This package…

- loads a bitmap image
- converts it to monochrome
- detect for barcodes
- record the position of the barcodes measured in pixels into a text database.

The full package…

- has the camera control, takes the picture as JPEG (takes up considerably less memory than bitmaps) and
- converts only the JPEG being worked on into a bitmap, so there only exists one bitmap then
- converts to monochrome, detects for barcodes, and records the position of barcodes

Installation

- Open "Package" folder, click on "setup"
- Go through the installation wizard, if your Windows magic box likes you, then nothing should go wrong, default installation is to "C:\Program Files\Chip Detector"
- Unzip and copy the "Images" folder into the computer, anywhere you want (desktop, documents folder), this is where the text database will also be created

Directions

- -Click on "Chip Detector" executable
- -Click on "Load" button
- -Find the **bitmap** image to load
    - The bitmap images in the package are of trays, we plan to take 3 pictures of one tray (left, middle, and right)
    - The target number of chips to detect is 64, 8 columns, roughly 1/3 of the tray
    - The camera zoom & resolution allows detection of around 100 chips in one picture, which ensures that we don't miss any chips
- -Set the RGB value to 160, this will determine the threshold to convert the image from color to B&W, the higher the value, the whiter the resulting picture
- -Click on monochrome to turn the image to B&W, you can find this B&W image in the Chip Detector folder, NOT the image folder, it is named "BoardTemp.bmp"
- Enter board identification information
- -Then click on detect, status 48 means that it couldn't find any chips, change RGB threshold if this happens, look at B&W picture to see if it is too light or too dark
- -Status 0 means that some chips were found, they are recorded in "Chips.txt" in the same folder that the image was taken from

Notes

-With uniform and unchanging lighting, there would be no need to try more than RGB thresholds

Database

- Right now the database only includes
  - Board identification
  - Chip numbers
  - Corresponding locations in pixels
- The board identification should include information on
  - The board itself
  - Which section of the board
  - The type of board (tray, triangular)
- In the future, we would need to create a simple script which will
  - Eliminate duplicate entries of the chips in the database, there will be quite a few of these, to ensure that we don't miss any chips in detection
  - Standardize the positions of the chips on the type of board (the first chip in a tray would be standardized as being in position 1 corresponding with pixel coordinate-124,324)