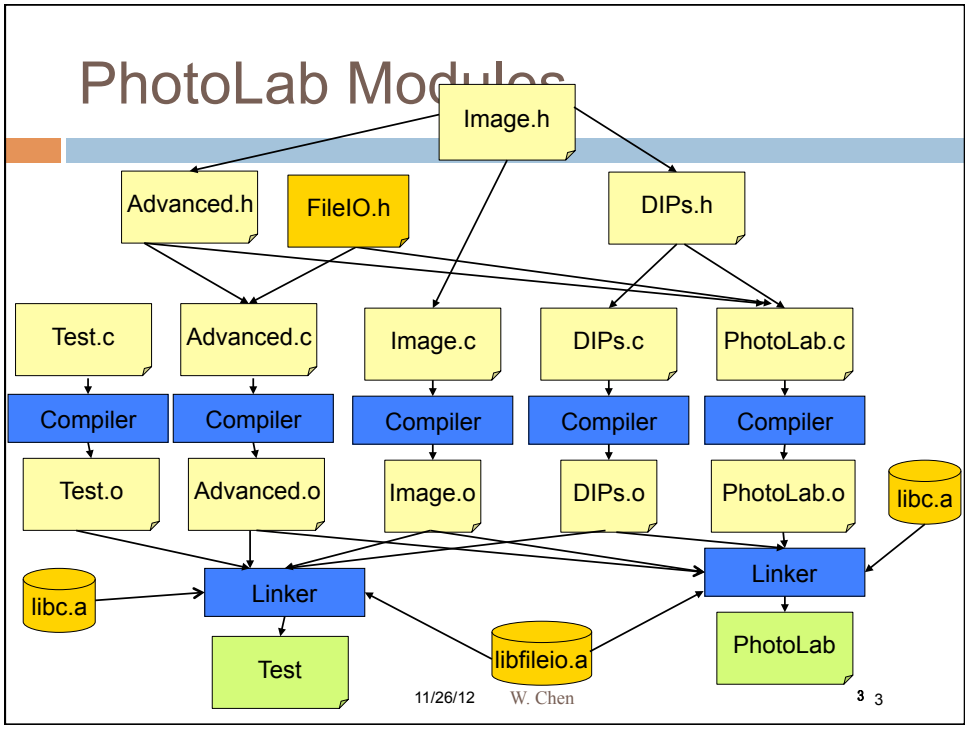
EECS22 LAB WEEK6

11/26/12

Weiwei Chen

Assignment 4

- Use dynamic memory allocation to handle images with different sizes.
- Use structures and pointers
- Use the Valgrind tool to check the memory usage of the program
- Translate pseudo code into C program. Understand C programs.
- Makefile Development for compiling multiple modules into one program, and link against libraries.



Dynamic Memory Allocation

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- Dynamic Memory Allocation (slides 13, lecture 12)
  - IMAGE *CreateImage(int W, int H)
  - Void DeleteImage(IMAGE *image)
- Structure (slides 6~9, lecture 11)
- Pointers

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Advanced DIP functions

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- Rotate-90-degrees
  - Original image size: W x H
  - Rotated image size: H x W
  - Mapping functions for pixel coordinates
    - Pixel (x, y) in the original image
    - Pixel (x', y') in the new image
    - y = f(x', y') = height – 1 - x'
    - x = g(x', y') = y'

Advanced DIP functions

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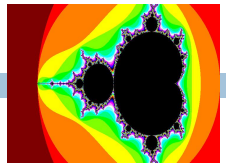
- Resize
  - Original image size: W x H
  - Resized image size: H x (percentage / 100)
    W x (percentage / 100)
  - Mapping functions for pixel coordinates
    - Pixel (x, y) in the original image
    - Pixel (x', y') in the new image
    - Percentage >= 100
    - Percentage < 100

Advanced DIP functions



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- Draw the Mandelbrot image
  - Translate pseudo code into C program
  - Define proper variables
  - Choose the color of the pixel from a predefined color palette
- Please take a look at the Mandelbrot drawing algorithm and tell your neighbor what does the algorithm do to draw the image?

Advanced DIP functions

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- Overlay
  - IMAGE *image = ReadImage("sailing.ppm");
  - IMAGE *imageS = ReadImage("rowing.ppm");
  - If the pixel in imageS is not too white < (250, 250, 250)
    - copy pixel (x, y) in imageS to (x+offset_x, y+offset_y) to image.