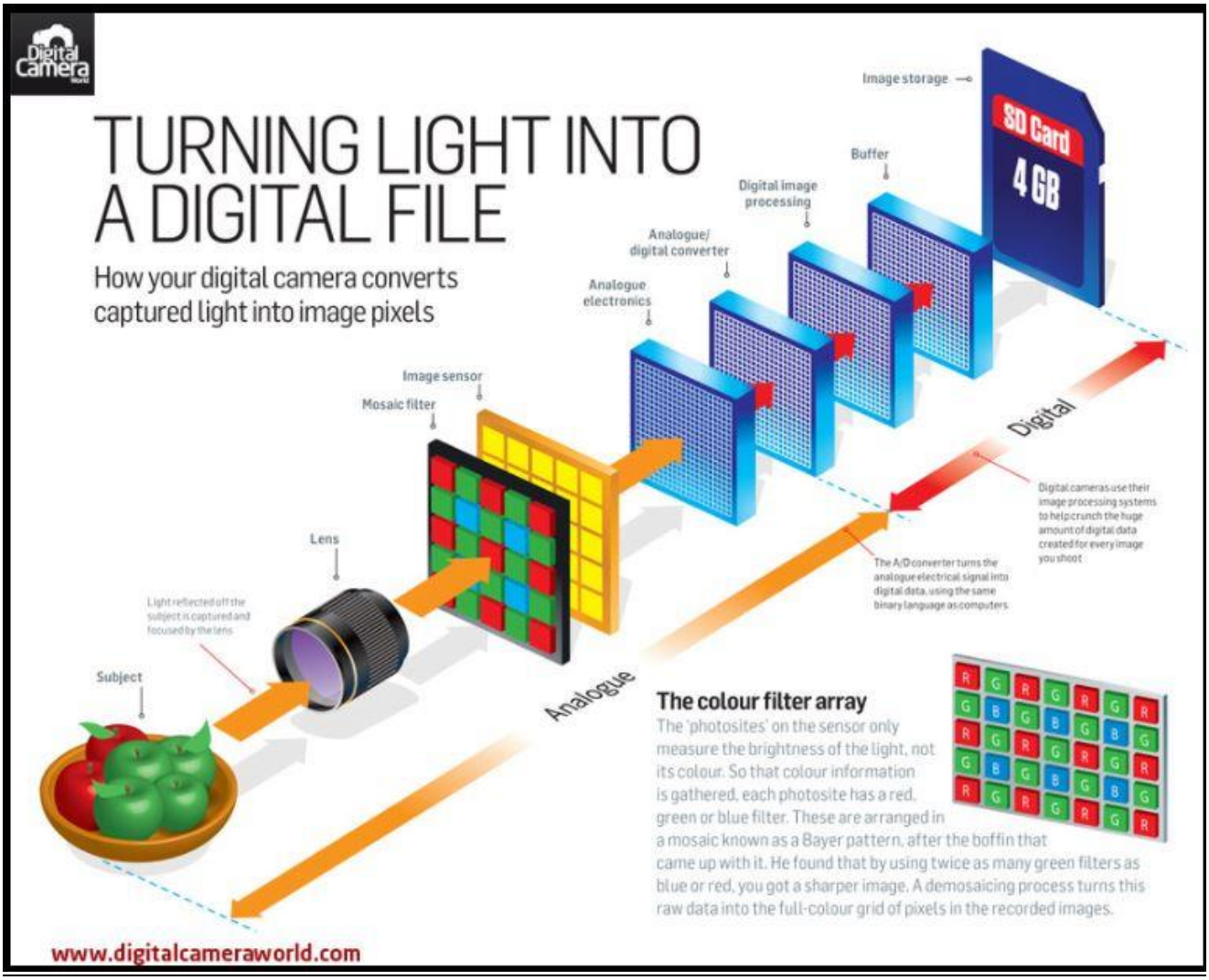
At the heart of all digital cameras is an image sensor, which converts light information transmitted via a lens into an electrical signal that can then be stored and called up later by a computer, which reveals it as a photograph. There are various technologies used in image sensors, but by far the most popular is the charge-coupled device (CCD). A CCD is an array of capacitors that are sensitive to light, when you hear cameras advertised by their resolution, it's the number of these capacitors that is being referred to. As particles of light (photons) strike the capacitors, they generate electrons. This creates an overall charge that can then be read as an indication of light intensity.

CCDs don't read the color of the light, just its intensity, so to produce color photographs there are a way of discriminating the intensity of the various colors of incoming light. These colors are known as the additive primaries: red, green and blue. All the colors you see in a digital photograph are built of these colors. One way to do this, and the most expensive, is to have three CCDs in each camera and use a prism to split the light up before directing each color to a different sensor. A less expensive method is to use a colored lattice called a Bayes filter mosaic, which is similar to a three-colored chess board.

The following are the things Digital cameras can do but film cameras cannot

- Display image on screen immediately after there are recorded
- Storing thousands of images on a single small memory device and deleting images to free storage space
- Some can crop pictures and perform other elements

The following page shows the sketch


Digital Camera World
TURNING LIGHT INTO A DIGITAL FILE
How your digital camera converts captured light into image pixels
Image storage
SD Card
4 GB
Buffer
Digital image processing
Analogue/ digital converter
Analogue electronics
Image sensor
Mosaic filter
Lens
Light reflected off the subject is captured and focused by the lens
Subject
Analogue
Digital
Digital cameras use their image processing systems to help crunch the huge amount of digital data created for every image you shoot
The A/D converter turns the analogue electrical signal into digital data, using the same binary language as computers
The colour filter array
The 'photosites' on the sensor only measure the brightness of the light, not its colour. So that colour information is gathered, each photosite has a red, green or blue filter. These are arranged in a mosaic known as a Bayer pattern, after the boffin that came up with it. He found that by using twice as many green filters as blue or red, you got a sharper image. A demosaicing process turns this raw data into the full-colour grid of pixels in the recorded images.
www.digitalcameraworld.com