KPIT

Implementation of YUV420 to Y Image

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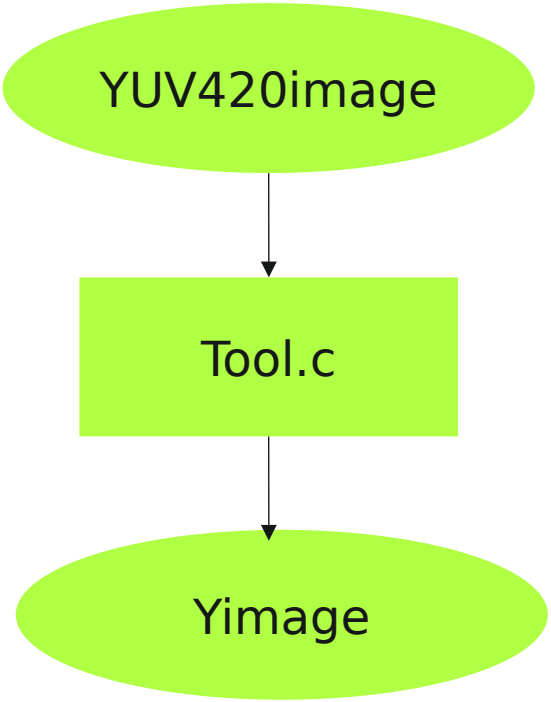
Agenda

- Planning and Requirement Analysis
- Defining and Designing Product Architecture
- Implementation
- Testing

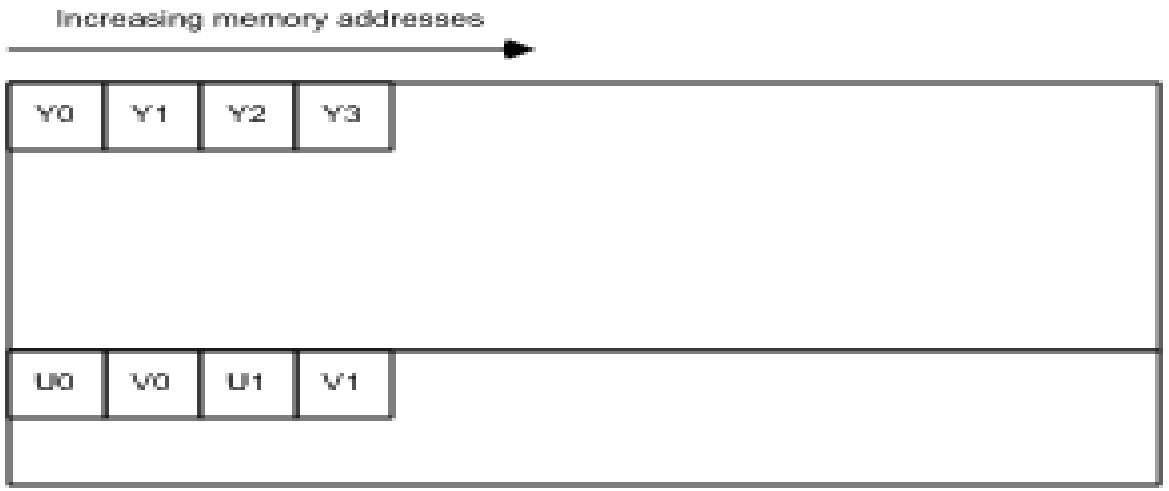
Planning and Requirement Analysis

- To implement a tool that converts YUV420 image to Y image
  - To Extract Data Information from Input i.e. YUV420
  - To process the input data
  - To generate Y image



Defining and Designing Product Architecture

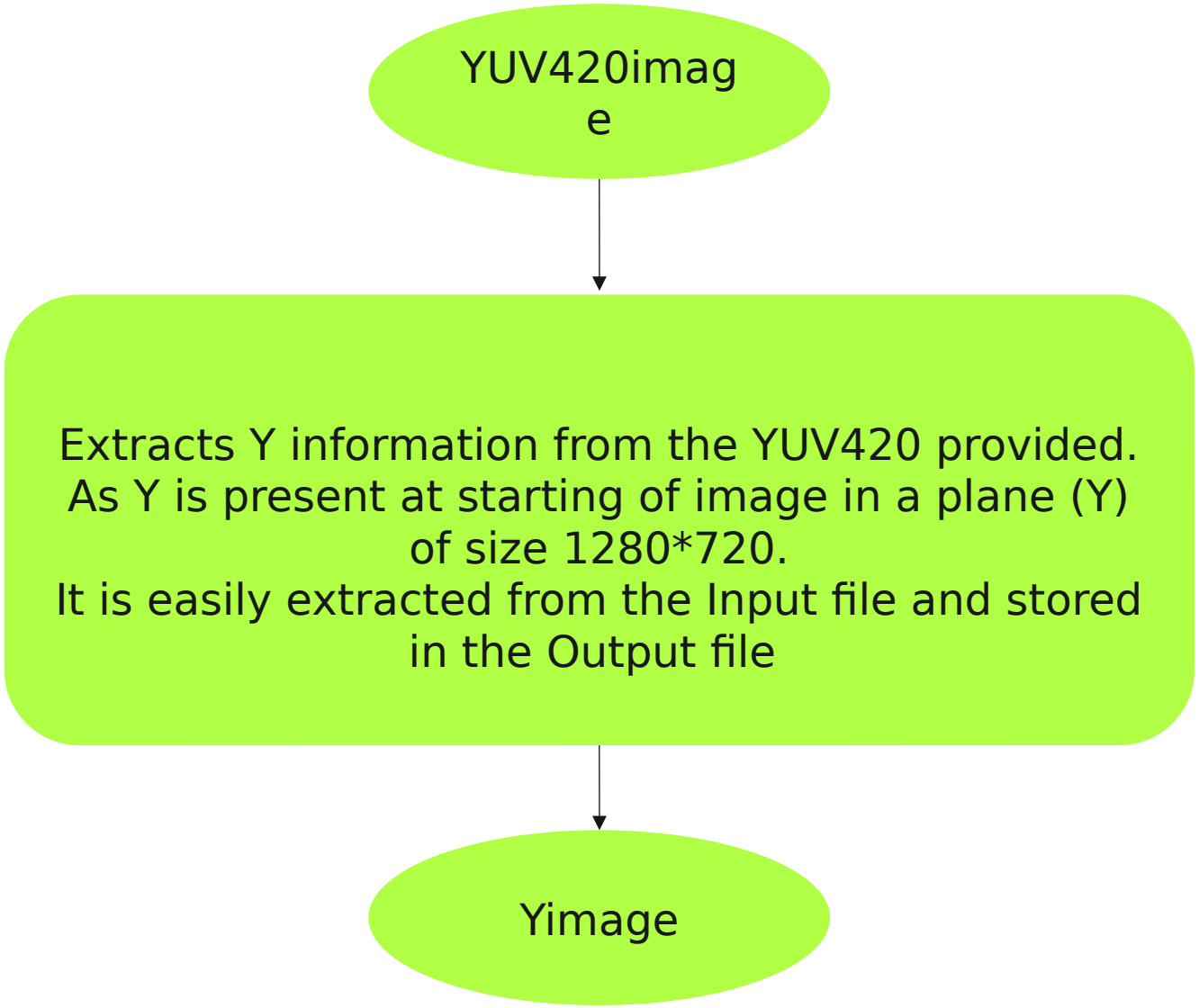
- Provided Image is “NV12” type of yuv420.
- Here as we know **Raw image** is just a binary file storing the image information in an **Array**.

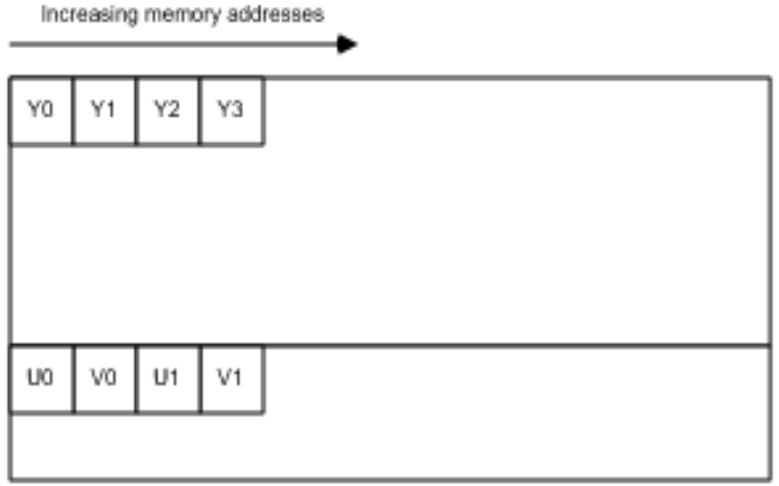


Here, I have just extracted the Y plane from the input image, as for “x” pixels of Image will have “x” Y’s in it i.e.every pixel will have its Y.
Thus new file only contains the Y0,Y1,Y2……etc.

- Input Image Specification:
  - Image format : YUV(4:2:0)
  - YUV420 type : NV12
  - Width : 1280
  - Height : 720
  - No of pixel : 1280*720
  - One pixel info : 12Bits
  - Size of file : 1280*720*1.5
  - **Luma (Y) Data : 1280*720**
  - **Chroma(U-V) Data : 1280*720*0.5**
- Y is present in the starting plane(Y-plane) in array and size is equal to **1280*720**.
- Our output only include **Luma Data** whose size is equal to **(1280*720)Bytes**.

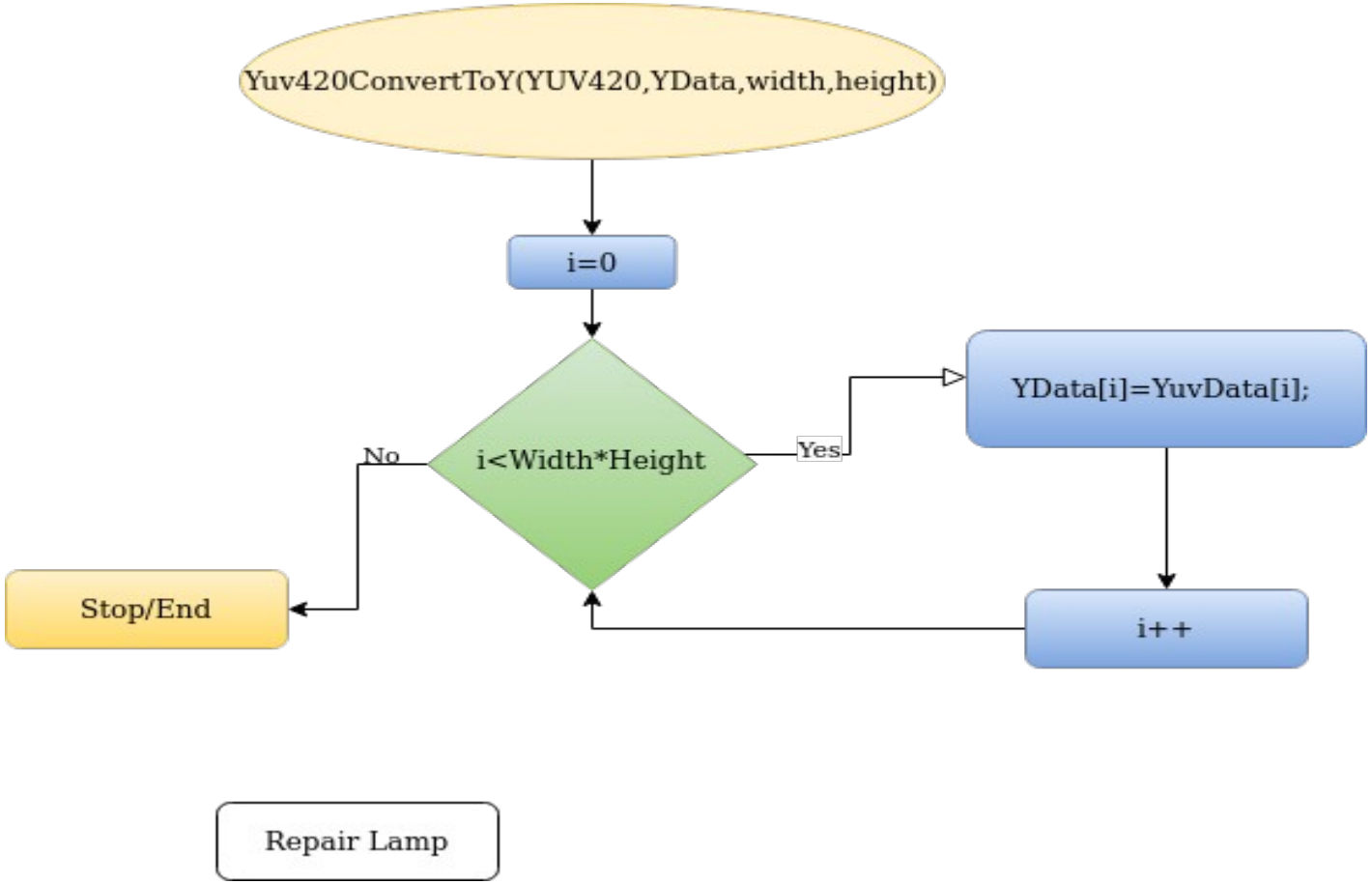
- Basic Functionality:





Y420 storage pattern

Flowchart


Yuv420ConvertToY(YUV420,YData,width,height)
i=0
i<Width*Height
No
Yes
YData[i]=YuvData[i];
Stop/End
i++
Repair Lamp

Implementation

```
  So,here we only want Y Data. So we only have read
  Y Plane from YUV420 image and written this Y plane in new file
*/
void Yuv420ToY(uint8_t YUV420[],uint8_t YData[],int width,int height){

    uint32_t LulCount=0;
    for(LulCount=0;LulCount<width*height;LulCount++)
    {
        /*Extracted only Y plane*/
        YData[LulCount]=YUV420[LulCount];
    }


}
```

Testing

- Tested with YuvView with Y setting’s only and It works as expected
- Checked Pixel’s details and it only contains Y details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Thank you