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Version Number:

Team Members :

Team No:

Module: Model Based System Engineering

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| **Ver.Rel. No.** | **Release Date** | **Prepared. By** | **Reviewed By** | **Approved By** | **Remarks/Revision Details** |
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**Document History**

Embedded System :- **DIGITAL CAMERA**

* Digital camera is one of the embedded products.
* Cameras that we use today are smart and have a lot of features that were not present in early cameras all because of the embedded system used in them.
* A digital camera has basically three functions, to capture an image which we call data, to store image data, and to represent this data.
* Today images are stored and processed in form of digital data in bits.
* There is no need for the film for storing images. This feature has increased the storage capacity and made it easy to transfer images.
* In digital cameras, the first image is captured and converted to digital form.
* This digital image is stored in internal memory.

Block Diagram :-

# 

# Block Diagram :-

# digitalcamera_full

**Components :**

**Lens** : A lens is a tool used to bring light to a fixed focal point.In Digital camera the lens directs light to a digital sensor.

**AGC** : Automatic Gain Control.AGC is basically a from of amplification where the camera will automatically boost the image received so that objects can be seen more clearly.

**ADC** :ADC stands for Analog to Digital Converter and refers to the digital camera's ability to capture an image and convert it into a digital file. All digital cameras are assigned an ADC number and it is given in the manufacturer's technical specifications for each mode.

**CFA** : In digital imaging, a color filter array (CFA), or color filter mosaic (CFM), is a mosaic of tiny color filters placed over the pixel sensors of an image sensor to capture color information.

**Image Sensor** : An image sensor or imager is a sensor that detects and conveys information used to make an image.The image sensor of the camera is responsible for converting the light and color spectrum into electrical signals for the camera to convert into zeroes and ones.

**Storage** : To store the images,videos .(removable disks)

* **Requirements :-**
* **Non\_Functional Requirements :**
* Performance:
* time required to process image.
* Must process image fast enough to be useful
* Size:
* number of logic gates in IC
* Must use IC that fits in reasonably sized camera
* Power:
* measure of avg. power consumed while processing
* Must operate below certain temperature (no-cooling fan) a constrained metric
* Energy:
* battery lifetime (power x time)
* Reducing power or time reduces energy
* Optimized metric: want battery to last as long as possible
* **Functional Requirements:**
* System’s behavior
* Captures images
* Stores images in digital format
* Multiple images stored in camera
* Number depends on amount of memory and bits used per image
* Downloads images to Computer System
* **Applications :-**
* Shoot Photos.
* Shoot Videos.
* Keeping Records of Family and Friends.
* Create Insurance Records.
* Make Business Cards.
* Digital Photographic Art.
* Record a Meeting or Event.
* Objects for Presentation.
* **Major Features**
* Resolution in Megapixels
* Optical Quality
* Optical vs. Digital (Interpolated) Zoom
* Storage Media
* Data Transfer
* Battery Duration
* Interchangeable Lenses