

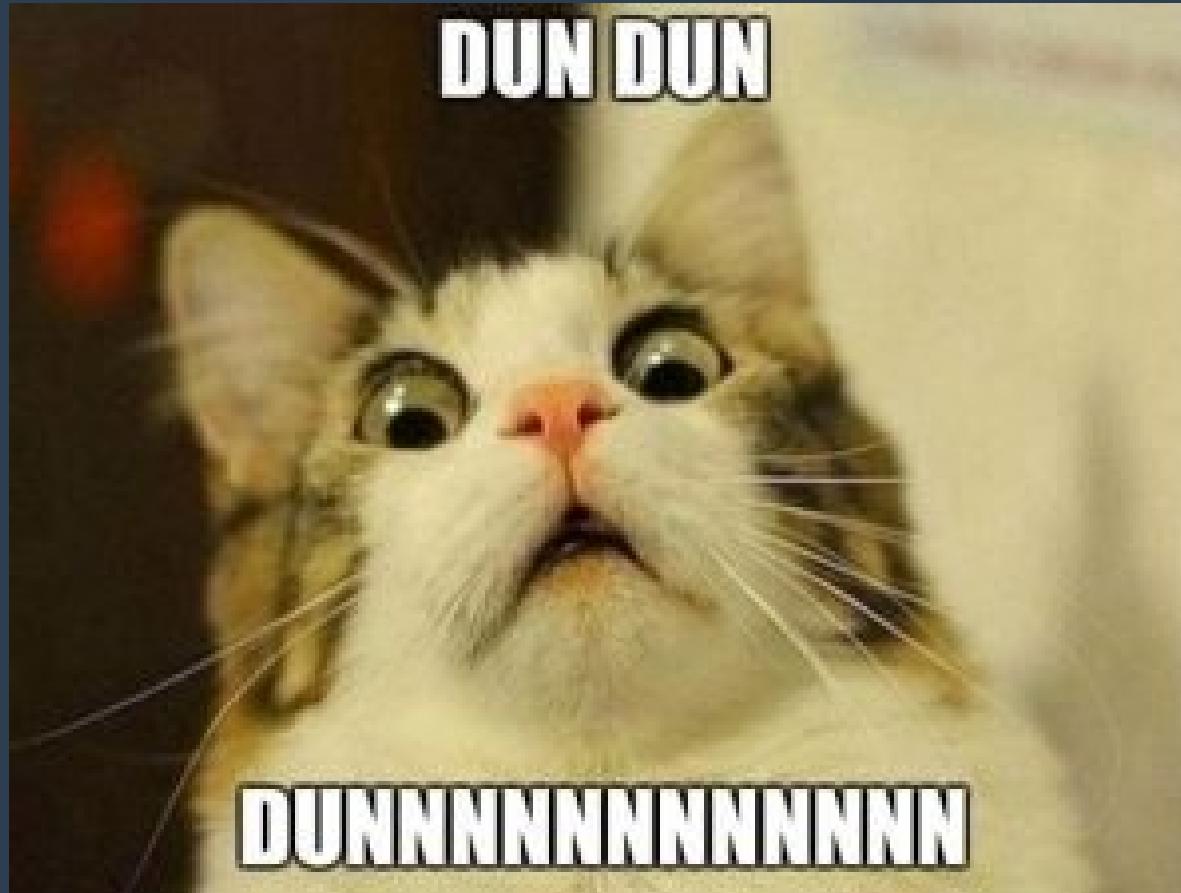
# WEEK 4

# PROGRAMMING FUNDAMENTALS

# ASSIGNMENT #1

- Late submissions will receive a 10% deduction per day.
- Solution will be posted Saturday morning.
- Once solution is posted, submissions will no longer be accepted.

# COMPUTER PROGRAMMING



# FIRST STEPS...



# PROGRAMMING FUNDAMENTALS

1. Basic Data Types
2. Variables
3. Conditionals
4. Arrays
5. Hashes
6. Loops
7. *Classes & Methods*

*\* similar concepts in every language, but might have a different name*



# BASIC DATA TYPES

# BASIC DATA TYPES

- Numeric values
- Non-numeric values
- True, False
- No value

*code-along/1-data.rb*

# VARIABLES



**Leon Bambrick**  
@secretGeek



There are 2 hard problems in computer science: cache invalidation, naming things, and off-by-1 errors.

1,147 8:20 AM - Jan 1, 2010

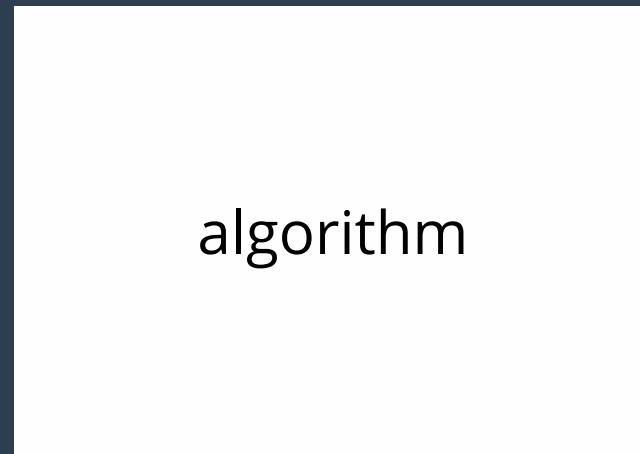


# CONDITIONALS



INPUT → OUTPUT

INPUT



OUTPUT

INPUT



algorithm



OUTPUT

*tacos*

```
# if input is "tacos",
#   :yum:
```



*kale*

```
# if input is "kale",
#   :grimace:
```



*code-along/2-conditionals.rb*

# ARRAYS

[https://en.wikipedia.org/wiki/List\\_of\\_lists\\_of\\_lists](https://en.wikipedia.org/wiki/List_of_lists_of_lists)

~To Do List

- 1) Make a to do list
- 2) check off first thing on the  
'To do' list
- 3) Realize you've already accomplished  
2 things on the list
- [in progress] 4) Reward yourself with a nap

~To Do List

- 1) Make a to do list
- 2) check off first thing on the  
'To do' list
- 3) Realize you've already accomplished  
2 things on the list
- [in progress] 4) Reward yourself with a nap

```
task1 = "make list"  
task2 = "check off first todo"  
task3 = "realize you've completed 2 todos"  
task4 = "reward yourself with a nap"
```

~To Do List

- 1) Make a to do list
- 2) check off first thing on the  
'To do' list
- 3) Realize you've already accomplished  
2 things on the list
- [in progress] 4) Reward yourself with a nap

```
tasks = [  
    "make list",  
    "check off first todo",  
    "realize you've completed 2 todos",  
    "reward yourself with a nap"  
]
```

*code-along/3-arrays.rb*

# HASHES

~To Do List

- 1) Make a to do list
- 2) Check off first thing on the 'To do' list
- 3) Realize you've already accomplished 2 things on the list
- [in progress] 4) Reward yourself with a nap

```
tasks = [  
    "make list",  
    "check off first todo",  
    "realize you've completed 2 todos",  
    "reward yourself with a nap"  
]
```

```
task1 = tasks[0] # "make list"
```

~To Do List

- 1) Make a to do list
- 2) check off first thing on the  
'To do' list
- 3) Realize you've already accomplished  
2 things on the list
- [in progress] 4) Reward yourself with a nap

```
# task1
description = "make list"
completed = true
```

~To Do List

- 1) Make a to do list
- 2) check off first thing on the  
'To do' list
- 3) Realize you've already accomplished  
2 things on the list
- [in progress] 4) Reward yourself with a nap

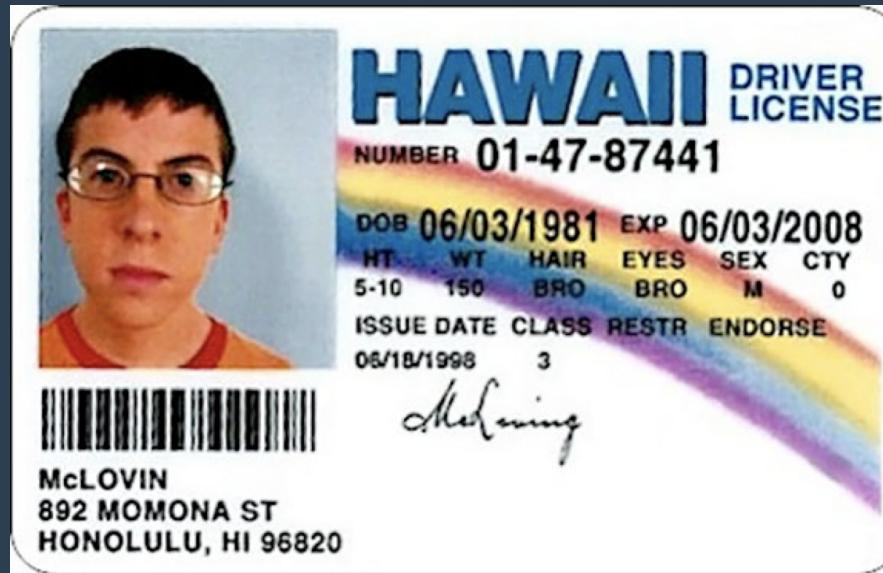
```
# task1
task1_description = "make list"
task1_completed = true
```

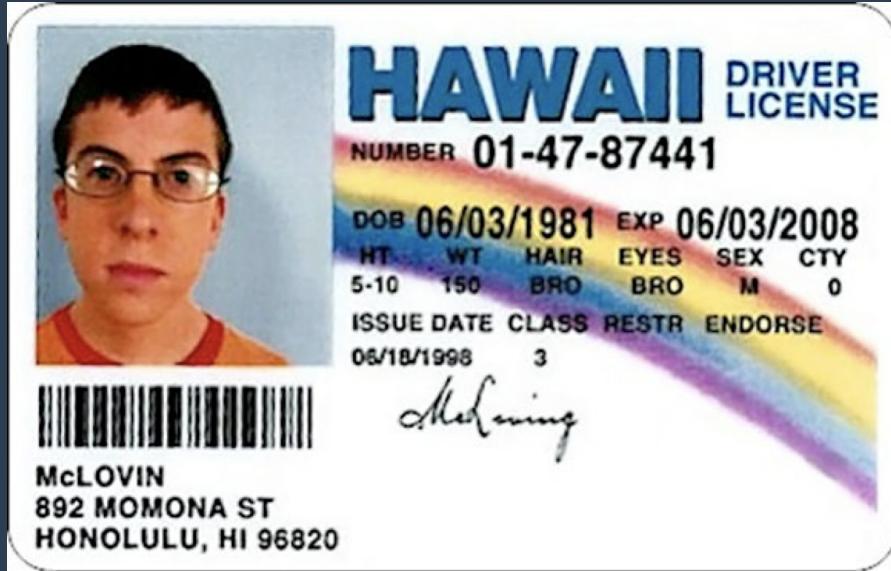
~To Do List

- 1) Make a to do list
- 2) Check off first thing on the 'To do' list
- 3) Realize you've already accomplished 2 things on the list
- [in progress] 4) Reward yourself with a nap

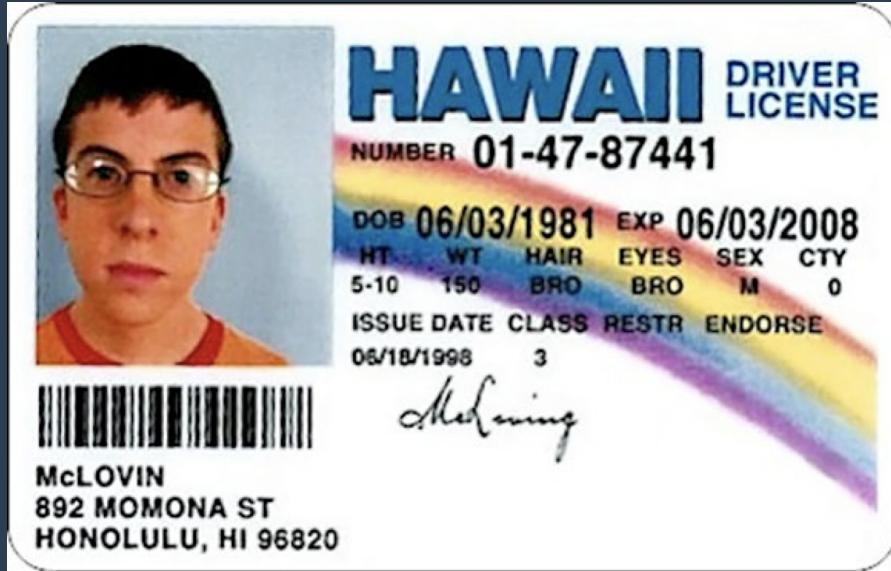
```
# task1
# task1_description = "make list"
# task1_completed = true

task1 = {
    "description" => "make list",
    "completed" => true
}
```





```
1 name = "McLovin"
2 license_number = "01-47-87441"
3 birthdate = "06/31/1981"
4 height = 70
5 weight = 150
6 street = "892 Momona St"
7 city = "Honolulu"
8 state = "HI"
9 zip = 96820
```



```
1 license = {
2   "name" => "McLovin",
3   "license_number" => "01-47-87441",
4   "birthdate" => "06/31/1981",
5   "height" => 70,
6   "weight" => 150,
7   "street" => "892 Momona St",
8   "city" => "Honolulu",
9   "state" => "HI",
10  "zip" => 96820
11 }
```

*code-along/4-hashes.rb*

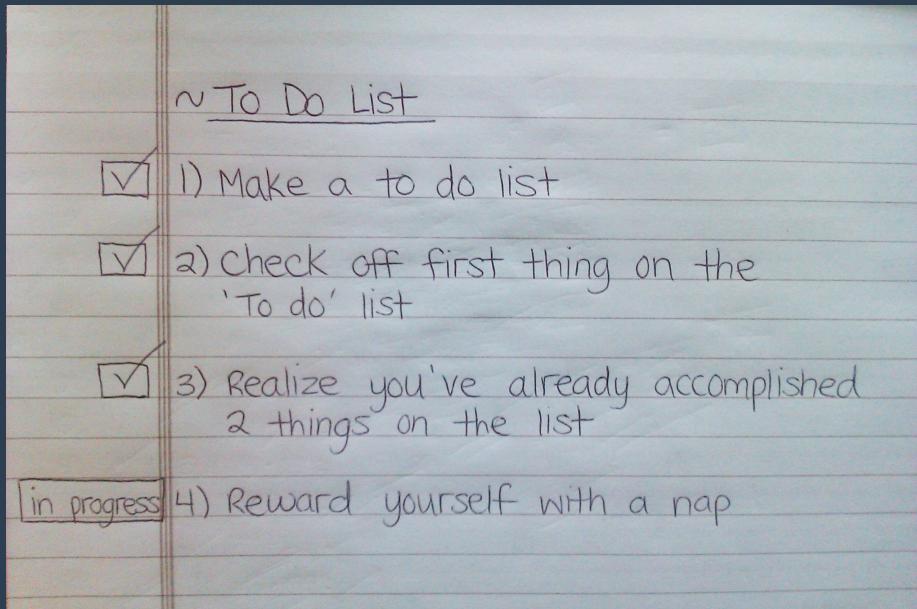
DATA  
REPRESENTS REAL WORLD THINGS

ARRAYS + HASHES =  
ANYTHING

~To Do List

- 1) Make a to do list
- 2) check off first thing on the  
'To do' list
- 3) Realize you've already accomplished  
2 things on the list
- [in progress] 4) Reward yourself with a nap

```
tasks = [  
    "make list",  
    "check off first todo",  
    "realize you've completed 2 todos",  
    "reward yourself with a nap"  
]
```



```
tasks = [
  {
    "description" => "make list",
    "completed" => true
  },
  {
    "description" => "check off first todo",
    "completed" => true
  },
  {
    "description" => "realize you've completed 2 todos",
    "completed" => true
  },
  {
    "description" => "reward yourself with a nap",
    "completed" => false
  },
]
```

# E-COMMERCE

```
1 store = {  
2   "products" => [  
3     {  
4       "name" => "Guitar Strings",  
5       "image" => "https://images.unsplash.com/...",  
6       "price" => 5.49,  
7       "description" => "These are favored by many musicians."  
8     },  
9     ...  
10   ],  
11   "promotions" => [ ... ]  
12 }
```

# VACATION RENTALS

**PLUS**



Entire apartment in Ukrainian Village  
Personalized Apartment in Vintage Building

4 guests · 2 bedrooms · 2 beds · 1 bath  
Washer · Kitchen · Dryer · Air conditioning

★ 4.86 (29)

\$71 / night  
\$2,254 total



---

  
Entire loft in Near North Side  
Kasa Chicago King Studio River North Apartment

3 guests · Studio · 2 beds · 1 bath  
Washer · Kitchen · Dryer · Air conditioning

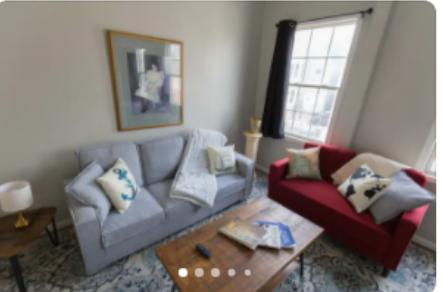
 Rare find

★ 4.84 (69)

\$105 \$95 / night  
\$3,000 total



---

  
Entire apartment in Logan Square  
Lovely 3BR in Heart of Logan Square, 5min to Train

5 guests · 3 bedrooms · 3 beds · 1 bath  
Washer · Kitchen · Dryer · Air conditioning

\$70 / night  
\$2,328 total



```
1  {
2    "listings" => [
3      {
4        "title" => "Personalized Apartment in Vintage Buildin",
5        "type" => "Entire Apartment",
6        "neighborhood" => "Ukranian Village",
7        "guests" => 4,
8        "bedrooms" => 2,
9        "bathrooms" => 1,
10       "amenities" => [
11         "Washer",
12         "Kitchen",
13         "Dryer",
14         "Air conditioning"
15       ],
16       "averageRating" => 4.86,
17       "numberOfReviews" => 29,
18       "ratePerNight" => 71.0
19     },
20     ...
21   ]
22 }
```

RINCE & REPEAT

# LOOPS





# SAY HI TO FRIENDS



# SAY HI TO FRIENDS

```
1 friends = ["Rachel", "Monica", "Phoebe", "Ross", "Chandler", "Joey"]
```

# SAY HI TO FRIENDS

```
1 friends = ["Rachel", "Monica", "Phoebe", "Ross", "Chandler", "Joey"]  
2  
3 greeting = "Hi #{friends[0]}"  
4 puts greeting # Hi Rachel  
5  
6 # greeting = "Hi #{friends[1]}"  
7 # puts greeting # Hi Monica  
8  
9 # greeting = "Hi #{friends[2]}"  
10 # puts greeting # Hi Phoebe  
11  
12 # greeting = "Hi #{friends[3]}"  
13 # puts greeting # Hi Ross  
14  
15 # greeting = "Hi #{friends[4]}"  
16 # puts greeting # Hi Chandler  
17  
18 # greeting = "Hi #{friends[5]}"  
19 # puts greeting # Hi Joey
```

repeat 5 more times

OR...

repeat  $n$  times for  $n$  elements in array

# SAY HI TO FRIENDS

```
1 friends = ["Rachel", "Monica", "Phoebe", "Ross", "Chandler", "Joey"]  
2  
3 greeting = "Hi #{friends[0]}"  
4 puts greeting # Hi Rachel
```

1. Set *index* = 0
2. Read *friend* in array at the index
3. Construct a sentence that includes "Hi" and the *friend* from step 2
4. Display the sentence
5. If this is the last element in the array, go to End (i.e. step 8)
6. Increment the index by adding 1
7. Go back to step 2 (i.e. repeat)
8. End

*code-along/5-loops.rb*

# PRACTICE

- Posted in Canvas

# NEXT WEEK

- Computer programming + SQL

# SOMETIME IN THE NEXT 2 WEEKS

- "Crash course" on HTML