

EXAM 1 FRIDAY (NOTE HW 2 DUE THURS 6:30 WHEN SOLUTION POSTS)

RULES FOR VARIABLE NAMES e.g., is "4a" valid?

WRITE OUT PUT OF SIMPLE SCRIPT, e.g.,

```
a = 5;  
a = a * 2
```

HOW & WHERE TO START COMMENTS
@ START & END OF A LINE

HOW TO START A CODE SECTION

USE OF THE CONSTANT π

MATH ORDER OF PRECEDENCE

- WRITE OUTPUT OF CODE
- WRITE CODE GIVEN "HAND WRITTEN" EQN

SOME BASIC STANDARD FUNCTIONS, e.g., $\sin()$, $\sinh()$, $\tanh()$, \lnspace , \sqrt{x}

THE `format` COMMAND & OPTIONS & DISPLAY OF #'S

e.g., <code>format</code>	<code>format long e</code>
<code>format short</code>	<code>format short e</code>
<code>" long</code>	<code>format short eng...</code>

"E NOTATION" e.g. WRITE 5.25×10^3 IN e NOT.
WRITE $5.25e3$ IN SCIENTIFIC NOT.

ARRAYS

WRITE CODE TO GENERATE SIMPLE ARRAY VARIABLE

1D, e.g., 1 3 5 7 → USING [] & : RANGE

2D, e.g.,
1 2
3 4

USE OF , ; NEW LINES INSIDE []

USING ARRAY INDEXES, e.g., SELECT & CHANGE SOME
ELEMENTS IN AN ARRAY → e.g., CHANGE 2 IN

$\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ TO 99

MISCELLANEOUS → ANALOG VS DIGITAL COMPUTER

SIMPLE BINARY ↔ DECIMAL CONVERSION

DOES DNA STORE INFO IN BINARY SYSTEM?

See ReactorLab.net, Resources, Matlab, More Notes
including DNA data – data storage in your body's cells

MAIN
m-file

%% USER-WRITTEN FUNCTION

a = 5

b = myFunc(a, b)

type myFunc.m

%% NEXT PROBLEM

"CALL"
FUNCTION
myFunc

myFunc.m

LIST OF 1 OR MORE INPUT "ARGUMENTS"

LINE 1 → function y = myFunc(x, w)
KEYWORD →
FUNCTION NAME →
 $y = 3 \times x^w ;$

VARIABLE WHOSE VALUE IS RETURNED

MAIN IDEAS
INPUT
STORAGE
PROCESSING
REPEATS
DECISIONS
FUNCTIONS/PROCEDURES

FUNCTION NAME IS
NAME OF FUNCTION M-FILE
WITH EXTENSION .M

FUNC NAMES FOLLOW VARIABLE NAME RULES

VARIABLES INSIDE FUNCTION FILE ARE "LOCAL"

TO THE FUNCTION, VALUES PASSED TO FUNC
BY POSITION IN INPUT ARGUMENT
LIST

WHY WRITE A FUNCTION?

SEVERAL REASONS

- BREAK LONG CODE INTO MORE READABLE & DE-BUGGABLE MODULES
- PUT CODE THAT IS USED IN MANY PLACES IN ONE PROGRAM OR IN MANY PROGRAMS INTO ONE PLACE (FUNCTION FILE)

MAKE NOW CHANGE IN ONLY ONE PLACE

THING 1

```
function z = THING1(w)
    ~~~~~
    z = ~w
endfunction
```

REVISED LONG PROGRAM

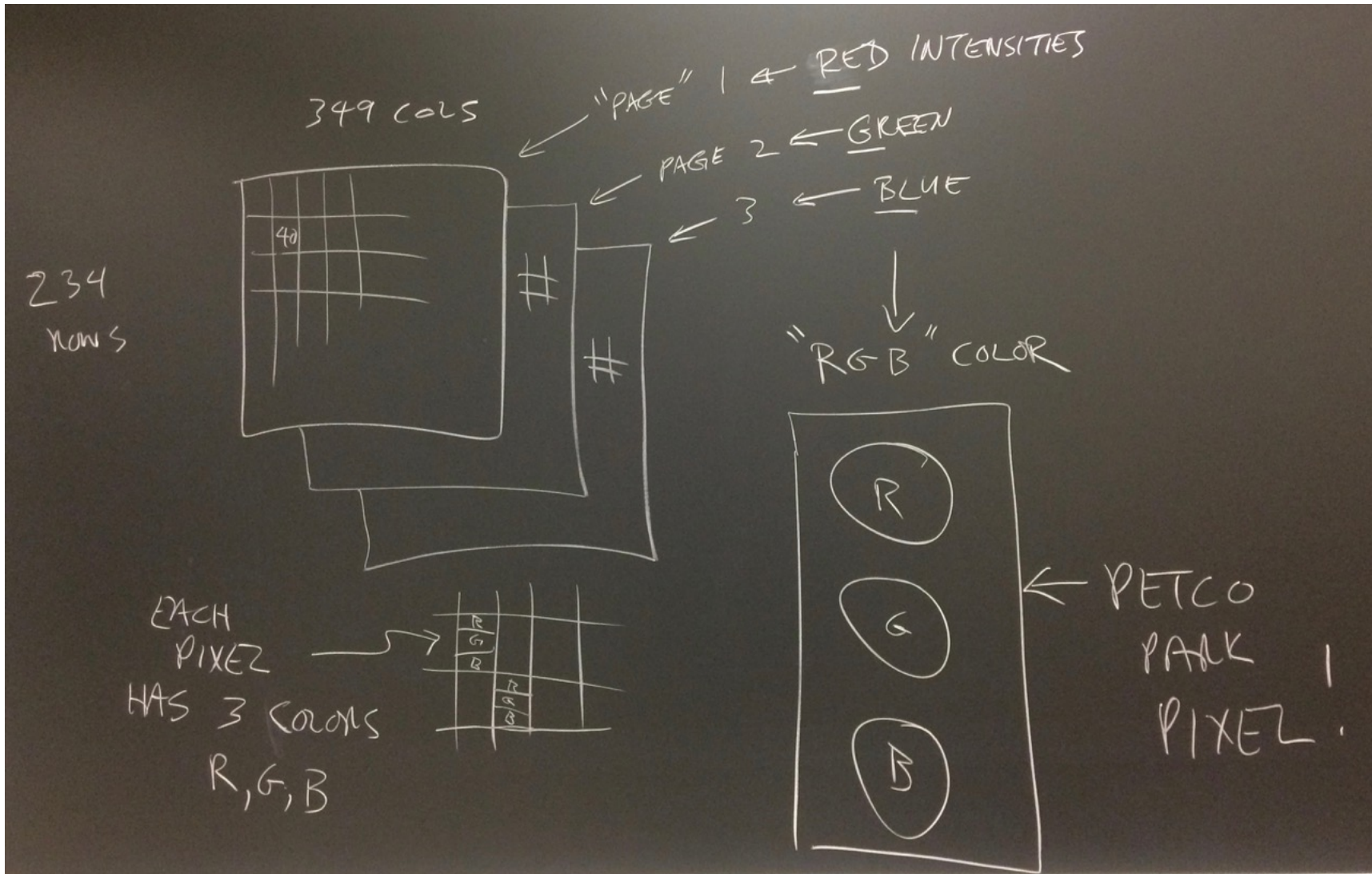
```
~~~~~
a = THING1(x) ← ONE LINE CODE
~~~~~
b = THING1(y) ← "CALL" THING 1
~~~~~
c = THING1(z)
```

CHANGE TO USE FUNCTIONS

LONG PROGRAM

```
~~~~~
DO THING 1
~~~~~
DO THING 1
~~~~~
DO THING 1
```

TO CHANGE WHAT THING 1 CODE LINES DO HAVE TO FIND & CHANGE ALL



Looks like my memory overestimated the size of the pixels in the Petco Park video board. The board is said to be 2472 pixels wide by 1224 pixels high for over 3 million total pixels. Using the size of the board, 37.7 m wide by 18.7 m high (123.6'x61.2'), I get 15.3 mm by 15.3 mm pixels (0.6"x0.6"). I think I remember seeing individual LEDs (R or G or B) that were at least this size stacked vertically in each pixel... You can always check in person. See https://en.wikipedia.org/wiki/List_of_largest_video_screens.

Editor - /Users/richardherz/Desktop/pixexp.m

```
1 % image experiments
2 - p = imread('mypic.png');
3 - image(p)
4 - size(p)
5 - figure(2)
6 % change all blue to 0
7 - p2 = p;
8 - p2(:,:,3) = 0;
9 % set some part of p2 back to original blue
```

standard functions image and imshow can be used to display images - image is better for display of computed data, imshow for display of photos, either works well for this homework, enter help image and help imshow for info

Figure

File Edit View Insert Tools Desktop

File Edit View Insert Tools

